Majestic Mathematics

A Textbook of Mathematics

5

Teacher's Resource Book

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Contents

Chapter 1. Large Numbers and Roman Numerals

Recap

1. 9,99,999 is the greatest 6 digit number.
2. (a) 43,676 : Forty-three thousand six hundred seventy-six
   (b) 8,62,649 : Eight lakh sixty-two thousand six hundred forty-nine
   (c) 9,99,999 : Nine lakh ninety-nine thousand nine hundred ninety-nine
   (d) 1,54, 964 : One lakh fifty-four thousand nine hundred sixty-four.
3. (a) Sixty-nine thousand two hundred twenty-six : 69,226
   (b) Four lakh five thousand three hundred fifty-nine : 4,05,359
   (c) Thirty-six lakh five hundred three : 36,05,003
   (d) Nine lakh nine hundred sixteen : 9,09,016
4. (a) 85,22,079; 85,23,079; 85,24,079; 85,25,079; 85,26,079
   (b) 4,99,765; 4,98,765; 4,97,765; 4,96,765; 4,95,765
   (c) 65,436; 65,536; 65,636; 65,736; 65,836
   (d) 2,36,506; 2,26,506; 2,25,506; 2,24,506; 2,23,506
5.

	Number	Digit	Place Value	Face Value
(a)	573643	6	600	6
(b)	600967	6	600000	6
(c)	624102	0	0	0
(d)	49954	9	9000	9

6. (a) Given number = 6,96,245
   Successor = 6,96,245 + 1 = 6,96,246
   Predecessor = 6,96,245 – 1 = 6,96,244
   (b) Given number = 7,03,448
   Successor = 7,03,448 + 1 = 7,03,449
   Predecessor = 7,03,448 – 1 = 7,03,447
   (c) Given number = 8,95,476
   Successor = 8,95,476 + 1 = 8,95,477
   Predecessor = 8,95,476 – 1 = 8,95,475
   (d) Given number = 56,269
   Successor = 56,269 + 1 = 56,270
   Predecessor = 56,269 – 1 = 56,268
7. (a) 32,648 < 79,364 < 1,56,364 < 8,64,564
   (b) 24,672 < 42,761 < 63,624 < 8,39,253
8. (a) 7,37,264 > 6,36,483 > 5,73,648 > 5,02,043
   (b) 8,10,931 > 6,42,001 > 5,25,273 > 4,98,320
9.

S. No.	Name	No. of plants	No. of plants in Roman Numeral
(a)	Rahul	72	LXXII
(b)	Punita	66	LXVI
(c)	Dinakar	49	XLIX
(d)	Sandhya	39	XXXIX
(e)	Triveni	88	LXXXVIII

Exercise 1.1

1. (a) 9648 → 9,648
   (b) 73026 → 73,026
   (c) 826491 → 8,26,491
   (d) 80045648 → 8,00,45,648
2. (a) Three lakh five thousand eight hundred thirty → 3,05,830
   (b) Seven crore fifty-two thousand six hundred sixty → 7,00,52,660
   (c) Three crore nineteen lakh fourteen thousand six hundred fifty-eight → 3,19,14,658
   (d) Seventy lakh eighty-five thousand two hundred ninety → 70,85,290
3. (a) 43,76,968 → Forty three lakh seventy-six thousand nine hundred sixty-eight
   (b) 8,46,963 → Eight lakh forty-six thousand nine hundred sixty-three
   (c) 42,87,700 → Forty-two lakh eighty-seven thousand seven hundred
   (d) 8,60,00,430 → Eight crore sixty lakh four hundred thirty

Indian Place Value Chart

S.No.	(a)	(b)	(c)	(d)
Crore (C)				8
Ten Lakhs (TL)	4		4	6
Lakhs (L)	3	8	2	0
Ten Thousands (TTh)	7	4	8	0
Thousands (Th)	6	6	7	0
Hundreds (H)	9	9	7	4
Ten (T)	6	6	0	3
One (O)	8	3	0	0

4. (a) 1 lakh = 1,00,000 = 100,000 = 100 thousands.
Thus, 100 thousands make 1 lakh.

(b) 10 lakh = 10,00,000 = 1,000,000 = 1,000 thousands.

Thus, 1000 thousands make 10 lakh.

(c) 1 crore = 1,00,00,000 = 100 lakh.

Thus, 100 lakhs make 1 crore.

(d) 1 crore = 1,00,00,000 = 10,000 hundreds.

Thus, 10,000 hundreds, make 1 crore.

(e) The greatest 7-digit number = 99,99,999
The greatest 6-digit number = 9,99,999
Number of 7-digit number
= 99,99,999 – 9,99,999 = 9000000
Thus, 90,00,000 numbers have 7 digits.

(f) The greatest 8-digit number = 9,99,99,999
The greatest 7-digit number = 99,99,999
Number of 8-digit numbers
= 9,99,99,999 – 99,99,999 = 9,00,00,000
Thus, 9,00,00,000 numbers have 8 digits.

5. (a) 40,35,691; 40,45,691; 40,55,691; 40,65,691; 40,75,691; 40,85,691

(b) 9,18,17,600; 8,18,17,600; 7,18,17,600; 6,18,17,600; 5,18,17,600; 4,18,17,600

(c) 3,48,22,672; 4,58,22,672; 5,68,22,672; 6,78,22,672; 7,88,22,672; 8,98,22,672

(d) 9,39,48,290; 8,48,57,381; 7,57,66,472; 6,66,75,563; 5,75,84,654; 4,84,93,745

6. (a) 48,36,437; 48,37,437; 48,38,437; 48,39,437; 48,40,437; 48,41,437

(b) 83,72,469; 84,72,469; 85,72,469; 86,72,469; 87,72,469; 88,72,469

(c) 1,27,93,401; 2,27,93,401; 3,27,93,401; 4,27,93,401; 5,27,93,401

Exercise 1.2

1.

S. No.	Number	Coloured Digit	Place Value	Face Value
(a)	8<u>4</u>059738	4	4000000	4
(b)	543<u>8</u>730	8	8000	8
(c)	<u>4</u>3009781	4	40000000	4
(d)	5643610<u>9</u>	0	0	0

2.

S. No.	Number	Digit	Place	Place Value
(a)	7389630	8	Ten Thousands	80,000
(b)	98736633	8	Ten Lakhs	80,00,000
(c)	4363938	8	Ones	8
(d)	803645	8	Lakhs	800,000

3. (a) Given number = 45,36,157 Place Value
$5 \times 10 = 50$
$5 \times 100000 = 5,00,000$
Sum = 50 + 5,00,000 = 5,00,050

(b) Given number = 8,75,36,583 Place Value
$5 \times 100 = 500$
$5 \times 100000 = 5,00,000$
Sum = 500 + 5,00,000 = 5,00,500

(c) Given number = 295,47,945 Place Value
$5 \times 1 = 5$
$5 \times 100000 = 5,00,000$
Sum = 5 + 5,00,000 = 5,00,005

(d) Given number = 9,57,536 Place Value
$5 \times 100 = 500$
$5 \times 10000 = 50,000$
Sum = 500 + 50,000 = 50,500

4. (a) Given number = 34,382 Place Value
$3 \times 100 = 300$
$3 \times 10000 = 30,000$
Difference = 30000 – 300 = 29,700

(b) Given number = 3,48,230 Place Value
$3 \times 10 = 30$
$3 \times 100000 = 3,00,000$
Difference = 3,00,000 – 30 = 2,99,970

(c) Given number = 5,73,637

Place Value
$3 \times 10 = 30$
$3 \times 1000 = 3,000$

Difference = 3,000 – 30 = 2970

(d) Given number = 45,36,834

Place Value
$3 \times 10 = 30$
$3 \times 10000 = 30000$

Difference = 30000 – 30 = 29970

5. (a) 2,04,83,967
= 20000000 + 400000 + 3000 + 900 + 60 + 7

(b) 7,18,00,143
= 70000000 + 1000000 + 800000 + 100 + 40 + 3

(c) 49,26,853
= 4000000 + 900000 + 20000 + 6000 + 800 + 50 + 3

(d) 35,63,963
= 3000000 + 500000 + 60000 + 3000 + 900 + 60 + 3

6. (a) 2,00,00,000 + 7,00,000 + 5,000 + 8
= 20,07,05,008

(b) 9,00,00,000 + 6,00,000 + 20,000 + 800 + 60
= 9,06,20,860

(c) 3,00,00,000 + 50,00,000 + 6,00,000 + 40,000 + 90 + 1
= 35,64,0091

Exercise 1.3

1. (a) 3,84,789 [<] 3,84,879

(b) 9,45,454 [>] 4,95,454

(c) 1,34,312 [=] 1,34,312

(d) 87,78,003 [>] 57,78,030

(e) 46,90,609 [>] 46,09,690

(f) 9,71,00,020 [<] 9,71,00,200

2. (a) 1,17,369 < 2,27,648 < 2,37,658 < 7,89,736 < 9,81,228

(b) 34,08,108 < 34,12,097 < 37,78,513 < 53,72,496 < 84,08,108

(c) 3,64,264 < 2,59,85,590 < 7,34,28,904 < 7,36,14,109 < 8,48,95,402

3. (a) 99,48,386 > 99,44,278 > 88,30,808 > 33,05,054 > 11,28,526

(b) 94,48,386 > 91,17,172 > 80,07,543 > 61,19,679 > 41,10,092

(c) 44,50,75,668 > 41,50,65,668 > 6,96,07,927 > 1,39,36,401 > 74,18,916

4.

S. No.	Digits	Smallest Number	Greatest Number
(a)	3, 4,1,7,6,0,9	10,34,679	97,64,310
(b)	8,2,7,6,0,1	1,02,678	8,76,210
(c)	9,7,0,3,4,8,6,5	3,04,56,789	9,87,65,430
(d)	6,4,8,1,3,9,0	10,34,689	98,64,310
(e)	7,4,1,9,8,2,3	12,34,789	9,87,4321
(f)	2,4,9,2,8,3,0	20,34,789	98,74,320

5.

S. No.	Digits	Smallest 7-digit number	Greatest 7-digit number
(a)	4,3,7,0	30,00,047	7777430
(b)	2,8,3,1	11,11,238	88,88,321
(c)	9,0,4,3	33,33,049	99,99,430
(d)	8,7,5,1	11,11,578	88,88,751

6.

S. No.	Digits	Smallest 8-digit number	Greatest 8-digit number
(a)	9,7,2,5	2,22,22,579	9,99,99,752
(b)	8,7,1	1,11,11,178	8,88,88,871
(c)	4,9,6,7,0	4,44,40,679	9,99,97,640
(d)	1,0,8,3	1,11,11,038	8,88,88,310

Exercise 1.4

1. (a) 7,936,401 = Seven million nine hundred thirty-six thousand four hundred one

(b) 5,600,248 = Five million six hundred thousand two hundred forty-eight

(c) 50,480,669 = Fifty million four hundred eighty thousand six hundred sixty-nine

(d) 51,372,814 = Fifty-one million three hundred seventy-two thousand eight hundred fourteen

2. (a) 14,069,315 (b) 29,503,014
(c) 7,626,982 (d) 265,513

3. (a) 4,360,938 (b) 83,636,403
(c) 48,114,309 (d) 7,005,304

4.

S. No.	Number	Coloured Digit	Place	Place Value
(a)	34,367,164	7	Thousands	7,000
(b)	8,311,642	3	Hundred Thousands	300,000
(c)	93,267,360	3	Millions	3,000,000
(d)	5,691,004	0	Hundred	0

5. (a) 8 lakhs = 800000 = 800 thousands
   (b) 1 million = 1000000 = 100 lakhs
   (c) 1 million = 1000000 = 1000 thousands
   (d) 1 crore = 10000000 = 100 lakhs

Exercise 1.5

1. (a) Given number = 7364
   Ones digit = 4 and 4 < 5
   So, rounded off number = 7360

   (b) Given number = 52409
   Ones digit = 9 and 9 > 5
   So, rounded off number = 52410

   (c) Given number = 876435
   Ones digit = 5
   So, rounded off number = 876440

   (d) Given number = 1436376
   Ones digit = 6 and 6 > 5
   So, rounded off number = 1436380

   (e) Given number = 84973597
   Ones digit = 7 and 7 > 5
   So, rounded off number = 84973600

   (f) Given number = 756666
   Ones digit = 6 and 6 > 5
   So, rounded off number = 756670

   (g) Given number = 9685744
   Ones digit = 4 and 4 < 5
   So, rounded off number = 9685740

   (h) Given number = 921483
   Ones digit = 3 and 3 < 5
   So, rounded number = 921480

2. (a) Given number = 789
   Tens digit = 8 and 8 > 5
   So, rounded off number = 800

   (b) Given number = 4629
   Tens digit = 2 and 2 < 5
   So, rounded off number = 4600

   (c) Given number = 53648
   Tens digit = 4 and 4 < 5
   So, rounded off number = 53600

   (d) Given number = 546273
   Tens digit = 7 and 7 > 5
   So, rounded off number = 546300

   (e) Given number = 2145958
   Tens digit = 5
   So, rounded off number = 214600

   (f) Given number = 87694815
   Tens digit = 1 and 1 < 5
   So, rounded off number = 87694800

   (g) Given number = 5308796
   Tens digit = 9 and 9 > 5
   So, rounded off number = 5308800

   (h) Given number = 183624
   Tens digit = 2 and 2 < 5
   So, rounded number = 183600

3. (a) Given number = 836459
   Hundreds digit = 4 and 4 < 5
   So, rounded off number = 836000

   (b) Given number = 54368
   Hundreds digit = 3 and 3 < 5
   So, rounded off number = 54000

   (c) Given number = 53241
   Hundreds digit = 2 < 5
   So, rounded off number = 53000

   (d) Given Number = 836459
   Hundreds digit = 4 and 4 < 5
   So, rounded off number = 836000

   (e) Given Number = 9303605
   Hundreds digit = 6 and 6 > 5
   So, rounded off number = 9304000

   (f) Given Number = 14760817
   Hundreds digit = 8 and 8 > 5
   So, rounded off number = 14761000

   (g) Given Number = 74214305
   Hundreds digit = 3 and 3 < 5
   So, rounded off number = 74214000

   (h) Given Number = 110039
   Hundreds digit = 0 and 0 < 5
   So, rounded off number = 110000

4. Answer may vary.

5. Answer may vary.

Exercise 1.6

1. (a) 48 = XLVIII
   (b) 128 = CXXVIII
   (c) 455 = CDLV

(d) 2872 = MMDCCCLXXII
(e) 930 = DCDXXX
(f) 1002 = MII
(g) 1428 = MCDXXVIII
(h) 732 = DCCXXXII
(i) 941 = CMXLI
(j) 1930 = MCMXXX

2. (a) LVI = 56 (b) XCVIII = 98
(c) CMLXV = 965 (d) LXXIX = 79
(e) CCCLVI = 356 (f) XCV = 95
(g) DCCXXVIII = 728 (h) DLXXXVI = 586

3. (a) XXXIX = 39 and XL = 40
Since 39 < 40
So, XXXIX [<] XL

(b) CXXXIX = 139
and CXXXII = 132
Since 139 > 132
So, CXXXIX [>] CXXXII

(c) XXXII = 32 and XXIX = 29
Since 32 > 29, so XXXII [>] XXIX

(d) LXXX = 80 and XC = 90
Since 80 < 90
So, LXXX [<] XC

(e) XCII = 92 and LXXXII = 82
Since 92 > 82, so XCII [>] LXXXII

(f) XCI = 91 and XCII = 92
Since 91 < 92, so XCI [<] XCII

Revision Exercise

1.

S. No.	Number	Underlined Digit	Place value in	
			Indian PVC	International PVC
(a)	8729<u>8</u>43	8	800	800
(b)	5<u>7</u>003764	7	70,00,000	7,000,000
(c)	<u>2</u>483726	2	20,00,000	2,000,000
(d)	43<u>6</u>536	6	6,000	6,000

2.

S. No.	Number	Use of commas in	
		Indian PVC	International PVC
(a)	7364824	73,64,824	7,364,824
(b)	96232684	9,62,32,684	96,232,684
(c)	8265497	82,65,497	8,265,497
(d)	18417364	1,84,17,364	18,417,364

3.

S. No.	Number	Successor	Predecessor
(a)	8736449	8736449 + 1 = 8736450	8736449 – 1 = 8736448
(b)	7343108	7343108 + 1 = 7343109	7343108 – 1 = 7343107
(c)	7253648	7253648 + 1 = 7253649	7253648 – 1 = 7253647
(d)	93003645	93003645 + 1 = 93003646	93003645 – 1 = 93003644

4. **Ascending order :**

(a) 4,36,456 < 59,63,648 < 59,63,739 < 83,71,628 < 8,37,12,694

(b) 48,00,961 < 67,92,318 < 67,93,218 < 69,72,184 < 4,70,06,752

(c) 57,36,173 < 58,46,194 < 96,26,314 < 96,38,426 < 96,48,326

Descending order :

(a) 8,37,12,694 > 83,71,628 > 59,63,739 > 59,63,648 > 4,36,456

(b) 4,70,06,752 > 69,72,184 > 67,93,218 > 67,92,318 > 48,00,961

(c) 96,48,326 > 96,38,426 > 96,26,314 > 58,46,194 > 57,36,173

5. Given digits = 7,0,2,1,9,8
The largest number = 987210
The smallest number = 102789

6. Given digits = 8,4,1,0
The largest 7-digit number = 8888410
The smallest 7-digit number = 1111048

7. The greatest 7-digit number = 9999999
The greatest 6-digit number = 999999
Number of 7-digit number
= 9999999 – 999999 = 9000000

8. (a) Given number = 736
Ones digit = 6 and 6 > 5.

Thus, rounded off number to the nearest 10 = 740

Tens digit = 3 and 3 < 5.
Thus, rounded off number to the nearest 100 = 700

Hundreds digit = 7 and 7 > 5.
Thus, rounded off number to the nearest 1000 = 1000

(b) Given number = 8329
Ones digit = 9 and 9 > 5.
So, rounded number to the nearest 10 = 8330
Tens digit = 2 and 2 < 5.
So, rounded number to the nearest 100 = 8300
Hundreds digit = 3 and 3 < 5.
So, rounded number to the nearest 1000 = 8000

(c) Given number = 9343
Ones digit = 3 and 3 < 5.
So, rounded number to the nearest 10 = 9340
Tens digit = 4 and 4 < 5.
So, rounded number to the nearest 100 = 9300
Hundreds digit = 3 and 3 < 5.
So, rounded number to the nearest 1000 = 9000

(d) Given number = 84364
Ones digit = 4 and 4 < 5.
So, rounded number to the nearest 10 = 84360
Tens digit = 6 and 6 > 5.
So, rounded number to the nearest 100 = 84400
Hundreds digit = 3 and 3 < 5.
So, rounded number to the nearest 1000 = 84000

9. (a) 472 = CDLXXII (b) 999 = CLXCIX
(c) 742 =DCCXLII (d) 824 = DCCCXXIV

10. (a) CLVI = 154 (b) LXXI = 71
(c) DVII = 507 (d) DCLXXIX = 679

HOTS

1. (a) A Roman numeral symbol cannot be repeated more than three times.
So, CXXXXII is meaningless.

(b) CXCVJ = 196

(c) Roman numeral 'L' cannot be repeated.
So, LLIV is meaningless.

(d) CXII = 12

2. (a) CCCXIII +I = CCCXIV
Thus, CCCXIV is successor of CCCXIII.
CCCXIII – I = CCCXII.
Thus, CCCXII is predecessor of CCCXIII

(b) CCCLXXXV + I = CCCLXXXVI
Thus, CCCLXXXVI is successer of CCCLXXXVI
CCCLXXXV – I = CCCLXXXIV
Thus, CCCLXXXIV is predecessor of CCCLXXXV

(c) CXLVI + I = CXLVII
Thus, CXLVII is successor of CXLVI
CXLVI – I = CXLV
Thus, CXLV is predecessor of CXLVI

(d) CCXXVI + I = CCXXVII
Thus, CCXXVII is successor of CCXXVI
CCXXVI – I = CCXXV
Thus, CCXXV is predecesser of CCXXVI

3. (a) CCCLX = 360
Half of 360 = 360 ÷ 2 = 180 = CLXXX
Thus, CLXXX is the required answer.

(b) MCDXL = 1440
Double of 1440
= 1440 × 2 = 2880 = MMDCCCLXXX
Thus, MMDCCCLXXX is the required answer.

(c) DC = 600
Five times 600 = 600 × 5 = 3000 = MMM
Thus, MMM is the required answer.

(d) DCCXV = 715
342 less than 715
= 715 – 342 = 373 = CCCLXXIII
Thus, CCCLXXIII is the required answer.

Case-based Questions

1. The population of Delhi, India is an 8-digit number having 6 at its thousands place.
2. The sum of the place values of 7 in 37,274,000 = 7,000,000 + 70,000 = 7,070,000.
3. Tokyo, Japan is the most populous city.
4. Mexico City is the least populous city.
5. The estimated population of Delhi to the nearest 1,000 = 32,066,000

Mental Maths

A. 1. 10<u>0</u>0 thousands make a million.
2. 1<u>0</u> ten thousands make a lakh.

3. 87364 — place value: 4 — Face value: 4

Difference = 4 – 4 = 0

Thus, the difference of place value and face value of the underlined digit in 873649 is 0.

4. Hundred millions, Ten million, Millions places form the million period.

5. The greatest 8-digit number having different digits with 5 in tens place is 7,64,32,150.

B. 1. 109 among the given numbers is a 3-digit number having 9 at its ones place. Thus, (a) is the correct answer.

2. Millions period consists of HM, TM, M places. Thus, (b) is the correct answer.

3. Given number = 4583596 — Place value: 500, 500000

Sum of place values obtained = 500 + 500000 = 500500

Thus, (a) is the correct answer.

4. Numbers having digit 5 between 1 and 100 are 5, 15, 25, 35, 45, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 65, 75, 85 and 95.

Clearly, digit 5 occurs 20 times between 1 and 100. Thus, (a) is the correct answer.

5. The place value about increases 10 times when we move from right to left in the place value chart.

Thus, (c) is the correct answer.

6. MCXI = 1111

Thus, (b) is the correct answer.

7. Ones digit of 84364 is 4 and 4 < 5.

So, rounded off number = 84360.

Thus, (b) is the correct answer.

8. The greatest 8-digit number = 99999999

Even number just less than 99999999 = 99999999 – 1 = 99999998

Thus, (d) is the correct answer.

Chapter 2. Addition & Subtraction

1. (a)

	TTh	Th	H	T	O
	3	4	8	7	6
+	2	3	4	6	5
	5	8	3	4	1

(b)

	L	TTh	Th	H	T	O
	2	3	6	8	7	6
+	3	7	9	4	7	8
	6	1	6	3	5	4

(c)

	TL	L	TTh	Th	H	T	O
		9	7	5	8	2	4
+		8	6	4	3	6	3
	1	8	4	0	1	8	7

2. (a)

	TTh	Th	H	T
	8	7	1	4
–	2	7	8	3
		5	9	3

(b)

	L	TTh	Th	H	T	O
	9	8	6	4	0	0
–		9	8	7	8	9
	8	8	7	6	1	1

(c)

	L	TTh	Th	H	T	O
	5	7	8	3	9	6
–	4	3	2	7	8	4
	1	4	5	6	1	2

3. (a) 546361 + 0 = 546361

(b) 48639 + 1 = 49640

(c) 49364 – 0 = 49364

(d) 83648 – 1 = 83647

(e) 49364 + 0 = 49364

(f) 893364 + 4000 = 897364

(g) 57369 – 4000 = 53369

(h) 368 + 274 = 274 + 368

Exercise 2.1

(1) (a)

	TL	L	TTh	Th	H	T	O
	8	4	7	2	6	4	5
+	1	1	4	8	3	7	9
	9	6	2	1	0	2	4

(b)

	TL	L	TTh	Th	H	T	O
	2	3	6	7	6	2	5
+	4	6	5	4	8	6	0
	7	0	2	2	4	8	5

(c)

	TL	L	TTh	Th	H	T	O
		8	7	3	6	4	6
+		8	6	9	4	3	9
	1	7	4	3	0	8	5

(d)

	TL	L	TTh	Th	H	T	O
		5	2	7	3	6	4
		2	3	4	6	2	3
+		8	3	6	4	3	2
	1	5	9	8	4	1	9

(e)

	TL	L	TTh	Th	H	T	O
		9	7	3	6	4	8
		2	1	2	3	7	5
+		4	0	5	0	9	7
	1	5	9	1	1	2	0

(f)

	TL	L	TTh	Th	H	T	O
		5	3	2	6	4	3
		1	4	2	3	7	8
+		3	2	7	3	2	4
	1	0	0	2	3	4	5

2. (a)

	TL	L	TTh	Th	H	T	O
	3	4	6	9	3	6	7
+		8	4	6	4	8	9
	4	3	1	5	8	5	6

(b)

	C	TL	L	TTh	Th	H	T	O
		9	6	3	6	0	4	3
+		8	4	3	6	4	8	9
	1	8	0	7	2	5	3	2

(c)

	TL	L	TTh	Th	H	T	O
	9	1	1	4	3	6	4
+		8	4	3	4	3	6
	9	9	5	7	8	0	0

(d)

	C	TL	L	TTh	Th	H	T	O
		4	3	1	2	6	7	6
+		7	3	2	6	4	6	0
	1	1	6	3	9	1	3	6

(e)

	C	TL	L	TTh	Th	H	T	O
		5	3	2	4	1	4	1
+		9	2	7	3	1	1	4
	1	4	5	9	7	2	5	5

(f)

	TL	L	TTh	Th	H	T	O
	5	3	6	4	3	4	6
+		3	2	6	4	9	8
	5	6	9	0	8	4	4

3. (a)

	TL	L	TTh	Th	H	T	O
	[3]	4	8	4	[5]	6	4
+	3	4	[5]	6	2	7	[3]
	6	[9]	4	[0]	8	[3]	7

(b)

	TL	L	TTh	Th	H	T	O
		5	[9]	4	8	7	[6]
+		4	2	[8]	7	9	4
	[1]	[0]	2	3	[6]	7	0

(c)

	TL	L	TTh	Th	H	T	O
		7	3	4	[3]	6	9
+		2	[9]	8	7	6	[5]
	[1]	0	3	[3]	1	[3]	4

4. (a) 43679 + 76269
= 76269 + 43679 [Using order property]

(b) 844696 + 967645
= 844696 + 967645 [Using order property]

(c) 567648 + 496768
= 496768 + 567648 [Using order property]

(d) 436489 + 0
= 436489 [Using property of 0]

(e) 9676836 + 0
= 9676836 [Using property of 0]

(f) 43964 + 1
= 43965 [Using property of 1]

(g) 845672 + 1
= 845673 [Using property of 1]

(h) (143676 + 84364) + 73649
= 143676 + (84364 + 73649)
[Using grouping property]

5. (a)

The cost of one car	=	₹ 1 4 2 7 0 0 0
The cost of another car	=	+ ₹ 2 4 6 5 5 9 5
Total cost of both cars	=	₹ 3 8 9 2 5 9 5

Thus, both cars cost ₹3892595.

(b)

Number of bricks produced in October	=	9626684
Number of bricks produced in November	= +	8445875
Number of bricks produced in these months	=	18072559

Thus, in October and November 18072559 bricks produced.

(c)

The population of one state	=	1248569
The population of other state	= +	2600960
Total population of both states	=	3849529

Thus, 3849529 is total population of both the states.

(d) The cost of a car = ₹ 8,34,000

The cost of a plot = ₹ 834000 + ₹ 32,30,000
=₹ 40,64,000

Thus, Mr. Lalit paid ₹ 40,64,000 for buying the plot.

(e) Number of copies of novel published in 2013–14 = 1214240

Number of copies of novel published in 2014–15 = 2668970

1214240	Total number of copies of
+ 2668970	novel published in two
3883210	years = 3883210

Since, 2668970 > 1214240, so in 2014–15 more copies of the novel were published.

Exercise 2.2

1. (a)

	TL	L	TTh	Th	H	T	O
	8	4	0	0	9	7	2
–	2	8	7	9	6	4	8
	5	5	2	1	3	2	4

(b)

	TL	L	TTh	Th	H	T	O
	6	4	5	2	7	6	4
–	1	3	9	8	7	8	9
	5	0	5	3	9	7	5

(c)

	TL	L	TTh	Th	H	T	O
	6	4	5	6	9	0	2
–	2	1	7	8	4	6	9
	4	2	7	8	4	3	3

(d)

	C	TL	L	TTh	Th	H	T	O
	3	4	5	0	0	2	9	6
–	1	7	9	6	8	9	7	2
	1	6	5	3	1	3	2	4

(e)

	C	TL	L	TTh	Th	H	T	O
	8	4	3	6	9	4	8	2
–	2	9	6	5	8	9	6	7
	5	4	7	1	0	5	1	5

(f)

	C	TL	L	TTh	Th	H	T	O
	2	4	8	9	9	6	7	8
–	1	5	6	4	8	4	9	6
		9	2	5	1	1	8	2

2. (a)

	TL	L	TTh	Th	H	T	O
	5	4	6	4	9	8	6
–	1	2	4	3	6	4	0
	4	2	2	1	3	4	6

(b)

	C	TL	L	TTh	Th	H	T	O
	7	9	9	3	8	6	4	8
–		8	8	8	8	8	8	1
	7	1	0	4	9	7	6	7

(c)

	TL	L	TTh	Th	H	T	O
	4	9	3	7	5	6	8
–	2	6	9	8	4	6	1
	2	2	3	9	1	0	7

(d)

	TL	L	TTh	Th	H	T	O
	5	6	1	4	3	7	8
–	1	4	3	6	4	5	8
	4	1	7	7	9	2	0

(e)

	TL	L	TTh	Th	H	T	O
	9	9	9	9	4	0	0
–	2	4	8	8	4	6	5
	7	5	1	0	9	3	5

(f)

	C	TL	L	TTh	Th	H	T	O
	6	4	5	4	3	6	4	8
–		2	5	6	4	9	6	7
	6	1	9	7	8	6	8	1

Checking

(a)

	TL	L	TTh	Th	H	T	O
	4	2	2	1	3	4	6
+	1	2	4	3	6	4	0
	5	4	6	4	9	8	6

(b)

	C	TL	L	TTh	Th	H	T	O
	7	1	0	4	9	7	6	7
+		8	8	8	8	8	8	1
	7	9	9	3	8	6	4	8

(c)

	TL	L	TTh	Th	H	T	O
	2	2	3	9	1	0	7
+	2	6	9	8	4	6	1
	4	9	3	7	5	6	8

(d)

	TL	L	TTh	Th	H	T	O
	4	1	7	7	9	2	0
+	1	4	3	6	4	5	8
	5	6	1	4	3	7	8

(e)

	TL	L	TTh	Th	H	T	O
	7	5	1	0	9	3	5
+	2	4	8	8	4	6	5
	9	9	9	9	4	0	0

(f)

	C	TL	L	TTh	Th	H	T	O
	6	1	9	7	8	6	8	1
+		2	5	6	4	9	6	7
	6	4	5	4	3	6	4	8

4. (a) 9736489 – 0 = 9736489 [Using property of 0]

   (b) 85643698 – 0 = 85643698 [Using property of 0]

   (c) 4696458 – 1 = 4696457 [Using property of 1]

   (d) 97364601 – 1 = 97364600 [Using property of 1]

   (e) 51432681 – 51432681 = 0

   (f) 9614371 – 9614371 = 0

5. (a) Number of votes got by Mr. A = 8436456

   Number of votes got by Mr. B = 1479873

   8 4 3 6 4 5 6
   – 1 4 7 9 8 7 3
   6 9 5 6 5 8 3

   Difference = 6956583

   Thus, Mr. A won the election by 69,56,583 votes.

   (b) To find the number which is added in 8,46,26,314 to get 9,76,49,114, we subtract 8,46,26,314 from 9,76,49,114.

   Checking

   9 7 6 4 9 1 1 4
   – 8 4 6 2 6 3 1 4
   1 3 0 2 2 8 0 0

   8 4 6 2 6 3 1 4
   + 1 3 0 2 2 8 0 0
   9 7 6 4 9 1 1 4

   Thus, the required number is 13022800.

   (c) Let the other number be A.
   Then, 47569405 + A = 98425600
   So, A = 98425600 – 47569405 = 50856195

   9 8 4 2 5 6 0 0
   – 4 7 5 6 9 4 0 5
   5 0 8 5 6 1 9 5

   Thus, the required number is 50856195.

   (d) Money available in Mr. Abdul's account = ₹11993750
   Money available in withdrew by Mr. Abdul's account = ₹5695250

   ₹ 1 1 9 9 3 7 5 0
   – ₹ 5 6 9 5 2 5 0
   ₹ 6 2 9 8 5 0 0

   Money available left in Mr. Abdul's account = ₹6298500
   Thus, ₹6298500 is left in his bank account.

   (e)

   The number of girls in state A = 4 4 7 5 9 7 5
   The number of girls in state B = – 1 5 2 6 8 4 0
   2 9 4 9 1 3 5

Exercise 2.3

1. (a) Let us find 5736428 + 493648 – 86434

   5 7 3 6 4 2 8
   + 4 9 3 6 4 8
   6 2 3 0 0 7 6

   6 2 3 0 0 7 6
   – 8 6 4 3 4
   6 1 4 3 6 4 2

   Thus, 5736428 + 493648 – 86434 = 6143642

   (b) Let us find 9143648 – 514864 – 182619

   9 1 4 3 6 4 8
   – 5 1 4 8 6 4
   8 6 2 8 7 8 4

   8 6 2 8 7 8 4
   – 1 8 2 6 1 9
   8 4 4 6 1 6 5

   Thus, 9143648 – 514864 – 182619 = 8446165

(c) Let us find 4936458 + 146984 – 93648

	4	9	3	6	4	5	8
+		1	4	6	9	8	4
	5	0	7	3	4	4	2

	5	0	7	3	4	4	2
–			9	3	6	4	8
	4	9	7	9	7	9	4

Thus, 4936458 +146984 – 93648 = 4979794

(d) Let us find 82496484 – 32496861 – 5436814

	8	2	4	9	6	4	8	4
–	3	2	4	9	6	8	6	1
	4	9	9	9	9	6	2	3

	4	9	9	9	9	6	2	3
–		5	4	3	6	8	1	4
	4	4	5	6	2	8	0	9

Thus, 82496484 – 32496861 –5436814
= 44562809

(e) Let us find 999999 + 8427640 – 5643264

		9	9	9	9	9	9
+	8	4	2	7	6	4	0
	9	4	2	7	6	3	9

	9	4	2	7	6	3	9
–		5	6	4	3	2	6	4
		3	7	8	4	3	7	5

Thus, 999999 + 8427640 – 5643264 = 3784375

(f) Let us find 49363664 – 84364896 + 73649564

	4	9	3	6	3	6	6	4
+	7	3	6	4	9	5	6	4
	1	2	3	0	1	3	2	8

	1	2	3	0	1	3	2	8
–		8	4	3	6	4	8	9	6
		3	8	6	4	8	3	3	2

Thus, 49363664 – 84364896 + 73649564
= 38648332

2. (a) 8080082 – 2643648 = 5436434;
8080082 –5436434 = 2643648

(b) 11172936 – 1436498 = 9736438;
11172936 – 9736438 = 1436498

(c) 64651187 – 102040 = 64549147;
64651187 – 64549147 = 102040

(d) 6738012 – 264364 = 6473648;
6738012 – 6473648 = 264364

3. (a) 2328411 + 6436483 = 8764894

(b) 4493119 + 4527364 = 9020483

(c) 4637793 + 2731483 = 7369276

(d) 2848050 + 5693643 = 8541693

4. (a) Estimated sum

	8	0	0	0	0	0	0
+	2	0	0	0	0	0	0
	1	0	0	0	0	0	0	0

Actual sum

	7	6	3	6	4	3	8
+	2	4	3	5	7	3	8
	1	0	0	7	2	1	7	6

(b) Estimated sum

	1	0	0	0	0	0	0	0
+			6	0	0	0	0	0
	1	0	6	0	0	0	0	0

Actual sum

		9	8	4	3	6	4	8
+			6	4	8	3	6	4
	1	0	4	9	2	0	1	2

(c) Estimated sum

	9	0	0	0	0	0	0
+	1	0	0	0	0	0	0
	1	0	0	0	0	0	0	0

Actual sum

	8	7	3	6	4	8	6
+	1	4	3	6	8	4	8
	1	0	1	7	3	3	3	4

(d) Estimated sum

	4	0	0	0	0	0	0
+		6	0	0	0	0	0
	4	6	0	0	0	0	0

Actual sum

	4	3	6	4	3	6	8
+		5	7	3	6	4	8
	4	9	3	8	0	1	6

(e) Estimated sum

	9	0	0	0	0	0	0
+	7	0	0	0	0	0	0
	1	6	0	0	0	0	0	0

Actual sum

	9	3	6	4	7	8	4
+	7	4	9	0	2	6	1
	1	6	8	5	5	0	4	5

(f) Estimated sum

	6	0	0	0	0	0	0
+		5	0	0	0	0	0
	6	5	0	0	0	0	0

Actual sum

	5	7	3	4	6	4	8
+			4	9	6	3	6	4
		6	2	3	1	0	1	2

5. (a) Actual Difference

	7	6	4	3	6	4	2
–		4	2	1	9	7	6	2
		3	4	2	3	8	8	0

Estimated Difference

	8	0	0	0	0	0	0
–	4	0	0	0	0	0	0
	4	0	0	0	0	0	0

(b) Actual Difference

	8	7	6	4	9	7	8	4
–		9	3	6	4	3	4	3
	7	8	2	8	5	4	4	1

Estimated Difference

	9	0	0	0	0	0	0	0
–		9	0	0	0	0	0	0
	8	1	0	0	0	0	0	0

(c) Actual Difference

	5	7	3	6	4	4	8
–	4	3	6	4	8	4	1
	1	3	7	1	6	0	7

Estimated Difference

	6	0	0	0	0	0	0
–	4	0	0	0	0	0	0
	2	0	0	0	0	0	0

(d) Actual Difference

	5	4	3	6	4	8	9
–	3	2	8	9	6	4	3
	2	1	4	6	8	4	6

Estimated Difference

	5	0	0	0	0	0	0
–	3	0	0	0	0	0	0
	2	0	0	0	0	0	0

(e) Actual Difference

	7	5	8	9	6	4	2
–	4	2	6	4	3	6	3
	3	3	2	5	2	7	9

Estimated Difference

	8	0	0	0	0	0	0
–	4	0	0	0	0	0	0
	4	0	0	0	0	0	0

(f) Actual Difference

	6	9	8	4	3	6	8
–	5	4	0	2	6	4	5
	1	5	8	1	7	2	3

Estimated Difference

	7	0	0	0	0	0	0
–	5	0	0	0	0	0	0
	2	0	0	0	0	0	0

Revision Exercise

(a) $\begin{array}{r} 6348758 \\ +\ 9473243 \\ \hline 15822001 \end{array}$ (b) $\begin{array}{r} 80943201 \\ +\ 4364873 \\ \hline 85308074 \end{array}$

(c) $\begin{array}{r} 1870245 \\ +4489372 \\ \hline 6359707 \end{array}$ (d) $\begin{array}{r} 48243724 \\ +46025914 \\ \hline 94269638 \end{array}$

(e) $\begin{array}{r} 45932408 \\ +47855862 \\ \hline 93788270 \end{array}$ (f) $\begin{array}{r} 802679 \\ +\ 564364 \\ \hline 1367043 \end{array}$

2. (a) $\begin{array}{r} 9726487 \\ -2734861 \\ \hline 6991626 \end{array}$ (b) $\begin{array}{r} 49847 24 \\ -3790245 \\ \hline 1194479 \end{array}$

(c) $\begin{array}{r} 8540283 \\ -4548935 \\ \hline 3991348 \end{array}$ (d) $\begin{array}{r} 5764103 \\ -2436917 \\ \hline 3327186 \end{array}$

(e) $\begin{array}{r} 96423745 \\ -73256048 \\ \hline 23167697 \end{array}$ (f) $\begin{array}{r} 9874000 \\ -3005993 \\ \hline 6868007 \end{array}$

3. (a) Let us solve 8427614 – 532493 + 6354464

$\begin{array}{r} 8427614 \\ -\ 532493 \\ \hline 7895121 \end{array}$ $\begin{array}{r} 7895121 \\ +\ 6354464 \\ \hline 14249585 \end{array}$

Thus, 8427614 – 532493 + 6354464 = 14249585

(b) Let us solve 9436341 + 842946 – 884973

$\begin{array}{r} 9436341 \\ +\ 842946 \\ \hline 10279287 \end{array}$ $\begin{array}{r} 10279287 \\ -\ 884973 \\ \hline 9394314 \end{array}$

Thus, 9436341 + 842946 – 884973 = 9394314

(c) Let us solve 499683 + 58764 – 84264

$\begin{array}{r} 499683 \\ +\ 58764 \\ \hline 558447 \end{array}$ $\begin{array}{r} 558447 \\ -\ 84264 \\ \hline 474183 \end{array}$

Thus, 499683 + 58764 – 84264 = 474183

(d) Let us solve 944437 – 46736 + 43075

$\begin{array}{r} 944437 \\ -\ 46736 \\ \hline 897701 \end{array}$ $\begin{array}{r} 897701 \\ +\ 43075 \\ \hline 940776 \end{array}$

Thus, 944437 – 46736 + 43075 = 940776

(e) Let us solve 97143648 – 483648 – 253730

$\begin{array}{r} 97143648 \\ -\ 483648 \\ \hline 96660000 \end{array}$ $\begin{array}{r} 96660000 \\ +\ 253730 \\ \hline 96406270 \end{array}$

Thus, 97143648 – 483648 – 253730 = 96406270

4. (a)

	C	TL	L	TTH	TH	H	T	O
	2	9	[4]	5	8	[2]	4	3
+	3	[8]	9	4	[2]	8	6	[9]
	[6]	8	4	0	1	1	[1]	2

(b)

	C	TL	L	TTH	TH	H	T	O
	8	[4]	0	0	[2]	[7]	9	8
–	1	2	[9]	4	8	9	[6]	[3]
	[7]	1	0	[5]	3	8	3	5

5. To get the required number, we subtract 7936487 from 84694736.

We have 84694736 – 7936487 = 76758249

$\begin{array}{r} 84694736 \\ -\ 7936487 \\ \hline 76758249 \end{array}$

Thus, 76758249 must be added to 7936487 to get 84694736.

Checking, 76758249 + 7936487 = 84694736.

$\begin{array}{r} 76758249 \\ -\ 7936487 \\ \hline 84694736 \end{array}$

6. To get the other number, we subtract 4273455 from 9824360.

We have 9824360 – 4273455 = 5550905

$\begin{array}{r} 9824360 \\ -4273455 \\ \hline 5550905 \end{array}$

Checking, 4273455 + 5550905

$\begin{array}{r} 4273455 \\ +5550905 \\ \hline 9824360 \end{array}$

Thus, the other number is 9824360.

7. To get the required number, we subtract 4295310 from 8004215

We have 8004215 – 4295310 = 7574705

$$\begin{array}{r} 8\,0\,0\,4\,2\,1\,5 \\ -\,4\,2\,9\,5\,3\,1\,0 \\ \hline 7\,5\,7\,4\,7\,0\,5 \end{array}$$

Thus, 7574705 must be subtracted from 8004215 to get 4295310.

Checking, 8004215 – 7574705 = 4295310

$$\begin{array}{r} 8\,0\,0\,4\,2\,1\,5 \\ -\,7\,5\,7\,4\,7\,0\,5 \\ \hline 4\,2\,9\,5\,3\,1\,0 \end{array}$$

8. Larger number = 9837298
Difference = 1272345
Smaller number = 9837298 – 1272345 = 8564953

$$\begin{array}{r} 9\,8\,3\,7\,2\,9\,8 \\ -\,1\,2\,7\,2\,3\,4\,5 \\ \hline 8\,5\,6\,4\,9\,5\,3 \end{array}$$

9. Number of boys participated in Olympiad = 1024360

Number of girls participated in Olympiad = 593270

Total number of participants
= 1024360 + 593270 = 1617630

$$\begin{array}{r} 1\,0\,2\,4\,3\,6\,0 \\ +\quad 5\,9\,3\,2\,7\,0 \\ \hline 1\,6\,1\,7\,6\,3\,0 \end{array}$$

Number of qualified students = 895105
Number of disqualified students
= 1617630 – 895105 = 722525

$$\begin{array}{r} 1\,6\,1\,7\,6\,3\,0 \\ -\quad 8\,9\,5\,1\,0\,5 \\ \hline 7\,2\,2\,5\,2\,5 \end{array}$$

Thus, in IMO, total 1617630 students participated out of which 722525 students disqualified.

10. Total population of the city = 89424750
Number of men in the city = 32615804
Number of women in the city = 29545845

$$\begin{array}{r} 3\,2\,6\,1\,5\,8\,0\,4 \\ +\,2\,5\,4\,5\,6\,8\,4\,5 \\ \hline 3\,5\,1\,6\,1\,6\,4\,9 \end{array} \qquad \begin{array}{r} 8\,9\,4\,2\,4\,7\,5\,0 \\ -\,3\,5\,1\,6\,1\,6\,4\,9 \\ \hline 5\,4\,2\,6\,3\,1\,0\,1 \end{array}$$

So, number of children in city
= 89424750 – (32615804 + 29545845)
= 89424750 – 35161649
= 54263101

Case-based Questions

1. Distance of rail routes of India = 70,225 km

Distance of rail routes of Germany = 40,682 km

Total distance of rail routes of India and Germany = 70,225 km + 40,682 km = 11,10,907 km.

2. Distance of rail routes of Chine = 1,50,000 km

Distance of rail routes of US = 2,57,560 km

Distance of rail routes of Canada = 49,422 km

Total distance of rail routes of China, The US and Canada

= 1,50,000 km + 2, 57,560 km + 49,422 km

= 4,56,982 km.

3. Total distance of rail routes of all these countries = (70,225 + 1,50,000 + 2, 57,560 + 40,682 + 49,422) km

= 5,67,889 km.

4. Distance of rail routes of India = 70,225 km

Distance of rail routes of US = 2,57,560 km

As 2,57,560 > 70,225, so the US has the greater distance of rail route.

Difference = 2,57,560 km – 70,225 km

= 1,87,335 km.

Thus, the US has the greater rail route than India by 1,87,335 km.

5. The largest rail routes is of US = 2,57,560 km

The shortest rail routes is of Germany

= 40,682 km

Difference = 2,57,560 km – 40,682 km

= 2,16,878 km.

HOTS

1. Number of points got by athlete = 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + 11 + 12 = 78

2. If A = +, B = –, then

43648 A 14365 B 32720 B 10410

= 43648 + 14365 – 32720 – 10410

= 58013 – 32720 – 10410

= 25293 – 10410 = 14883

$$\begin{array}{r} 2\,5\,2\,9\,3 \\ -\,1\,0\,4\,1\,0 \\ \hline 1\,4\,8\,8\,3 \end{array} \qquad \begin{array}{r} 4\,3\,6\,4\,8 \\ +\,1\,4\,3\,6\,5 \\ \hline 5\,8\,0\,1\,3 \end{array} \qquad \begin{array}{r} 5\,8\,0\,1\,3 \\ -\,3\,2\,7\,2\,0 \\ \hline 2\,5\,2\,9\,3 \end{array}$$

Mental Maths

1. Greatest 6-digit number = 999999
   Smallest 7-digit number = + 1000000
   Sum = 1999999

   Thus, the sum of the greatest 6-digit number and the smallest 7-digit number is 1999999

2. Greatest 8-digit number = 99999999
   Greatest 7-digit number = − 9999999
   10000000

   Thus, the difference of the greatest 8-digit number and the greatest 7-digit number is 10000000

3. Smallest 5-digit number 10000
   Smallest 6-digit number = 100000
   Smallest 7-digit number = + 1000000
   Sum = 1110000

   The sum of the smallest 5-digit number, 6-digit number and 7-digit number is 1110000

4. Required number
   = 84849643 – 53432710 = 31416933

   84849643
   − 53432710
   31416933

   Thus, 84849643 is the sum of 53432710 and 31416933

5. The Required number
   = 48627596 – 19272450 = 29355146

   48627596
   − 19272450
   29355146

   Thus, 19272450 is the difference of 29355146 and 48627596

Chapter 3. Multiplication & Division

Recap

1. (a)

	TTh	Th	H	T	O
		5	2	6	4
×				1	4
	2	1	0	5	6
+	5	2	6	4	0
	7	3	6	9	6

(b)

	L	TTh	Th	H	T	O
				6	0	7	0
×						2	5
			3	0	3	5	0
+	1	2	1	4	0	0
	1	5	1	7	5	0

(c)

	TTh	Th	H	T	O
			4	2	9
×			1	4	2
			8	5	8
+	1	7	1	6	0
	1	8	0	1	8

(d)

	L	TTh	Th	H	T	O
				5	2	7
×				2	4	9
			4	7	4	3
		2	1	0	8	0
+	1	0	5	4	0	0
	1	3	1	2	2	3

(e)

	L	TTh	Th	H	T	O
			2	4	5	8
×				1	0	0
			0	0	0	0
		0	0	0	0	0
+	2	4	5	8	0	0
	2	4	5	8	0	0

(f)

	L	TTh	Th	H	T	O
			5	3	7	3
×					4	0
			0	0	0	0
+	2	1	4	9	2	0
	2	1	4	9	2	0

2. (a)
   174
   5) 870
   − 5
   37
   − 35
   20
   − 20
   0

   Thus, Q = 174, R = 0

(b) $12\overline{)9624}$

-96

024

-24

0

Thus, Q = 802, R = 0

(c) $8\overline{)4800}$

-48

000

Thus, Q = 600, R = 0

(d) $15\overline{)9768}$

-90

76

75

18

15

3

Thus, Q = 651, R = 3

(e) $40\overline{)963}$

-80

163

160

3

Thus, Q = 24, R = 3

(f) $21\overline{)6433}$

-63

133

-126

7

Thus, Q = 306, R = 7

3. (a) $150 \div 10 = 15$, $150 \div 15 = 10$

(b) $616 \div 14 = 44$, $616 \div 44 = 14$

(c) $7776 \div 8 = 972$, $7776 \div 972 = 8$

(d) $5390 \div 11 = 490$, $5390 \div 490 = 11$

4. (a) The cost of 1 shirt = ₹1728

The cost of 18 shirts = ₹1728 × 18 = ₹31104

$$\begin{array}{r} 1728 \\ \times \quad 18 \\ \hline 13824 \\ +17280 \\ \hline 31104 \end{array}$$

Thus, the cost of 18 shirts is ₹31104

(b) The cost of 42 pairs of slippers = ₹3360

The cost of 1 pair of slippers = ₹3360 ÷ 42 = ₹80

$42\overline{)336}$

-336

0

Exercise 3.1

1. (a)

	TTh	Th	H	T	O
		6	7	9	8
×					6
	4	0	7	8	8

(b)

	L	TTh	Th	H	T	O
		9	5	7	3	6
×						4
	3	8	2	9	4	4

(c)

	L	TTh	Th	H	T	O
		8	0	7	0	6
×						9
	7	2	6	3	5	4

(d)

	TL	L	TTh	Th	H	T	O
		6	4	9	3	6	4
×							3
	1	9	4	8	0	9	2

(e)

	TL	L	TTh	Th	H	T	O
		7	0	3	4	3	6
×							8
	5	6	2	7	4	8	8

(f)

	TL	L	TTh	Th	H	T	O
		5	7	3	6	4	8
×							3
	1	7	2	0	9	4	4

2. (a)
$$\begin{array}{r} 4937 \\ \times\ 24 \\ \hline 19748 \\ +\ 98740 \\ \hline 108488 \end{array}$$

(b)
$$\begin{array}{r} 8376 \\ \times\ 57 \\ \hline 58632 \\ +\ 418800 \\ \hline 467432 \end{array}$$

(c)
$$\begin{array}{r} 57364 \\ \times\ 42 \\ \hline 114728 \\ +\ 2294560 \\ \hline 2409288 \end{array}$$

(d)
$$\begin{array}{r} 70936 \\ \times\ 84 \\ \hline 283744 \\ +\ 5674880 \\ \hline 5958624 \end{array}$$

(e)
$$\begin{array}{r} 670648 \\ \times\ 99 \\ \hline 6035832 \\ +\ 60358320 \\ \hline 66394152 \end{array}$$

(f)
$$\begin{array}{r} 514264 \\ \times\ 36 \\ \hline 3085584 \\ +\ 15427920 \\ \hline 18513504 \end{array}$$

3. (a)
$$\begin{array}{r} 4987 \\ \times\ 235 \\ \hline 24935 \\ 149610 \\ +\ 997400 \\ \hline 1171945 \end{array}$$

(b)
$$\begin{array}{r} 6364 \\ \times\ 702 \\ \hline 12728 \\ 000000 \\ +\ 4454800 \\ \hline 4467528 \end{array}$$

(c)
$$\begin{array}{r} 41264 \\ \times\ 245 \\ \hline 206320 \\ 1650560 \\ +\ 8252800 \\ \hline 10109680 \end{array}$$

(d)
$$\begin{array}{r} 60027 \\ \times\ 794 \\ \hline 240108 \\ 5402430 \\ +\ 42018900 \\ \hline 47661438 \end{array}$$

(e)
$$\begin{array}{r} 824636 \\ \times\ 102 \\ \hline 1649272 \\ 0000000 \\ +\ 82463600 \\ \hline 84112872 \end{array}$$

(f)
$$\begin{array}{r} 906263 \\ \times\ 234 \\ \hline 3625052 \\ 27187890 \\ +\ 181252600 \\ \hline 212065542 \end{array}$$

4. (a) Amount deposited in 1 month = ₹15208

Amount deposited in 8 months

= ₹15208 × 8 = ₹121664

$$\begin{array}{r} 15208 \\ \times\ 8 \\ \hline 121664 \end{array}$$

Thus, Mr. Sushil deposited ₹121664 in 8 months.

(b) The cost of 1 bike = ₹72905

The cost of 82 bikes

= ₹72905 × 82

= ₹5978210

$$\begin{array}{r} 72905 \\ \times\ 82 \\ \hline 145810 \\ +\ 5832400 \\ \hline 5978210 \end{array}$$

Thus, the showroom owner invested ₹5978210 on bikes.

(c) The cost of 1 bat = ₹545

The cost of 124500 bats

= ₹124500 × 545

= ₹67852500

$$\begin{array}{r} 124500 \\ \times\ 545 \\ \hline 622500 \\ 4980000 \\ +\ 62250000 \\ \hline 67852500 \end{array}$$

Thus, the cost of 124500 bats is ₹67852500.

(d) The amount earned in 1 month = ₹124790

The amount earned in 18 months

= ₹124790 × 18 = ₹2246220

$$\begin{array}{r} 124790 \\ \times\ 18 \\ \hline 998320 \\ +\ 1247900 \\ \hline 2246220 \end{array}$$

Thus, Mr. Ambani earned ₹2246220 in 18 months.

(e) The weight of 1 packet of chips = 255 g

The weight of 372210 packets of chips

= 372210 × 255g = 9488550 g

$$\begin{array}{r} 372210 \\ \times\ 255 \\ \hline 186050 \\ 1860500 \\ +\ 7442000 \\ \hline 9488550 \end{array}$$

Exercise 3.2

1. (a) $872 \times 24 = 24 \times 872$ [Order property]

   (b) $5372 \times 146 = 5372 \times 146$ [Order property]

   (c) $53644 \times 1 = 53644$
   [Multiplicative property of 1]

   (d) $73648 \times 1 = 73648$
   [Multiplicative property of 1]

   (e) $936430 \times 1 = 936430$
   [Multiplicative property of 1]

   (f) $54484 \times 0 = 0$ [Multiplicative property of 0]

   (g) $82403 \times 0 = 0$ [Multiplicative property of 0]

   (h) $243 \times 8 \times 3 = (243 \times 8) \times 3$
   [Grouping property of multiplicative]

   (i) $9736 \times (7 \times 12) = (9736 \times 7) \times 12$
   $= (7 \times 12) \times 9736$
   [Grouping property of multiplicative]

2. (a) $8469 \times 10 = 84690$

   (b) $87369 \times 10 = 873690$

   (c) $427366 \times 100 = 42736600$

   (d) $59742 \times 100 = 5974200$

   (e) $691 \times 1000 = 691000$

   (f) $4573 \times 1000 = 4573000$

   (g) $8173 \times 20 = 163460$

   (h) $9243 \times 60 = 554580$

   (i) $94178 \times 300 = 3725400$

3. (i) $624 \times 4000 = 2496000$

   (ii) $98 \times 7000 = 686000$

   (iii) $900 \times 60 = 54000$

   (iv) $8000 \times 400 = 3200000$

   So, (a)– (ii), (b)– (iv), (c)– (i), (d)– (iii)

4. (a) $26 \times 109 = 26 \times (100 + 9)$
   $= 26 \times 100 + 26 \times 9 = 2600 + 234 = 2834$

   (b) $78 \times 103 = 78 \times (100 + 3)$
   $= 78 \times 100 + 78 \times 3 = 7800 + 234 = 8034$

   (c) $450 \times 1001 = 450 \times (1000 + 1)$
   $= 450 \times 1000 + 450 \times 1 = 450000 + 450$
   $= 450450$

   (d) $674 \times 98 = 674 \times (100 - 2)$
   $= 674 \times 100 - 672 \times 2 = 67400 - 1344$
   $= 66056$

   (e) $413 \times 99 = 413 \times (100 - 1)$
   $= 413 \times 100 - 413 \times 1 = 41300 - 413 = 40887$

   (f) $537 \times 1001 = 537 \times (1000 + 1)$
   $= 537 \times 1000 + 537 \times 1 = 537000 + 537 = 537537$

   (g) $7348 \times 999 = 7348 \times (1000 - 1)$
   $= 7348 \times 1000 - 7348 \times 1 = 7348000 - 7348$
   $= 7340652$

   (h) $2054 \times 101 = 2054 \times (100 + 1)$
   $= 2054 \times 100 + 2054 \times 1 = 205400 + 2054$
   $= 207454$

Exercise 3.3

1. (a)
$$
\begin{array}{r}
1\,5\,3\,3 \\
5\overline{)\,7\,6\,6\,8} \\
-\,5 \\
\hline
2\,6 \\
-\,2\,5 \\
\hline
1\,6 \\
-\,1\,5 \\
\hline
1\,8 \\
-\,1\,5 \\
\hline
3
\end{array}
$$

Checking

$7668 = 5 \times 1533 + 3$
$= 7665 + 3 = 7668$

(b)
$$
\begin{array}{r}
1\,5\,0\,5\,1 \\
6\overline{)\,9\,0\,2\,4\,7} \\
-\,6 \\
\hline
3\,0 \\
-\,3\,0 \\
\hline
2\,4 \\
-\,2\,4 \\
\hline
0\,7 \\
-\,6 \\
\hline
1
\end{array}
$$

Checking

$90247 = 6 \times 15041 + 1 = 90246 + 1 = 90247.$

(c)
$$
\begin{array}{r}
1\,0\,5\,3\,1 \\
8\overline{)\,8\,4\,2\,4\,9} \\
-\,8 \\
\hline
0\,4\,2 \\
-\,4\,0 \\
\hline
2\,4 \\
-\,2\,4 \\
\hline
0\,9 \\
-\,8 \\
\hline
1
\end{array}
$$

Checking

$84249 = 8 \times 10531 + 1$
$= 84248 + 1$
$= 84249$

(d)
$$\begin{array}{r} 7\,0\,5\,2\,9 \\ 7\overline{)4\,9\,3\,7\,0\,4} \\ -\,4\,9 \\ \hline 0\,3\,7 \\ -\,3\,5 \\ \hline 2\,0 \\ -\,1\,4 \\ \hline 6\,4 \\ -\,6\,3 \\ \hline 1 \end{array}$$

Checking

$493704 = 7 \times 70529 + 1$
$= 493703 + 1$
$= 493704$

(e)
$$\begin{array}{r} 1\,2\,6\,0\,9\,2 \\ 4\overline{)5\,0\,4\,3\,6\,9} \\ -\,4 \\ \hline 1\,0 \\ -\,8 \\ \hline 2\,4 \\ -\,2\,4 \\ \hline 0\,3\,6 \\ -\,3\,6 \\ \hline 0\,9 \\ -\,8 \\ \hline 1 \end{array}$$

Checking

$504369 = 4 \times 126092 + 1$
$= 504368 + 1 = 504369$

(f)
$$\begin{array}{r} 7\,0\,2\,5\,2 \\ 7\overline{)4\,9\,1\,7\,6\,4} \\ -\,4\,9 \\ \hline 1\,7 \\ -\,1\,4 \\ \hline 3\,6 \\ -\,3\,5 \\ \hline 1\,4 \\ -\,1\,4 \\ \hline 0 \end{array}$$

Checking

$491764 = 7 \times 70252 + 0 = 491764$

2. (a)
$$\begin{array}{r} 2\,5\,4 \\ 19\overline{)4\,8\,2\,6} \\ -\,3\,8 \\ \hline 1\,0\,2 \\ -\,9\,5 \\ \hline 7\,6 \\ -\,7\,6 \\ \hline 0 \end{array}$$

Checking

$4826 = 19 \times 254 + 0 = 4826 + 0 = 4826$

(b)
$$\begin{array}{r} 3\,0\,9 \\ 26\overline{)8\,0\,3\,5} \\ -\,7\,8 \\ \hline 2\,3\,5 \\ -\,2\,3\,4 \\ \hline 1 \end{array}$$

Checking

$8035 = 26 \times 309 + 1 = 8034 + 1 = 8035$

(c)
$$\begin{array}{r} 2\,0\,8\,9 \\ 35\overline{)7\,3\,1\,4\,9} \\ -\,7\,0 \\ \hline 3\,1\,4 \\ -\,2\,8\,0 \\ \hline 3\,4\,9 \\ -\,3\,1\,5 \\ \hline 3\,4 \end{array}$$

Checking

$73149 = 35 \times 2089 + 34$
$= 73115 + 34 = 73149$

(d)
$$\begin{array}{r} 9\,2\,9 \\ 46\overline{)4\,2\,7\,3\,6} \\ -\,4\,1\,4 \\ \hline 1\,3\,3 \\ -\,9\,2 \\ \hline 4\,1\,6 \\ -\,4\,1\,4 \\ \hline 2 \end{array}$$

Checking

$42736 = 46 \times 929 + 2 = 42734 + 2 = 42736$

11802
(e) 74)873404
−74
133
−74
594
−592
204
−148
56

Checking
873404 = 74 × 11802 + 56
= 873348 + 56 = 873404

6177
(f) 81)500348
−486
143
−81
624
−567
578
−567
11

Checking
500348 = 81 × 6177 + 11
= 500337 + 11
= 500348

58
3. (a) 123)7246
−615
1096
−984
112

Checking
7246 = 58 × 123 + 112 = 7134 + 112 = 7246

24
(b) 205)4928
−410
828
−820
8

Checking
4928 = 205 × 24 + 8 = 4920 + 8 = 4928

51
(c) 171)87736
−855
223
−171
526
−513
13

Checking
87736 = 171 × 513 + 13 = 87723 + 13 = 87736

292
(d) 208)60768
−416
1916
−1872
448
−416
32

Checking
60768 = 208 × 292 + 32
= 60736 + 32 = 60768

4130
(e) 144)594827
−576
188
−144
442
−432
107

Checking
594827 = 4130 × 144 + 107
= 594720 + 107 = 594827

2698
(f) 325)876947
−650
2269
−1950
3194
−2925
2697
−2600
97

Checking

876947 = 2698 × 325 + 97

= 876850 + 97 = 876947

4. (a) Total number of shirts to be packed = 15704

Number of shirts a box can hold = 26

So, the required number of boxes

= 15704 ÷ 26

= 604

Thus, 604 boxes are needed to pack all the shirts.

```
      6 0 4
   ___________
26 ) 1 5 7 0 4
     – 1 5 6
     ---------
         1 0 4
       – 1 0 4
       ---------
             0
```

(b) Total number of plants in a garden = 842660

Number of rows in a garden = 35

So, number of plants in one row

= 842660 ÷ 35 = 24076

Thus, there are 24076 plants in each row.

```
      2 4 0 7 6
   ___________
35 ) 8 4 2 6 6 0
     – 7 0
     ---------
       1 4 2
     – 1 4 0
     ---------
           2 6 6
         – 2 4 5
         ---------
             2 1 0
           – 2 1 0
           ---------
                 0
```

(c) The cost of 42 packets = ₹7098

The cost of 1 packet = ₹7098 ÷ 42 = ₹169

Thus, 1 packet of toffees cost = ₹169

```
      1 6 9
   ___________
42 ) 7 0 9 8
     – 4 2
     ---------
       2 8 9
     – 2 5 2
     ---------
           3 7 8
         – 3 7 8
         ---------
               0
```

(d) The product of two numbers = 482825

One given number = 175

Then, other number = 482825 ÷ 175 = 2759

Thus, the required other is 2759.

```
      2 7 5 9
   ___________
175 ) 4 8 2 8 2 5
     – 3 5 0
     ---------
       1 3 2 8
     – 1 2 2 5
     ---------
           1 0 3 2
         – 8 7 5
         ---------
             1 5 7 5
           – 1 5 7 5
           ---------
                 0
```

(e) The cost of 290 laptops = ₹9469660

The cost of 1 laptop = ₹9469660 ÷ 290 = ₹32654.

Thus, each laptop costs ₹32654.

```
      3 2 6 5 4
   ___________
290 ) 9 4 6 9 6 6 0
     – 8 7 0
     ---------
       7 6 9
     – 5 8 0
     ---------
         1 8 9 6
       – 1 7 4 0
       ---------
             1 5 6 6
           – 1 4 5 0
           ---------
                 1 1 6 0
               – 1 1 6 0
               ---------
                     0
```

Exercise 3.4

1. (a) 84368 ÷ 1 = 84368
   (b) 936486 ÷ 1 = 936486
   (c) 73024 ÷ 1 = 73024 (d) 24843 ÷ 24843 = 1
   (e) 54146 ÷ 1 = 54146 (f) 8364 ÷ 8364 = 1
   (g) 0 ÷ 936 = 0 (h) 0 ÷ 246 = 0

2.

S. No.	Division fact	Quotient	Remainder
(a)	81724 ÷ 10	8172	4
(b)	9300 ÷ 10	930	0
(c)	64538 ÷ 100	645	38
(d)	42710 ÷ 100	427	10
(e)	643972 ÷ 1000	643	972
(f)	817096 ÷ 1000	817	96

3. (b) Quotient = 904, Remainder = 35,
Dividend = 90435, Divisor = ?
We know that dividend
= Divisor × Quotient + Remainder

or Divisor = $\frac{\text{Dividend} - \text{Remainder}}{\text{Quotient}}$

$= \frac{90435-35}{904} = \frac{90400}{904} = 100$

(c) Divisor = 100, Remainder = 27,
Dividend = 249327, Quotient = ?
We know that Dividend
= Divisor × Quotient + Remainder

or Quotient = $\frac{\text{Dividend} - \text{Remainder}}{\text{Divisor}}$

$= \frac{249327-27}{100} = \frac{249300}{100} = 2493.$

(d) Quotient = 1486, Divisor = 10,
Dividend = 14869, Remainder = ?
We know that Dividend
= Divisor × Quotient + Remainder
or Remainder
= Dividend – (Divisor × Quotient)
= 14869 – (10 × 1486)
= 14869 – 14860 = 9

(e) Quotient = 731, Remainder = 25,
Dividend = 731025, Divisor = ?
We know that Dividend
= Divisor × Quotient + Remainder

or Divisor = $\frac{\text{Dividend} - \text{Remainder}}{\text{Quotient}}$

$= \frac{731025-25}{731} = \frac{731000}{731} = 1000$

(f) Quotient = 1701, Divisor = 100,
Remainder = 15, Dividend = ?
We know that Dividend
= Divisor × Quotient + Remainder
= 100 × 1701 + 15
= 170100 + 15
= 170115

Revision Exercise

1. (a)
$$\begin{array}{r} 97384 \\ \times\quad 41 \\ \hline 97384 \\ +3895360 \\ \hline 3992744 \end{array}$$

(b)
$$\begin{array}{r} 804376 \\ \times\quad 145 \\ \hline 4021880 \\ +32175040 \\ +\ 8043760\,0 \\ \hline 116634520 \end{array}$$

(c)
$$\begin{array}{r} 83560 \\ \times\quad 245 \\ \hline 417800 \\ 3342400 \\ +\ 16712000 \\ \hline 20472200 \end{array}$$

(d)
$$\begin{array}{r} 44265 \\ \times\quad 125 \\ \hline 221325 \\ 885300 \\ +\ 4426500 \\ \hline 5533125 \end{array}$$

(e)
$$\begin{array}{r} 273461 \\ \times\quad 34 \\ \hline 1093844 \\ +8203830 \\ \hline 9297674 \end{array}$$

(f)
$$\begin{array}{r} 590400 \\ \times\quad 834 \\ \hline 2361600 \\ 17712000 \\ +\ 472320000 \\ \hline 492393600 \end{array}$$

2. (a)
$$\begin{array}{r|l} & 3179 \\ \hline 169 & 537290 \\ -507 & \\ \hline & 302 \\ -169 & \\ \hline & 1339 \\ -1183 & \\ \hline & 1560 \\ -1521 & \\ \hline & 39 \end{array}$$

Checking: 537290 = 3179 × 169 + 39
= 537251 + 39 = 537290.

(b)
$$\begin{array}{r|l} & 1339 \\ \hline 284 & 380408 \\ -284 & \\ \hline & 964 \\ -852 & \\ \hline & 1120 \\ -852 & \\ \hline & 2688 \\ -2556 & \\ \hline & 132 \end{array}$$

Checking:
380408 = 284 × 1339 + 132
= 380276 + 132 = 380408.

(c)
$$\begin{array}{r} 2\,6\,7\,6 \\ 308\overline{)\,8\,2\,4\,3\,6\,4} \\ -\,6\,1\,6 \\ \hline 2\,0\,8\,3 \\ -\,1\,8\,4\,8 \\ \hline 2\,3\,5\,6 \\ -\,2\,1\,5\,6 \\ \hline 2\,0\,0\,4 \\ -\,1\,8\,4\,8 \\ \hline 1\,5\,6 \end{array}$$

Checking:

$824364 = 308 \times 2676 + 156$

$= 824208 + 156$

$= 824364$

(d)
$$\begin{array}{r} 1\,5\,4\,2 \\ 305\overline{)\,4\,7\,0\,3\,4\,9} \\ -\,3\,0\,5 \\ \hline 1\,6\,5\,3 \\ -\,1\,5\,2\,5 \\ \hline 1\,2\,8\,4 \\ -\,1\,2\,2\,0 \\ \hline 6\,4\,9 \\ -\,6\,1\,0 \\ \hline 3\,9 \end{array}$$

Checking:

$470349 = 305 \times 1542 + 39$

$= 470310 + 39$

$= 470349$

(e)
$$\begin{array}{r} 8\,9\,4 \\ 95\overline{)\,8\,4\,9\,3\,7} \\ -\,7\,6\,0 \\ \hline 8\,9\,3 \\ -\,8\,5\,5 \\ \hline 3\,8\,7 \\ -\,3\,8\,0 \\ \hline 7 \end{array}$$

Checking:

$84937 = 95 \times 894 + 7$

$= 84930 + 7$

$= 84937$

(f)
$$\begin{array}{r} 1\,2\,5\,1\,2 \\ 32\overline{)\,4\,0\,0\,3\,9\,6} \\ -\,3\,2 \\ \hline 8\,0 \\ -\,\,6\,4 \\ \hline 1\,6\,3 \\ -\,1\,6\,0 \\ \hline 3\,9 \\ -\,3\,2 \\ \hline 7\,6 \\ -\,6\,4 \\ \hline 1\,2 \end{array}$$

Checking:

$400396 = 32 \times 12512 + 12$

$= 400384 + 12 = 400396.$

3. (a) $\underline{1} \times 34 = 34$
   (b) $134 \times 26 = 26 \times \underline{134}$
   (c) $7384 \times 0 = \underline{0}$
   (d) $244 \times 32 \times 18 = 18 \times \underline{240} \times 32$
   (e) $843 \times (100 + 4) = 843 \times 100 + 843 \times 4$
   (f) $8345 \div 1 = 8345$
   (g) $248 \div 248 = 1$
   (h) $0 \div 937 = \underline{0}$
   (i) $148 \times 10 = 1480$
   (j) $845 \times 100 = 84500$
   (k) $28000 \times 1 = 28000$
   (l) $3800 \div 100 = 38$
   (m) $8000 \div 1000 = 8$

4. (a) $37 \times 3 \times 1 = 111$
   $37 \times 3 \times 3 = 333$
   $37 \times 3 \times 5 = 555$
   $37 \times 3 \times 7 = 777$
   $37 \times 3 \times 9 = 999$

   (b) $9 \times 9 = 81$
   $99 \times 9 = 891$
   $999 \times 9 = 8991$
   $9999 \times 9 = 89991$
   $99999 \times 9 = 899991$

   (c) $8 \div 2 = 4$
   $80 \div 2 = 40$
   $800 \div 2 = 400$
   $8000 \div 2 = 4000$
   $80000 \div 2 = 40000$

5. (a) The cost of 1 kg of sugar = ₹36
   The cost of 3750 kg of sugar
   = ₹36 × 3750 = ₹135000

```
     3 7 5 0
  ×      3 6
 ___________
   2 2 5 0 0
+1 1 2 5 0 0
 ___________
 1 3 5 0 0 0
```

Thus, the cost of 3750 kg of sugar is ₹1.35.000.

(b) The cost of 1 kg sugar = ₹55

The cost of 14982 kg of sugar = ₹55 × 14982

= ₹824010

```
   1 4 9 8 2
  ×      5 5
 ___________
   7 4 9 1 0
+7 4 9 1 0 0
 ___________
 8 2 4 0 1 0
```

Thus, the shopkeeper earned ₹8,24,010 in the month of March

(c) Product of two numbers = 2087855

One given number = 85

Other number = 2087855 ÷ 85 = 24563.

```
     2 4 5 6 3
85 ) 2 0 8 7 8 5 5
   – 1 7 0
     3 8 7
   – 3 4 0
       4 7 8
     – 4 2 5
         5 3 5
       – 5 1 0
           2 5 5
         – 2 5 5
               0
```

Thus, the other number is 24563.

(d) The cost of 348 computers = ₹6354480

The cost of 1 computer = ₹6354480 ÷ 348

= ₹18260.

Thus, the cost of one computer is ₹18260.

```
      1 8 2 6 0
348 ) 6 3 5 4 4 8 0
    – 3 4 8
      2 8 7 4
    – 2 7 8 4
          9 0 4
        – 6 9 6
          2 0 8 8
        – 2 0 8 8
              0 0
```

HOTS

1. The cost of 132 kg of apples = ₹132 × 127
   = ₹16764

   The cost of 185 kg of apples = ₹185 × 127
   = ₹23495

   Thus, the earned amount = ₹16764 + ₹23495
   = ₹40259
2. The weight of 28 sacks = 3500 kg

   The weight of 1 sack = 3500 ÷ 28 = 125 kg

   The weight of 134 sacks = 134 × 125 kg
   = 16750 kg

Case-based Questions

1. We know that on Mars, a person weighs 38/100 of his weight on Earth.

   So, Saket's weight on Mars = (50 kg × 38) ÷ 100 = 19 kg.
2. We know that on Jupiter, a person weighs 2.5 times of his weight on Earth.

   So, Saranch's weight on Jupiter = 50 kg × 2.5 = 125 kg.
3. We know that on Mars, a person weighs 38/100 of his weight on Earth.

   Navya's weight on Earth = (38 kg × 100) ÷ 38 = 100 kg.
4. We know that on Jupiter, a person weighs 2.5 times of his weight on Earth.

   Divya's weight on Earth = 100 kg ÷ 2.5 = 40 kg.
5. The children will do it themselves.

Mental Math

A. 1. <u>Multiplication</u> means repeated addition and division means repeated subtraction.
   2. The product of 72, 1 and 0 is 72 × 1 × 0 = 0.
   3. If 726 × 18 = 13068, then 13068 ÷ 18 = <u>726.</u>
   4. If9535×27=257445,then<u>257445</u>÷27=9535.
   5. <u>Multiplication</u> is distributive over addition and subtractive.
   6. A non-zero number divided by 1 gives the <u>same</u> number as the quotient.
   7. The product of two even numbers is always <u>even</u>.
   8. The product of two <u>odd</u> numbers is always odd.

B. 1. 4967 × 200 × 0 = 0

   Thus, (c) is the correct answer.

2. We know that division by 0 is meaning less.
   Thus, (b) is the correct answer.
3. $82676 \times 34 \times 11 = (34 \times 82676) \times 11$
   Thus, (c) is the correct answer.
4. $(60 + 40) \times 1000 = 100 \times 1000 = 100000$
   Thus, (b) is the correct answer.
5. $438400 \div 100 = 4384$
   Thus, (c) is the correct answer.
6. If $3432 \times 12 = 41184$, then $41184 \div 12 = 3432$
   Thus, (c) is the correct answer.

Test Your Knowledge-1 (Chapters 1 – 3)

1.

S.No.	C	TL	L	TTh	Th	H	T	O
(a)	4	2	6	3	7	5	0	1
(b)	7	0	0	4	5	3	7	5
(c)			8	2	4	9	3	1

2. (a) 217,364,826 (b) 204,364,111
   (c) 8,349,304
3. (a) 2,43,673 = 2,00,000 + 40,000 + 3,000 + 600 + 70 + 3
   (b) 49,32,736 = 40,00,000 + 9,00,000 + 30,000 + 2,000 + 700 + 30 + 6
   (c) 55,49,26,384 = 50,00,00,000 + 5,00,00,000 + 40,00,000 + 9,00,000 + 20,000 + 6,000 + 300 + 80 + 4
4. (a) 75 = LXXV (b) 140 = CXL
   (c) 154 = CLIV (d) 264 = CCLXIV
5. (a)
$$\begin{array}{r} 2436108 \\ +\ 3043917 \\ \hline 5480025 \end{array}$$
   (b)
$$\begin{array}{r} 26354402 \\ 17364827 \\ +\ 949365 \\ \hline 53212874 \end{array}$$
6. (a)
$$\begin{array}{r} 8436264 \\ -\ 1222175 \\ \hline 7214089 \end{array}$$
$$\begin{array}{r} 7214089 \\ -\ 4541305 \\ \hline 2672784 \end{array}$$
   (b)
$$\begin{array}{r} 5376875 \\ +\ 4269375 \\ \hline 9646250 \end{array}$$
$$\begin{array}{r} 9646250 \\ -\ 1414175 \\ \hline 8232075 \end{array}$$
7. (a)
$$\begin{array}{r} 1243 \\ \times\ \ 45 \\ \hline 6215 \\ +\ 4972\,0 \\ \hline 55935 \end{array}$$
   (b)
$$\begin{array}{r} 2634 \\ \times\ 384 \\ \hline 10536 \\ 210720 \\ +\ 790200 \\ \hline 1011456 \end{array}$$
   (c)
$$\begin{array}{r} 4468 \\ \times\ 2683 \\ \hline 13404 \\ 357440 \\ 2680800 \\ +\ 8936000 \\ \hline 11987644 \end{array}$$
8. (a)
$$\begin{array}{r} 302 \\ 14\overline{)4228} \\ -\ 42 \\ \hline 028 \\ -\ 28 \\ \hline 0 \end{array}$$
   (b)
$$\begin{array}{r} 382 \\ 15\overline{)5730} \\ -\ 45 \\ \hline 123 \\ -\ 120 \\ \hline 30 \\ -\ 30 \\ \hline 0 \end{array}$$
   (c)
$$\begin{array}{r} 407 \\ 17\overline{)6932} \\ -\ 68 \\ \hline 132 \\ -\ 119 \\ \hline 13 \end{array}$$
9. (a)
$$\begin{array}{r} 787 \\ 54\overline{)42536} \\ -\ 378 \\ \hline 473 \\ -\ 432 \\ \hline 416 \\ -\ 378 \\ \hline 38 \end{array}$$
   Verification:
   $42536 = 54 \times 787 + 38$
   $42498 + 38 = 42536$
   Verified
   (b)
$$\begin{array}{r} 589 \\ 142\overline{)83642} \\ -\ 710 \\ \hline 1264 \\ -\ 1136 \\ \hline 1282 \\ -\ 1278 \\ \hline 4 \end{array}$$
   Verification:
   $83642 = 142 \times 589 + 4$
   $83638 + 4 = 83642$
   Verified
   (c)
$$\begin{array}{r} 470 \\ 19\overline{)8940} \\ -\ 76 \\ \hline 134 \\ -\ 133 \\ \hline 10 \end{array}$$
   Verification:
   $8940 = 19 \times 470 + 10$
   $8930 + 10 = 8940$
   Verified
10. (a) Number of pouches of *ghee* present already in dairy = 498275

Number of pouches of *ghee* prepared
= 396274

Number of pouches of *ghee* sold = 564040

Number of pouches of *ghee* left unsold
= 498275 + 396274 – 564040 = 330509

```
  498275        894549
+ 396274      – 564040
  894549        330509
```

Thus, 330509 pouches of *ghee* were left unsold.

(b) The worth of gold ornaments = ₹ 275840
The worth of plot = +₹ 860395
Total worth of property = ₹1136235

Thus, the daughter get the property of worth ₹11,36235 as gift from her father.

(c) Total number of participants = 830465
The number of girls participants = 395876
The number of boys participants
= 830465 – 395876

```
  830465
+ 395876
  434589
```

The number of boys participants = 434589

They 4,3,4,5,8,9 boys participated in the event.

(d) Total number of oranges = 10368
Number of boxes having oranges = 108
The number of oranges each box contain
= 10368 ÷ 108 = 96

```
     96
108)10368
   – 972
     648
   – 648
       0
```

Thus, each box contains 96 oranges.

(e) The weight of 1 bag of rice = 25 kg
The weight of 5365 bags of rice
= 5365 × 25 kg
= 134125 kg.

The weight of 1 bag of wheat = 35 kg
The weight of 4035 bags of wheat
= 4035 × 35 kg = 141225 kg

Total amount of grain in godown
= 134125 + 141225 = 275350 kg

Thus, the godown has 2,75,350 kg of grain.

Chapter 4. Simplification

Recap

1. (a) 54768 + 27364 – 34996
= 82132 – 34996 [Performing addition]
= 47136.

(b) 793646 – 243152 – 178425
= 550494 – 178425 = 372069.

(c) 88642 + 40279 – 18364
= 128921 – 18364 [Performing addition]
= 110557.

(d) 500264 – 843690 + 624687
= 500264 + 624687 – 843690
= 1124951 – 843690 [Performing addition]
= 281261.

(e) 462649 – 172640 – 124982
= 290009 – 124982
= 165027

(f) 527264 – 14263 – 82643
= 513001 – 82643
= 430358

2. (a)

```
  86796
×    12
 173592
+867960
1041552
```

(b)

```
  82149
×   124
 328596
1642980
+8214900
10186476
```

(c)

```
  97642
×    27
 683494
+1952840
2636334
```

(d)

```
     1348
42)56648
 – 42
   146
 – 126
    204
 – 168
     368
 – 336
      32
```

(e)

```
     2373
38)90204
 – 76
   142
 – 114
    280
 – 266
     144
 – 114
      30
```

(f)
$$\begin{array}{r} 9\,9\,3 \\ 108\overline{)\,1\,0\,7\,2\,6\,4} \\ -\;\;9\,7\,2 \\ \hline 1\,0\,0\,6 \\ -\;\;9\,7\,2 \\ \hline 3\,4\,4 \\ -\;3\,2\,4 \\ \hline 2\,0 \end{array}$$

3. A = 2464 + 7626 = 10090
   B = 10090 – 7654 = 2436
   C = 7654 × 22 = 168388
   D = 168388 ÷ 44 = 3827

Exercise 4.1

1. (a) 18 + 4 ÷ 2
   = 18 + 2 = 20.

   (b) 24 × 9 ÷ 3
   = 24 × 3
   = 72.

   (c) 29 – 4 × 6
   = 29 – 24
   = 5

   (d) 72 ÷ 6 + 7 × 3 – 2
   = 12 + 7 × 3 – 1
   = 12 + 21 – 2
   = 33 – 2
   = 31.

   (e) 86 – 28 ÷ 7
   = 86 – 4
   = 82.

   (f) 14 ×12 + 16 ÷ 2 – 4
   = 14 × 12 + 8 – 4
   = 168 + 8 – 4
   = 168 + 4
   = 172.

   (g) 86 – 36 + 8 × 10 ÷ 2
   = 86 – 36 + 8 × 5
   = 86 – 36 + 40
   = 50 + 40
   = 90.

   (h) 38 + 24 × 18 ÷ 9 – 30
   = 38 + 24 × 2 – 30
   = 38 + 48 – 30
   = 86 – 30
   = 56.

   (i) 28 – 16 ÷ 4 × 9 + 95
   = 28 – 4 × 9 + 95
   = 28 – 36 + 95
   = 28 + 95 – 36
   = 123 – 36
   = 87.

   (j) 100 – 42 × 12 ÷ 12 + 24
   = 100 – 42 × 1 + 24
   = 100 – 42 + 24
   = 100 + 24 – 42
   = 124 – 42
   = 82.

   (k) 50 – 55 ÷ 11 × 18 + 78
   = 50 – 5 × 18 + 78
   = 50 – 90 + 78
   = 50 + 78 – 90
   = 128 – 90
   = 38.

   (l) 124 – 12 + 28 ÷ 4 × 3 ÷ 3
   = 124 – 12 + 7 × 1
   = 124 – 12 + 7
   = 124 + 7 – 12
   = 131 – 12
   = 119.

2. (a) 16 × 14 ÷ 7
   = 16 × 2
   = 32
   OR
   26 ÷ 2 × 4
   = 13 × 4
   = 52
   Since, 52 > 32 so 26 ÷ 2 × 4 > 16 × 14 ÷ 7

   (b) 18 × 3 – 24 ÷ 8
   = 18 × 3 – 3
   = 54 – 3
   = 51
   OR
   28 ÷ 4 × 5 – 10
   = 7 × 5 – 10
   = 35 – 10
   = 25
   Since, 51 > 25
   so 18 × 3 – 24 ÷ 8 > 28 ÷ 4 × 5 – 10

   (c) 21 × 9 – 30 ÷ 10 + 4
   = 21 × 9 – 3 + 4
   = 189 – 3 + 4
   = 190

Since 190 > 114,
so $21 \times 9 - 30 \div 10 + 4 > 114$

(d) $21 + 86 \div 4 \times 2 - 8$

$= 21 + \frac{5}{15} \times 2 - 8$

$= 21 + 43 - 8$
$= 64 - 8$
$= 56$

OR
$= 40 - 48 \div 8 \times 2 + 4$
$= 40 - 6 \times 2 + 4$
$= 40 - 12 + 4$
$= 44 - 12$
$= 32$

Since 56 > 32

So, $21 + 86 \div 4 \times 2 - 8 > 40 - 48 \div 8 \times 2 + 4$

3. (a) $12 \div 2 \times 6 + 4 - 3$
$= 6 \times 6 + 4 - 3$
$= 36 + 4 - 3$
$= 40 - 3$
$= 37.$
So, '÷' is the correct symbol.

(b) $4 - 6 \times 2 \div 2 + 2$
$= 4 - 6 \times 1 + 2$
$= 4 - 6 + 2$
$= 6 - 6$
$= 0.$
So, '+' is the correct symbol.

(c) $5 - 8 \div 4 \times 2 - 1$
$= 5 - 2 \times 2 - 1$
$= 5 - 4 - 1$
$= 5 - 5$
$= 0.$
So, '–' is the correct symbol.

(d) $12 \div 6 - 3 \times 3 + 20$
$= 2 - 9 + 20$
$= 22 - 9 = 13.$
So, '+' is the correct symbol.

(e) $4 \times 6 - 2 + 8 \div 2 - 2$
$= 4 \times 6 - 2 + 4 - 2$
$= 24 - 2 + 4 - 2$
$= 28 - 2 - 2$
$= 26 - 2 = 24.$
So, '×' is the correct symbol.

Exercise 4.2

1. (a) $8 \div 4 \times 2 + 30$ of 6
$= 8 \div 4 \times 2 + 180$
$= 2 \times 2 + 180$
$= 4 + 180$
$= 184$

(b) 16 of $2 + 24 - 4 \div 2 - 15$
$= 32 + 24 - 4 \div 2 - 15$
$= 32 + 24 - 2 - 15$
$= 56 - 2 - 15$
$= 54 - 15 = 39$

(c) $36 - 2 + 18 \times 12 \div 3 + 12 \times 8$
$= 36 - 2 + 18 \times 12 \div 3 + 96$
$= 36 - 2 + 18 \times 4 + 96$
$= 36 - 2 + 72 + 96$
$= 36 + 72 + 96 - 2$
$= 204 - 2$
$= 202$

(d) 24 of $4 \div 8 + 3 + 9 - 2 \times 4$
$= 96 \div 8 + 3 + 9 - 2 \times 4$
$= 12 + 3 + 9 - 2 \times 4$
$= 12 + 3 + 9 - 8$
$= 24 - 8$
$= 16$

(e) $80 \div 5$ of $4 + 220 - 3 \times 8$
$= 80 \div 20 + 220 - 3 \times 8$
$= 4 + 220 - 3 \times 8$
$= 4 + 220 - 24$
$= 224 - 24$
$= 200$

(f) $210 \times 3 + 410 \div 5 - 36$ of 4
$= 210 \times 3 + 410 \div 5 - 144$
$= 210 \times 3 + 82 - 144$
$= 630 + 82 - 144$
$= 712 - 144 = 568$

2. (a) 110 of $4 \div 2 + 72$ of 8
$= 440 \div 2 + 576$
$= 220 + 576 = 796$

(b) $845 + 305 \div 5 - 42$ of 6
$= 845 + 305 \div 5 - 92$
$= 845 + 61 - 92$
$= 906 - 92 = 814$

(c) $84 \div 7 \times 8$ of $4 + 36 - 4$ of 5
$= 84 \div 7 \times 32 + 36 - 20$
$= 12 \times 32 + 36 - 20$
$= 384 + 36 - 20$
$= 420 - 20 = 400$

(d) 8 of 5 ÷ 5 + 36 × 2 of 3
= 40 ÷ 5 + 36 × 6
= 8 + 36 × 6
= 8 + 216 = 224

(e) 190 – 72 ÷ 8 + 36 of 4 + 2 × 3
= 190 – 72 ÷ 8 + 144 + 2 × 3
= 190 – 9 + 144 + 2 × 3
= 190 – 9 + 144 + 6
= 190 + 144 + 6 – 9
= 340 – 9
= 331

(f) 160 of 11 + 930 ÷ 10 + 12 of 6
= 1760 + 930 ÷ 10 + 72
= 1760 + 93 + 72
= 1925

Exercise 4.3

1. (a) $(27 \div 3 + 4) - 9 \times 2 + 24$
= $(9 + 4) - 9 \times 2 + 24$
= $13 - 9 \times 2 + 24$
= $13 - 18 + 24$
= $13 + 24 - 18$
= $37 - 18$
= 19

(b) $28 - 10 + 26 \div 2 \times 4\,(3 + 8)$
= $28 - 10 + 26 \div 2 \times 4 \times 11$
= $28 - 10 + 13 \times 4 \times 11$
= $28 - 10 + 572$
= $572 + 28 - 10$
= $600 - 10 = 590$

(c) $48 - [9 + \{10 - (8 - 2)\}]$
= $48 - [9 + \{10 - 6\}]$
= $48 - [9 + 4]$
= $48 - 13 = 35$

(d) $10 + [26 - 9 + \{(8 - 4) - 3\}]$
= $10 + [26 - 9 + \{4 - 3\}]$
= $10 + [26 - 9 + 1]$
= $10 + [27 - 9]$
= $10 + 18 = 28$

(e) $160 - [72 - \{10 \times 4 + (9 \times \overline{2 \times 3})\}]$
= $160 - [72 - \{10 \times 4 + (9 \times 6)\}]$
= $160 - [72 - \{10 \times 4 + 15\}]$
= $160 - [72 - \{40 \times 15\}]$
= $160 - [72 - 55]$
= $160 - 17 = 143$

(f) $84 \div [24 - \{20 \div 4 - (10 - 8)\}]$
= $84 \div [24 - \{20 \div 4 - 2\}]$
= $84 \div [24 - \{5 - 2\}]$
= $84 \div [24 - 3]$
= $84 \div 21 = 4$

(g) $28 + [10 - (4 + 5) - \overline{9 - 2}]$
= $28 + [10 - (4 + 5) - 7]$
= $28 + [10 - 9 - 7]$
= $28 + [10 - 16]$
= $28 + [-6]$
= $28 - 6 = 22$

(h) $(9 \text{ of } 3 + 8) \div 5 - 4 + 3$
= $(27 + 8) \div 5 - 4 + 3$
= $35 \div 5 - 4 + 3$
= $7 - 4 + 3$
= $10 - 4 = 6$

(i) $8 - [8 - \{8 - (8 - \overline{8 - 8})\}]$
= $8 - [8 - \{8 - (8 - 0)\}]$
= $8 - [8 - \{8 - 8\}]$
= $8 - [8 - 0]$
= $8 - 8 = 0$

(j) $140 - [\{160 \div (4 \times 4) - (2 + \overline{5 - 3})\} + 4]$
= $140 - [\{160 \div (4 \times 4) - (2 + 2)\} + 4]$
= $140 - [\{160 \div 16 - 4\} + 4]$
= $140 - [\{10 - 4\} + 4]$
= $140 - [6 + 4]$
= $140 - 10 = 130$

Revision Exercise

1. (a) $28 + 4 \times 9 \div 3 - 8$
= $28 + 4 \times 3 - 8$
= $28 + 12 - 8$
= $40 - 8$
= 32

(b) $17 - 9 \times 8 \div 2 + 35$
= $19 - 9 \times 4 + 35$
= $19 - 36 + 35$
= $54 - 36$
= 18

(c) $96 \div 8 - 26 + 120 \times 2$
= $12 - 26 + 120 \times 2$
= $12 - 26 + 240$
= $252 - 26$
= 226

(d) $24 + 6 \div 6 - 3 \times 7$
= $24 + 1 - 3 \times 7$
= $24 + 1 - 21$
= $25 - 21$
= 4

(e) $75 \times 2 + 32 \div 4 - 54$
$= 75 \times 2 + 8 - 54$
$= 150 + 8 - 54$
$= 158 - 54$
$= 104$

(f) $18 - 16 \div 4 + 3 \times 3$
$= 18 - 4 + 3 \times 3$
$= 18 - 4 + 9$
$= 27 - 4$
$= 23$

(g) $64 \div 8 \times 2 + 6$
$= 8 \times 2 + 6$
$= 16 + 6$
$= 22$

(h) $21 + 36 - 18 \div 6$
$= 21 + 36 - 3$
$= 57 - 3$
$= 54$

(i) $84 \div 12 + 3 \times 4$
$= 7 + 3 \times 4$
$= 7 + 12$
$= 19$

2. (a) $\frac{2}{6}$ of $9 + 8 \div 2 + 9$
$= 6 + 8 \div 2 + 9$ [Performing 'of']
$= 6 + 4 + 9 = 19$

(b) $\frac{4}{8}$ of $64 \div 4 \times 5 + 10 - 3$
$= 32 \div 4 \times 5 + 10 - 3$ [Performing 'of']
$= 8 \times 5 + 10 - 3$
$= 40 + 10 - 3$
$= 50 - 3$
$= 47$

(c) 8 of $5 + 10 \div 2 - 40 \div 5$
$= 40 + 10 \div 2 - 40 \div 5$ [Performing 'of']
$= 40 + 5 - 8$
$= 45 - 8$
$= 37$

(d) $48 \div 3$ of $2 + 8 - 2 \times 8$
$= 48 \div 6 + 8 - 2 \times 8$ [Performing 'of']
$= 8 + 8 - 2 \times 8$
$= 8 + 8 - 16$
$= 16 - 16$
$= 0$

(e) $21 \div 3$ of $7 + 72 - 2 \times 8$
$= 21 \div 21 + 72 - 2 \times 8$ [Performing 'of']
$= 1 + 72 - 2 \times 8$
$= 1 + 72 - 16$
$= 73 - 16$
$= 57$

(f) $26 \times 2 + 60 \div 12 - 2$ of 3
$= 26 \times 2 + 60 \div 12 - 6$ [Performing 'of']
$= 26 \times 2 + 5 - 6$
$= 52 + 5 - 6$
$= 57 - 6$
$= 51$

(g) $64 \div 8$ of $4 \div 2 + 2 \times 4$
$= 64 \div 32 \div 2 + 2 \times 4$ [Performing 'of']
$= 1 + 8$
$= 9$

(h) $72 - 36 + 16 \div 16 \times 4$ of 2
$= 72 - 36 + 16 \div 16 \times 8$ [Performing 'of']
$= 72 - 36 + 1 \times 8$
$= 72 - 36 + 8$
$= 36 + 8 = 44$

(i) $110 \div 2 + 14$ of $2 - 72 \div 24 \times 4$
$= 110 \div 2 + 28 - 72 \div 24 \times 4$
[Performing 'of']
$= 55 + 28 - 3 \times 4$
$= 55 + 28 - 12$
$= 83 - 12$
$= 71$

(j) 61 of $2 + 210 \div 7 \times 4 + 3 - 25$
$= 122 + 210 \div 7 \times 4 + 3 - 25$
$= 122 + 30 \times 4 + 3 - 25$
$= 122 + 120 + 3 - 25$
$= 245 - 25$
$= 220$

3. (a) $(4 + 7) \times 3$
$= 11 \times 3$ [Removing bracket]
$= 33$

(b) $12 - (2 \times 5) + 20 \div 5 \times 2$
$= 12 - 10 + 20 \div 5 \times 2$
$= 12 - 10 + 4 \times 2$
$= 12 - 10 + 8$
$= 20 - 10$
$= 10$

(c) $10 \times 3 + 3 \times (2 \times 4 \div 2)$
$= 10 \times 3 + 3 \times (2 \times 2)$
$= 10 \times 3 + 3 \times 4$
$= 10 \times 3 + 12$
$= 30 + 12$
$= 42$

(d) $10 \times (2 \times 5 - 4) - 4 + 8$
$= 10 \times (10 - 4) - 4 + 8$
$= 10 \times 6 - 4 + 8$
$= 60 - 4 + 8$
$= 68 - 4$
$= 64$

(e) $4 \times [12 + \{24 + 18 \times (25 - 10)\}]$
$= 4 \times [12 + \{24 + 18 \times 15\}]$
$= 4 \times [12 + \{24 + 270\}]$
$= 4 \times [12 + 294]$
$= 4 \times 306$
$= 324$

(f) $96 - [12 \text{ of } 2 - \{20 + (8 + 4 - 10)\}]$
$= 96 - [12 \text{ of } 2 - \{20 + (12 - 10)\}]$
$= 96 - [12 \text{ of } 2 - \{20 + 2\}]$
$= 96 - [12 \text{ of } 2 - 22]$
$= 96 - [24 - 22]$
$= 96 - 2$
$= 94$

(g) $240 \div [\{18 + 4\,(8 - \overline{7 - 2})\}]$
$= 240 \div [\{18 + 4\,(8 - 5)\}]$
$= 240 \div [\{18 + 4\,(3)\}]$
$= 240 \div [\{18 + 12\}]$
$= 240 \div 30$
$= 8$

(h) $4 + [56 \div \{28 - 4\,(\overline{8 - 2} - 1)\}]$
$= 4 + [56 \div \{28 - 4\,(6 - 1)\}]$
$= 4 + [56 \div \{28 - 4\,(5)\}]$
$= 4 + [56 \div \{28 - 20\}]$
$= 4 + [56 \div 8]$
$= 4 + 7 = 11$

4. (a) The sum of 24 and the difference of 27 and 9
$= 24 + (27 - 9) = 24 + 18 = 42$

(b) Product of the sum of 18 and 15 and the difference of 25 and 15.
$= (18 + 15) \times (25 - 15) = 33 \times 10 = 330$

(c) 84 is divided by double of 21.
$= 84 \div (2 \times 21)$
$= 84 \div 42 = 2$

(d) (Product of 75 and 3) – (Product of 19 and 9)
$= (75 \times 3) - (19 \times 9) = 225 - 171 = 54$

(e) (Product of 12 and 4) + (Sum of 26 and 15)
$= (12 \times 4) + (26 + 15) = 48 + 41 = 89$

HOTS

1. $3\frac{1}{6} - \left[2 + \left\{5\frac{3}{2} - \left(2 \text{ of } 2\frac{1}{2} \div 1\frac{1}{4} + 2\right)\right\}\right]$

$= \frac{19}{6} - \left[2 + \left\{\frac{13}{2} - 2 \times \frac{5}{2} \div \frac{5}{4} + 2\right\}\right]$

$= \frac{19}{6} - \left[2 + \left\{\frac{13}{2} - 5 \times \frac{4}{5} + 2\right\}\right]$

$= \frac{19}{6} - \left[2 + \left\{\frac{13}{2} - 6\right\}\right]$

$= \frac{19}{6} - \left[2 + \left\{\frac{13}{2} - \frac{12}{2}\right\}\right]$

$= \frac{19}{6} - \left[\frac{4}{2} + \frac{1}{2}\right] = \frac{19}{6} - \frac{5}{2} = \frac{19 - 15}{6}$

$= \frac{4}{6} = \frac{2}{6}$.

2. $1\frac{1}{2} + \left[9\frac{1}{2} - \left\{1 + \left(1 - 2\overline{\frac{1}{2} - 1\frac{1}{2}}\right)\right\}\right]$

$= \frac{3}{2} + \left[\frac{19}{2} - \left\{1 + \left(1 - \overline{\frac{5}{2} - \frac{3}{2}}\right)\right\}\right]$

$= \frac{3}{2} + \left[\frac{19}{2} - \{1 + (1 - 1)\}\right]$

$= \frac{3}{2} + \left[\frac{19}{2} - 1\right]$

$= \frac{3}{2} + \left[\frac{19}{2} - \frac{2}{2}\right]$

$= \frac{3}{2} + \frac{17}{2} = \frac{20}{2} = 10$.

Mental Maths

A. 1. $(10 - 2) \times 14 = 8 \times 14 = 112$
and $5 \times (5 + 10) = 5 \times 15 = 75$
So, $(10 - 2) \times 14 > 5 \times (5 + 10)$

2. $60 + (9 - 2) = 60 + 7 = 67$
and $(21 \div 7) + 4 = 4 + 4 = 8$
So, $60 + (9 - 2) > (21 \div 7) + 4$

3. $20 + [10 \times \{8 - (4 \div 2)\}]$
$= 20 + [10 \times \{8 - 2\}]$
$= 20 + [10 \times 6]$
$= 20 + 60 = 80$
and $[50 + \{40 - (4 \times 5)\}] \times 4$
$= [50 + \{40 - 20\}] \times 4$
$= [50 + 20] \times 4$
$= 70 \times 4 = 280$
So, $20 + [10 \times \{8 - (4 \div 2)\}]$
$< [50 + \{40 - (4 \times 5)\}] \times 4$

4. $63 - [30 - \{56 \div (9 - 1)\}]$
$= 63 - [30 - \{56 \div 8\}]$
$= 63 - [30 - 7]$
$= 63 - 27 = 36$
and $90 - [50 - \{30 + (30 + 3)\}]$
$= 90 - [50 - \{30 + 10\}]$
$= 90 - [50 - 40]$
$= 90 - 10 = 80$
So, $63 - [30 - \{56 \div (9 - 1)\}] < 90 - [50 - \{30 + (30 \div 3)\}]$

B. 1. $30 + (2 \times 5) = 30 + 10 = 40$
Thus, (b) is the correct answer.

2. $12 + 4 \times 3 \div 3 = 12 + 4 \times 1 = 12 + 4 = 16$
Thus, (c) is the correct answer.

3. If an expression contains +, –, ×, ÷ and 'of', we first perform 'of'.
Thus, (d) is the correct answer.

4. $63 \div 7 + 3 \times 2 - 4 = 9 + 3 \times 2 - 4$
$= 9 + 6 - 4 = 15 - 4 = 11$
Thus, (a) is the correct answer.

5. If a numerical expression contains all the brackets, we first solve '———'.

6. $0[11 \times \{26 - (80 \div 20)] = 0$ because if we multiply a number by 0, we get 0.
Thus, (d) is the correct answer.

Chapter 5. Multiples and Factors

Recap

1. (a) The 8th multiple of 5 is $8 \times 5 = \underline{40}$.
(b) 60 is the <u>5th</u> multiple of 12 as $5 \times 12 = 60$.
(c) If $7 \times 4 = 28$, then 7 and 4 are <u>factor</u> of 28.
(d) There are <u>infinite</u> multiples for a given number.
(e) There are at least <u>two</u> factors of a number except 1.
(f) If $9 \times 8 = 72$, then 72 is a multiple of <u>9</u> and <u>8</u>.

2. (a) $16 \times 1 = 16$, $16 \times 2 = 32$,
$16 \times 3 = 48$, $16 \times 4 = 64$,
$16 \times 5 = 80$
Thus, 16, 32, 48, 64 and 80 are the first five multiples of 16.

(b) $18 \times 1 = 18$, $18 \times 2 = 36$,
$18 \times 3 = 54$, $18 \times 4 = 72$,
$18 \times 5 = 90$
Thus, 18, 36, 54, 72 and 90 are the first five multiples of 18.

(c) $19 \times 1 = 19$, $19 \times 2 = 38$,
$19 \times 3 = 57$, $19 \times 4 = 76$,
$19 \times 5 = 95$
Thus, 19, 38, 57, 76 and 95 are the first five multiples of 19.

(d) $24 \times 1 = 24$, $24 \times 2 = 48$,
$24 \times 3 = 72$, $24 \times 4 = 96$,
$24 \times 5 = 120$
Thus, 24, 48, 72, 96 and 120 are the first five multiples of 24.

(e) $25 \times 1 = 25$, $25 \times 2 = 50$,
$25 \times 3 = 75$, $25 \times 4 = 100$,
$25 \times 5 = 125$
Thus, 25, 50, 75, 100 and 125 are the first five multiples of 25.

3. (a) $60 \div 1 = 60$, $60 \div 2 = 30$,
$60 \div 3 = 20$, $60 \div 4 = 15$,
$60 \div 5 = 12$, $60 \div 6 = 10$
Thus, factors of 60 are 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 and 60.

(b) $36 \div 1 = 36$, $36 \div 2 = 18$,
$36 \div 3 = 12$, $36 \div 4 = 9$,
$36 \div 6 = 6$
Thus, factors of 36 are 1, 2, 3, 4, 6, 9, 12, 18 and 36.

(c) $120 \div 1 = 120$, $120 \div 2 = 60$,
$120 \div 3 = 40$, $120 \div 4 = 30$,
$120 \div 6 = 20$, $120 \div 8 = 15$,
$120 \div 10 = 12$
Thus, factors of 120 are 1, 2, 3, 4, 6, 8, 10, 12, 15, 20, 30, 40, 60 and 120.

(d) $140 \div 1 = 140$, $140 \div 2 = 70$,
$140 \div 4 = 35$, $140 \div 5 = 28$,
$140 \div 10 = 14$
Thus, factors of 140 are 1, 2, 4, 5, 10, 14, 28, 35, 70 and 140.

(e) $190 \div 1 = 190$, $190 \div 2 = 95$,
$190 \div 5 = 38$, $190 \div 10 = 19$
Thus, factors of 190 are 1, 2, 5, 10, 19, 38, 95 and 190.

4. (a) $49 \div 7 = 7$
Thus, 49 is a multiple of 7.

(b) $279 \div 9 = 31$

Thus, 279 is a multiple of 9.

(c)
$$\begin{array}{r} 779 \\ 12\overline{)9348} \\ -84 \\ \hline 94 \\ -84 \\ \hline 108 \\ -108 \\ \hline 0 \end{array}$$

12 divides 9348 completely. Thus, 9348 is a multiple of 12.

(d) $154 \div 14 = 11$

Thus, 154 is a multiple of 14.

(e)
$$\begin{array}{r} 50 \\ 18\overline{)908} \\ -90 \\ \hline 8 \end{array}$$
Q = 50, R = 8

Thus, 908 is not a multiple of 18.

Exercise 5.1

1. (a) Given number = 204

Its ones digit is 4, So, it is divisible by 2, but not by 5 and 10.

Sum of its digits = 2 + 0 + 4 = 6 and 6 is divisible by 3.

So, it is divisible by 3.

(b) Given number = 672

It is ones digit is 2. So, it is divisible by 2, but not by 5 and 10.

Sum of its digits = 6 + 7 + 2 = 15 and 15 is divisible by 3.

So, it is divisible by 3.

(c) Given number = 8040

Its ones digit is 0, So, it is divisible by 2, 5 and 10.

Sum of its digits = 8 + 0 + 4 + 0 = 12 and 12 is divisible by 3.

So, it is divisible by 3.

(d) Given number = 9305

Its ones digit is 5, So, it is divisible by 5, but not by 2 and 10.

Sum of its digits = 9 + 3 + 0 + 5 = 17 and 17 is not divisible by 3.

So, 9305 is not divisible by 3.

2. (a) Given number = 4020

Number formed with ones and tens digits is 20 and 20 is divisible by 4.

So, 4020 is divisible by 4.

(b) Given number = 8034

Number formed with ones and tens digits is 34 and 34 is not divisible by 4.

So, 8034 is not divisible by 4.

(c) Given number = 90348

Number formed with ones and tens digits is 48 and 48 is divisible by 4.

So, 90348 is divisible by 4.

(d) Given number = 28508

Number formed with ones and tens digits is 08 i.e. 8 and 8 is divisible by 4.

So, 28508 is divisible by 4.

(e) Given number = 90176

Number formed with ones and tens digits is 76 and 76 is divisible by 4.

So, 90176 is divisible by 4.

(f) Given number = 57084

Number formed with ones and tens digits is 84 and 84 is divisible by 4.

So, 57084 is divisible by 4.

(g) Given number = 31422

Number formed with ones and tens digits is 22 and 22 is not divisible by 4.

So, 31422 is not divisible by 4.

(h) Given number = 80064

Number formed with ones and tens digits is 64 and 64 is not divisible by 4.

So, 80064 is not divisible by 4.

3.

S.No.	Number	Is it divisible by		Is it divisible by 6
		2	3	
(a)	268	Yes	No	No
(b)	5307	No	Yes	No
(c)	7122	Yes	Yes	Yes
(d)	53604	Yes	Yes	Yes
(e)	30310	Yes	No	No
(f)	2460	Yes	Yes	Yes
(g)	4173	No	Yes	No
(h)	8384	Yes	No	No

4.

S. No.	Number (A)	Number formed by ones, tens and hundreds digits	Is B divisible 8?	Is A divisible 8?
(a)	5320	370	No	No
(b)	24024	24	Yes	Yes
(c)	85764	764	No	No
(d)	40032	32	Yes	Yes
(e)	52341	341	No	No
(f)	9356	356	No	No
(g)	32008	8	Yes	Yes
(h)	52080	80	Yes	Yes

5.

S.No.	Number (A)	Sum of Digits (B)	Is B divisible by 9?	Is A divisible by 9?
(a)	3276	3 + 2 + 7 + 6 = 18	Yes	Yes
(b)	3712	3 + 7 + 1 + 2 = 13	No	No
(c)	25434	2 + 5 + 4 + 3 + 4 = 18	Yes	Yes
(d)	41625	4 + 1 + 6 + 2 + 5 = 18	Yes	Yes
(e)	20278	2 + 0 + 2 + 7 + 8 = 19	No	No
(f)	24804	2 + 4 + 8 + 0 + 4 = 18	Yes	Yes
(g)	73875	7 + 3 + 8 + 7 + 5 = 30	No	No
(h)	67640	6 + 7 + 6 + 4 + 0 = 23	No	No

6.

S. No.	Number (A)	Sum of the digits at odd places (B)	Sum of the digits at even places (C)	Difference of B and C (D)	Is D divisible by 11 or it is 0?	Is A divisible by 11?
(a)	5621	1 + 6 = 7	2 + 5 = 7	7 – 7 = 0	Yes	Yes
(b)	8438	8 + 4 = 12	3 + 8 = 11	12 – 11 = 1	No	No
(c)	93764	4 + 7 + 9 = 20	6 + 3 = 9	20 – 9 = 11	Yes	Yes
(d)	706354	4 + 3 + 0 = 7	5 + 6 + 7 = 18	18 – 7 = 11	Yes	Yes
(e)	131340	0 + 3 + 3 = 6	4 + 1 + 1 = 6	6 – 6 = 0	Yes	Yes
(f)	746856	6 + 8 + 4 = 18	5 + 6 + 7 = 18	18 – 18 = 0	Yes	Yes
(g)	17649	9 + 6 + 1 = 16	4 + 7 = 11	16 – 11 = 5	No	No
(h)	21362	2 + 3 + 2 = 7	6 + 1 = 7	7 – 7 = 0	Yes	Yes

Exercise 5.2

1. (a) $12 \times 1 = 12$, $12 \times 2 = 24$,
$12 \times 3 = 36$, $12 \times 4 = 48$,
$12 \times 5 = 60$
So, the first five multiples of 12 are 12, 24, 36, 48, 60

(b) $14 \times 1 = 14$, $14 \times 2 = 28$,
$14 \times 3 = 42$, $14 \times 4 = 56$,
$14 \times 5 = 70$
So, the first five multiples of 14 are 14, 28, 42, 56, 70

(c) $18 \times 1 = 18$, $18 \times 2 = 36$,
$18 \times 3 = 54$, $18 \times 4 = 72$,

$18 \times 5 = 90$
So, the first five multiples of 18 are 18, 36, 54, 72, 90

(d) $20 \times 1 = 20$, $20 \times 2 = 40$,
$20 \times 3 = 60$, $20 \times 4 = 80$,
$20 \times 5 = 100$
So, the first five multiples of 20 are 20, 40, 60, 80, 100

(e) Similar work to be done.

2. (a) $1 \times 50 = 50$ $2 \times 25 = 50$
$5 \times 10 = 50$
So, the factors of 50 are 1, 2, 5, 10, 25 and 50

(b) $1 \times 80 = 80$ $2 \times 40 = 80$
$4 \times 20 = 80$ $8 \times 10 = 80$
So, the factors of 80 are 1, 2, 4, 8, 10, 20, 40 and 80

(c) $1 \times 105 = 105$ $3 \times 35 = 105$
$5 \times 21 = 105$ $7 \times 15 = 105$
So, the factors of 105 are 1, 3, 5, 7, 15, 21, 35 and 105

(d) $1 \times 235 = 235$ $5 \times 47 = 235$
So, the factors of 235 are 1, 5, 47 and 235

(e) $1 \times 304 = 304$ $2 \times 152 = 304$
$4 \times 76 = 304$ $8 \times 38 = 304$
$16 \times 19 = 304$
So, the factors of 304 are 1, 2, 4, 8, 16, 19, 38, 76, 152 and 304

3. (a) 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195

(b) 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190

(c) 60, 75, 90, 105, 120, 135, 150, 165, 180, 195

(d) 72, 96, 120, 144, 168, 192

(e) 60, 120, 180

4. (a) True (b) True (c) False
(d) True (e) False

Exercise 5.3

1.

S.No.	Number	Ones Digit	Even/Odd
(a)	17	7	Odd
(b)	24	4	Even
(c)	340	0	Even
(d)	575	5	Odd
(e)	690	0	Even
(f)	1844	4	Even
(g)	1249	9	Odd
(h)	8046	6	Even
(i)	93762	2	Even
(j)	7598	8	Even

2. (a) 11, 13, 17, 19, 23, 29, 31

(b) 23, 29, 31, 37

(c) 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73

(d) 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97

3. (a) 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, 24

(b) 21, 22, 24, 25, 26, 27, 28, 30, 32, 33, 34, 35, 36, 38, 39

(c) 46, 48, 49, 50, 51, 52, 54, 55, 56, 57, 58, 60, 62, 63, 64, 65, 66, 68, 69

(d) 66, 68, 69, 70, 72, 74, 75, 76, 77, 78, 80, 81, 82, 84, 85, 86, 87, 88, 90, 91, 92, 93, 94, 95, 96, 98, 99, 100

4. (a) $35 = 23 + 7 + 5$ (b) $46 = 41 + 5$
(c) $70 = 67 + 3$ (d) $85 = 73 + 7 + 5$
(e) $18 = 13 + 5$ (f) $100 = 97 + 3$

5. 3 and 5, 5 and 7, 11 and 13, 17 and 19, 29 and 31, 41 and 43, 59 and 61, 71 and 73

6. 90, 91, 92, 93, 94, 95, 96

7. (a) Factors of 5 = 1, 5
Factors of 6 = 1, 2, 3, 6
Common factor = 1
So, 5 and 6 are co-primes.

(b) Factors of 50 = 1, 2, 5, 10, 25, 50
Factors of 55 = 1, 5, 11, 55
Common factors = 1, 5
So, 1 and 5 are not co-primes.

(c) Factors of 9 = 1, 3, 9
Factors of 16 = 1, 2, 4, 8, 16
Common factor = 1
So, 9 and 16 are co-primes.

(d) Factors of 18 = 1, 2, 3, 6, 9, 18
Factors of 23 = 1, 23
Common factor = 1
So, 18 and 23 are co-primes.

(e) Factors of 38 = 1, 2, 19, 38
Factors of 39 = 1, 3, 13, 39
Common factor = 1
So, 38 and 39 are co-primes.

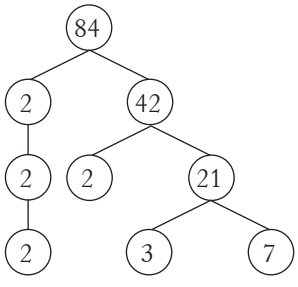
(f) Factors of 94 = 1, 2, 47, 94
Factors of 99 = 1, 3, 9, 11, 33, 99
Common factor = 1
So, 94 and 99 are co-primes.

(g) Factors of 90
= 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90
Factors of 92 = 1, 2, 4, 23, 46, 92
Common factors = 1, 2
So, 90 and 92 are not co-primes.

8. (a) 2 is the smallest and even prime number.
(b) Every prime number has only two factors.
(c) Sum of two even numbers is even.
(d) Sum of two odd numbers is even.
(e) 1 is the unique number or it is neither a prime number a composite number.

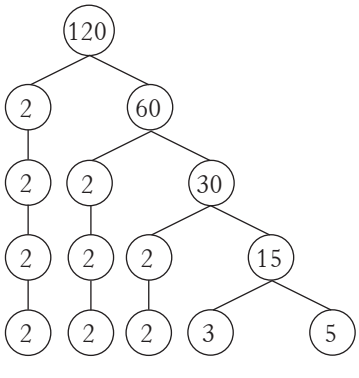
Exercise 5.4

1. (a)



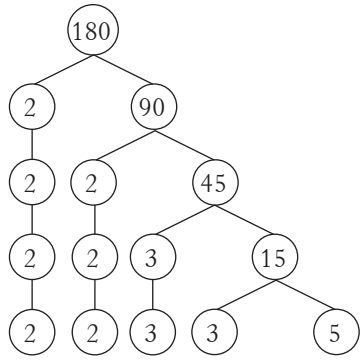
$84 = 2 \times 2 \times 3 \times 7$

(b)



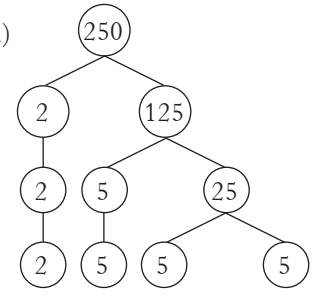
$120 = 2 \times 2 \times 2 \times 3 \times 5$

(c)



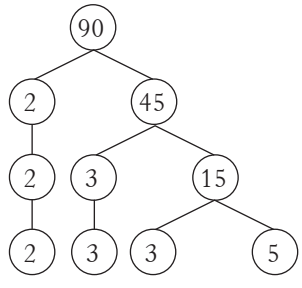
$180 = 2 \times 2 \times 3 \times 3 \times 5$

(d)



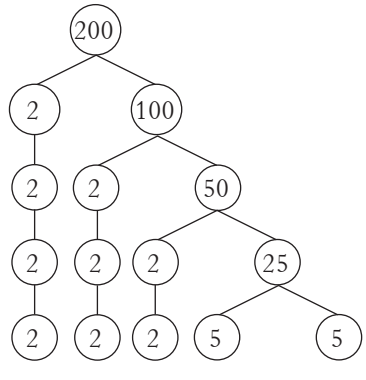
$250 = 2 \times 5 \times 5 \times 5$

(e)



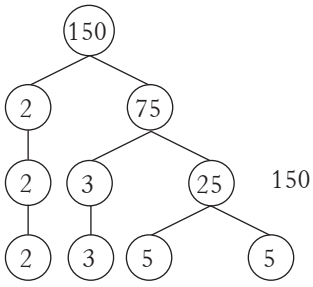
$90 = 2 \times 3 \times 3 \times 5$

(f)



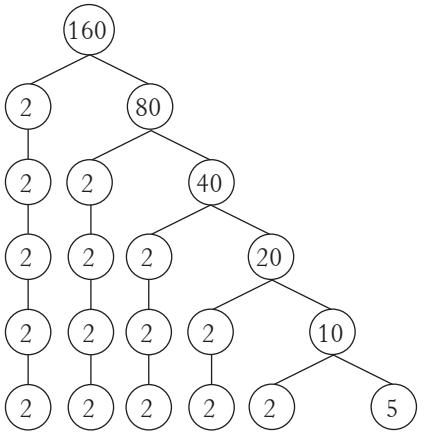
$280 = 2 \times 2 \times 2 \times 5 \times 5$

(g)



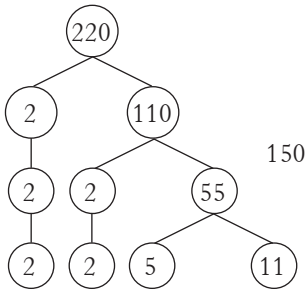
150 = 2 × 3 × 5 × 5

(h)



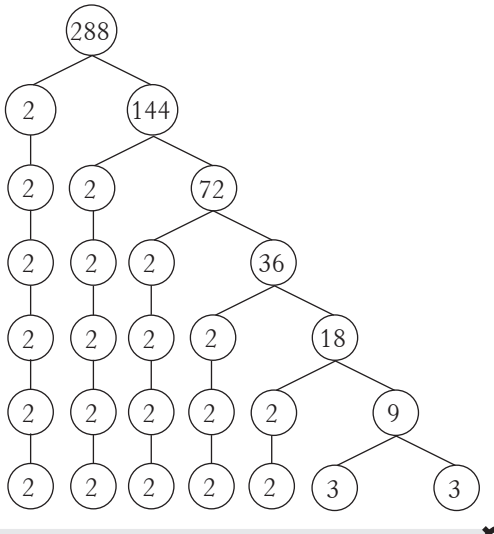
160 = 2 × 2 × 2 × 2 × 2 × 5

(i)



150 = 2 × 3 × 5 × 5

(j)



288 = 2 × 2 × 2 × 2 × 2 × 3 × 3

2. (a)

3	45
3	15
5	5
	1

45 = 3 × 3 × 5

(b)

3	75
5	25
5	5
	1

75 = 3 × 5 × 5

(c)

2	90
3	45
3	15
5	5
	1

90 = 2 × 3 × 3 × 5

(d)

2	160
2	80
2	40
2	20
2	10
5	5
	1

160 = 2 × 2 × 2 × 2 × 2 × 5

(e)

2	324
2	162
3	81
3	27
3	9
3	3
	1

324 = 2 × 2 × 3 × 3 × 3 × 3

(f)

7	91
13	13
	1

91 = 7 × 13

(g)

2	216
2	108
2	54
3	27
3	9
3	3
	1

$216 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$

(h)

2	240
2	120
2	60
2	30
3	15
5	5
	1

$240 = 2 \times 2 \times 2 \times 2 \times 3 \times 5$

(i)

2	284
2	142
71	71
	1

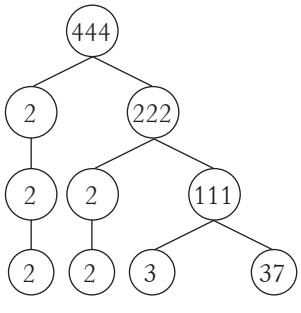
$284 = 2 \times 2 \times 71$

(j)

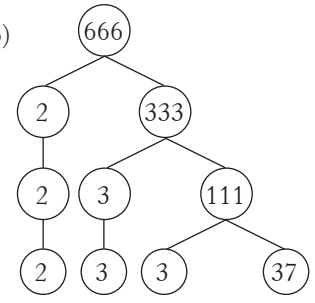
2	360
2	180
2	90
3	45
3	15
5	5
	1

$360 = 2 \times 2 \times 2 \times 3 \times 3 \times 5$

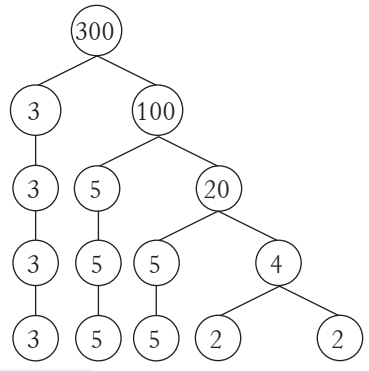
3. (a)



(b)



(c)



Exercise 5.5

1. (a) Factors of 22 = 1, 2, 11, 22
   Factors of 90 = 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90
   Common factors = 1, 2

   (b) Factors of 48 = 1, 2, 3, 4, 6, 8, 12, 16, 24, 48
   Factors of 72 = 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72
   Common factors = 1, 2, 3, 4, 6, 8, 9, 12, 24

   (c) Factors of 90 = 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90
   Factors of 140 = 1, 2, 4, 5, 7, 10, 14, 20, 28, 35, 70, 140
   Common factors = 1, 2, 5, 10

   (d) Factors of 224 = 1, 2, 4, 7, 8, 14, 16, 28, 32, 56, 112, 224
   Factors of 460 = 1, 2, 4, 5, 10, 20, 23, 46, 92, 115, 230, 460
   Common factors = 1, 2, 4

   (e) Factors of 272 = 1, 2, 4, 8, 16, 17, 34, 68, 136, 272
   Factors of 540 = 1, 2, 3, 4, 5, 6, 9, 10, 12, 15, 16, 20, 27, 30, 36, 45, 54, 60, 90, 108, 135, 180, 270, 540
   Common factors = 1, 2, 4

(f) Factors of 380 = 1, 2, 4, 5, 10, 19, 20, 38, 76, 95, 190, 380
Factors of 400 = 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 200, 400
Common factors = 1, 2, 4, 10, 20

2. (a) Factors of 14 = 1, 2, 7, 14
Factors of 16 = 1, 2, 4, 8, 16
Common factors = 1, 2
HCF (14, 16) = 2

(b) Factors of 27 = 1, 3, 9, 27
Factors of 35 = 1, 5, 7, 35
Common factor = 1
HCF (27, 35) = 1

(c) Factors of 20 = 1, 2, 4, 5, 10, 20
Factors of 30 = 1, 2, 3, 5, 6, 10, 15, 30
Common factors = 1, 2, 5, 10
HCF (20, 30) = 10

(d) Factors of 18 = 1, 2, 3, 6, 9, 18
Factors of 52 = 1, 2, 4, 13, 26, 52
Common factors = 1, 2
HCF (18, 52) = 2

(e) Factors of 40 = 1, 2, 4, 5, 8, 10, 20, 40
Factors of 45 = 1, 3, 5, 9, 15, 45
Factors of 80 = 1, 2, 4, 5, 8, 10, 16, 20, 40, 80
Common factors = 1, 5
HCF (40, 45, 80) = 5

(f) Factors of 12 = 1, 2, 3, 4, 6, 12
Factors of 21 = 1, 3, 7, 21
Factors of 63 = 1, 3, 7, 9, 21, 63
Common factors = 1, 3
HCF (12, 21, 63) = 3

3. (a) $52 = 2 \times 2 \times 13$
$70 = 2 \times 5 \times 7$
Common prime factor = 2
HCF (52, 70) = 2

2	52
2	26
13	13
	1

2	70
5	35
7	7
	1

(b) $144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$
$290 = 2 \times 5 \times 29$
Common prime factor = 2
HCF (144, 290) = 2

2	144
2	72
2	36
2	18
3	9
3	3
	1

2	290
5	145
29	29
	1

(c) $10 = 2 \times 5$
$85 = 5 \times 17$
Common prime factor = 5
HCF (10, 85) = 5

(d) $62 = 2 \times 31$
$120 = 2 \times 2 \times 3 \times 5$
Common prime factor = 2
HCF (62, 120) = 2

(e) $18 = 2 \times 3 \times 3$
$54 = 2 \times 3 \times 3 \times 3$
$72 = 2 \times 2 \times 2 \times 3 \times 3$
Common prime factor = 2, 3, 3
HCF (18, 54, 72) = $2 \times 3 \times 3 = 18$

(f) $14 = 2 \times 7$
$56 = 2 \times 2 \times 2 \times 7$
$70 = 2 \times 5 \times 7$
Common prime factor = 2, 7
HCF (14, 56, 70) = $2 \times 7 = 14$

4. (a)
$$\begin{array}{r} 28\overline{)40}\,(1 \\ -28 \\ \hline 12\overline{)28}\,(2 \\ -24 \\ \hline 4\overline{)12}\,(3 \\ -12 \\ \hline 0 \end{array}$$
HCF (28, 40) = 4

(b)
$$\begin{array}{r} 54\overline{)96}\,(1 \\ -54 \\ \hline 42\overline{)54}\,(1 \\ -42 \\ \hline 12\overline{)42}\,(3 \\ -36 \\ \hline 6\overline{)12}\,(2 \\ -12 \\ \hline 0 \end{array}$$
HCF (54, 96) = 6

(c) $30\overline{)84}\,2$
-60
$24\overline{)30}\,1$
-24
$6\overline{)24}\,4$
-24
0

HCF (30, 84) = 6

(d) $49\overline{)63}\,1$
-49
$14\overline{)49}\,3$
-42
$7\overline{)14}\,2$
-14
0

HCF (49, 63) = 7

(e) $22\overline{)66}\,3$ $\quad$ $22\overline{)88}\,4$
-66 $\quad$ -88
0 $\quad$ 0

HCF (22, 66, 88) = 22

(f) $90\overline{)120}\,1$ $\quad$ $30\overline{)160}\,5$
-90 $\quad$ -150
$30\overline{)90}\,3$ $\quad$ $10\overline{)30}\,3$
-90 $\quad$ -30
0 $\quad$ 0

HCF (90, 120, 160) = 10

5. (a) The largest possible number of stamps in each sheet will be the HCF of 36 and 44.

$36\overline{)44}\,1$
-36
$8\overline{)36}\,4$
-32
$4\overline{)8}\,2$
-8
0

Thus, each sheet has maximum 4 stamps.

(b) The largest possible length of side of each square coloured paper will be the HCF 72 and 90.

$72 = 2 \times 2 \times 2 \times 3 \times 3$

$90 = 2 \times 3 \times 3 \times 5$

2	72
2	36
2	18
3	9
3	3
	1

2	90
3	45
3	15
5	5
	1

Common prime factors = 2, 3, 3

HCF = $2 \times 3 \times 3 = 18$.

Thus, the largest possible length of the side of each square coloured sheet will be 18 cm.

(c) The largest possible length of pieces = HCF of 448 and 616.

$448\overline{)616}\,1$
-448
$168\overline{)448}\,2$
-336
$112\overline{)168}\,1$
-112
$56\overline{)112}\,2$
-112
0

HCF (448, 616) = 56

Thus, the greatest possible length of pieces will be 56 cm.

(d) The given numbers are 160 and 396.

Let us find HCF of 160 and 396.

$160\overline{)391}\,2$
-320
$76\overline{)160}\,2$
-152
$8\overline{)76}\,9$
-72
$4\overline{)8}\,2$
-8
0

HCF (160, 396) = 4

Thus, 4 is the largest number that divides 160 and 396 without leaving a remainder.

(e) 275 – 15 = 260 and 340 – 15 = 325

Let us find the HCF of 260 and 325.

HCF of 260 and 325 = 65

Thus, 65 divides 275 and 340 leaving a remainder of 15.

$$
\begin{array}{r}
260\overline{)325}\,\big)\,1 \\
-260 \\
\hline
65\overline{)260}\,\big)\,4 \\
-260 \\
\hline
0
\end{array}
$$

Exercise 5.6

1. (a) Multiples of 8 = 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, ...
Multiples of 10 = 10, 20, 30, 40, 50, 60, 70, 80, 90, ...
Common multiples of 8 and 10 = 40, 80, 120, 160, ...

(b) Multiples of 6 = 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, ...
Multiples of 15 = 15, 30, 45, 60, 75, 90, 105, 120, 135, ...
Common multiples of 6 and 15 = 30, 60, 90, 120, ...

(c) Multiples of 16 = 16, 32, 48, 64, 80, 96, 112, 128, 144, 160, ...
Multiples of 20 = 20, 40, 60, 80, 100, 120, 140, 160, ...
Common multiples of 16 and 20 = 80, 160, 240, 320, ...

(d) Multiples of 8 = 8, 16, 24, 32, 40, 48, 56, ...
Multiples of 24 = 24, 48, 72, 96, ...
Common multiples of 8 and 24 = 24, 48, 72, 96, ...

(e) Multiples of 15 = 15, 30, 45, 60, 75, 90, 105, 120, ...
Multiples of 40 = 40, 80, 120, 160, 200, ...
Common multiples of 15 and 40 = 120, 240, 360, 480, ...

(f) Multiples of 3 = 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, ...
Multiples of 21 = 21, 42, 63, 84, 105, ...
Common multiples of 3 and 21 = 21, 42, 63, 84, ...

(g) Multiples of 25 = 25, 50, 75, 100, 125, 150, ...
Multiples of 30 = 30, 60, 90, 120, 150, 180, ...
Common multiples of 25 and 30 = 150, 300, 450, 600, ...

(h) Multiples of 7 = 7, 14, 21, 28, 35, 42, 49, 56, ...
Multiples of 28 = 28, 56, 84, ...
Common multiples of 7 and 28 = 28, 56, 84, 112, ...

2. (a) Multiples of 12 = 12, 24, 36, 48, 60, 72, ...
Multiples of 16 = 16, 32, 48, 64, 80 ...
Common multiples = 48, 96, ...
LCM of 12 and 16 = 48

(b) Multiples of 10 = 10, 20, 30, 40, 50, 60, 70, 80, 90, ...
Multiples of 18 = 18, 36, 54, 72, 90 ...
Common multiples of 10 and 18 = 90, 180, 270, ...
LCM of 10 and 18 = 90

(c) Multiples of 15 = 15, 30, 45, 60, 75, 90, 105, 120, ...
Multiples of 50 = 50, 100, 150, 200, ...
Common multiples of 15 and 50 = 150, 300, 450, ...
LCM of 15 and 50 = 150

(d) Multiples of 15 = 15, 30, 45, 60, 75, 90, ...
Multiples of 20 = 20, 40, 60, 80, 100, ...
Common multiples of 15 and 20 = 60, 120, 180, ...
LCM of 15 and 20 = 60

(e) Multiples of 45 = 45, 90, 135, 180, 225, ...
Multiples of 60 = 60, 120, 180, 240, 300, ...
Multiples of 90 = 90, 180, 270, ...
Common multiples = 180, 360, 540, ...
LCM of 45, 60 and 90 = 180

(f) Multiples of 25 = 25, 50, 75, 100, 125, 150, ...
Multiples of 50 = 50, 100, 150, 200, ...
Multiples of 75 = 75, 150, 225, ...
Common multiples = 150, 300, ...
LCM of 25, 50 and 75 = 150

(g) Multiples of 18 = 18, 36, 54, 72, 90, 108, 126, 144, ..., 360, ...
Multiples of 24 = 24, 48, 72, 96, 120, ..., 360, ...
Multiples of 30 = 30, 60, 90, 120, ..., 360, ...
Common multiples = 360, 720, ...
LCM of 18, 24, 30 = 360

(h) Multiples of 24 = 24, 48, 73, 96, 120, ...
Multiples of 60 = 60, 120, 180, ...
Multiples of 120 = 120, 240, 360, ...
Common multiples = 120, 240, 360, ...
LCM of 24, 60, 120 = 120

3. (a) $14 = 2 \times 7$
$32 = 2 \times 2 \times 2 \times 2 \times 2$
Common prime factor = 2
LCM of 14 and 32
$= 2 \times 2 \times 2 \times 2 \times 2 \times 7 = 224$

(b) $21 = 3 \times 7$
$24 = 2 \times 2 \times 2 \times 3$
Common prime factor = 3
LCM of 21 and 24
$= 3 \times 2 \times 2 \times 2 \times 7 = 168$

(c) $24 = 2 \times 2 \times 2 \times 3$
$36 = 2 \times 2 \times 3 \times 3$
Common prime factors = 2, 2, 3
LCM of 24 and 36 = $(2 \times 2 \times 3) \times (2 \times 3)$
$= 12 \times 6 = 72$

(d) $20 = 2 \times 2 \times 5$
$25 = 5 \times 5$
Common prime factors = 5
LCM of 20 and 25 = $2 \times 2 \times 5 = 20$

(e) $16 = 2 \times 2 \times 2 \times 2$
$18 = 2 \times 3 \times 3$
$24 = 2 \times 2 \times 2 \times 3$
Common prime factor = 2
LCM of 16, 18 and 24
$= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3$
$= 64 \times 27 = 1428$

(f) $12 = 2 \times 2 \times 3$
$30 = 2 \times 3 \times 5$
$45 = 3 \times 3 \times 5$
Common prime factor = 3
LCM of 12, 30, 45
$= 3 \times 2 \times 2 \times 2 \times 3 \times 5 = 360$

(g) $18 = 2 \times 3 \times 3$
$20 = 2 \times 2 \times 5$
$28 = 2 \times 2 \times 7$
Common prime factor = 2
LCM of 18, 20 and 28 = $2 \times 2 \times 2 \times 5 \times 7$
$= 2520$

(h) $40 = 2 \times 2 \times 2 \times 5$
$60 = 2 \times 2 \times 3 \times 5$
$100 = 2 \times 2 \times 5 \times 5$
Common prime factors = 2, 2, 5
LCM of 40, 60, 100 = $(2 \times 2 \times 5) \times (2 \times 3 \times 5)$
$= 20 \times 30 = 600$

4. (a)

2	30, 60
3	15, 30
5	5, 10
	1, 2

LCM = $2 \times 3 \times 5 \times 2 = 60$

(b)

2	18, 72
3	9, 36
3	3, 12
	1, 4

LCM = $2 \times 3 \times 3 \times 2 \times 2 = 72$

(c)

2	22, 66
11	11, 33
	1, 3

LCM = $2 \times 11 \times 3 = 66$

(d)

2	28, 42
7	14, 21
	2, 3

LCM = $2 \times 7 \times 2 \times 3 = 84$

(e)

2	14, 21, 35
7	7, 21, 35
	1, 3, 5

LCM = $2 \times 7 \times 3 \times 5 = 210$

(f)

2	4, 8, 12
2	2, 4, 6
	1, 2, 3

LCM = $2 \times 2 \times 2 \times 3 = 36$

(g)

2	40, 80, 120
2	20, 40, 60
2	10, 20, 30
5	5, 10, 15
	1, 2, 3

LCM = $2 \times 2 \times 2 \times 5 \times 2 \times 3 = 240$

(h)

2	72, 108, 132
2	36, 54, 66
3	18, 27, 33
3	6, 9, 11
	2, 3, 11

LCM = $2 \times 2 \times 3 \times 3 \times 2 \times 3 \times 11 = 2376$.

5. (a) Number of pencils in a package = 12
Number of erasers in a package = 18
Number of required packages

= LCM of 12 and 18
= 2 × 3 × 2 × 3 = 36

2	12, 18
3	6, 9
	2, 3

Thus, Sahid needs to buy 36 packages to get the save number of pencils and erasers.

(b) Number of plants planted by Abdul in a row = 22
Number of plants planted by Siddhu in a row = 30
Number of smallest number of required plants = LCM of 22 and 30
= 2 × 11 × 15 = 330

2	12, 30
	11, 15

Thus, each friend will have to plant in 330 plants.

(c) Number of days after which students of Draw Green School meet orphanage = 32 days
Number of days after which students of Go Green School meet orphanage = 40 days
Number of days after which students of both school meet together at the orphanage
= LCM of 32 and 40
= 2 × 2 × 2 × 4 × 5 = 160 days

2	32, 40
2	16, 20
2	8, 10
	4, 5

Thus, after 160 days they will next meet together at the orphanage.

(d) Number of seconds taken by car A to complete the track = 28
Number of seconds taken by car B to complete the track = 24
Number of seconds after which they will be side-by-side = LCM of 28 and 24
= 2 × 2 × 7 × 6 = 168

2	28, 24
2	14, 12
	7, 6

Thus, the cars will meet after 168 seconds.

(e) The required number = LCM of 60, 90, 105
= 2 × 3 × 5 × 2 × 3 × 7 = 1260

2	60, 90, 105
3	30, 45, 105
5	10, 15, 35
	2, 3, 7

Thus, 1260 is the smallest number which is exactly divisible by 60, 90 and 105.

(f) The required number of seconds
= LCM of 14, 18 and 24
= 2 × 3 × 7 × 3 × 4 = 504 seconds
= 8 minutes 24 seconds

2	14, 18, 24
3	7, 9, 12
	7, 3, 4

Thus, the bells will ring together again at 9:08:24 a.m.

Exercise 5.7

1. Product of two numbers = 432
HCF = 6
LCM = ?
Since HCF × LCM = Product of two numbers
So, 6 × LCM = 432
or LCM = 432 ÷ 6 = 72

2. LCM of two numbers = 72
HCF = 12
Product of two numbers = ?
Since HCF × LCM = Product of two numbers
So, 12 × 72 = Product of two numbers
or Product of two numbers = 864

3. LCM of two numbers = 135
Product of two numbers = 1215
HCF of two numbers = ?
Since LCM × HCF = Product of two numbers
So, 135 × HCF = 1215
HCF = 1215 ÷ 135 = 9

4. (a) Given co-primes = 18, 19
Their HCF = 1
Their LCM = 18 × 19 = 342

(b) Given co-primes = 32, 33
Their HCF = 1
Their LCM = 32 × 33 = 1056

(c) Given co-primes = 17, 24
Their HCF = 1
Their LCM = 17 × 24 = 408

(d) Given co-primes = 21, 22
Their HCF = 1
Their LCM = 21 × 22 = 462

(e) Given co-primes = 11, 13
Their HCF = 1
Their LCM = 11 × 13 = 143

(f) Given co-primes = 7, 13
Their HCF = 1
Their LCM = 7 × 13 = 91

(g) Given co-primes = 17, 19
Their HCF = 1
Their LCM = 17 × 19 = 323

(h) Given co-primes = 23, 29
Their HCF = 1
Their LCM = 23 × 29 = 667

5. (a) 15 is a factor of 60.
So, HCF of 15 and 60 = 15
and LCM of 15 and 60 = 60

(b) 14 is a factor of 98.
So, HCF of 14 and 98 = 14
and LCM of 14 and 98 = 98

(c) 28 is a factor of 112.
So, HCF of 28 and 112 = 28
and LCM of 28 and 112 = 112

(d) 36 is a factor of 108.
So, HCF of 36 and 108 = 36
and LCM of 36 and 108 = 108

(e) 25 is a factor of 200.
So, HCF of 25 and 200 = 25
and LCM of 25 and 200 = 200

(f) 18 is a factor of 126.
So, HCF of 18 and 126 = 18
and LCM of 18 and 126 = 126

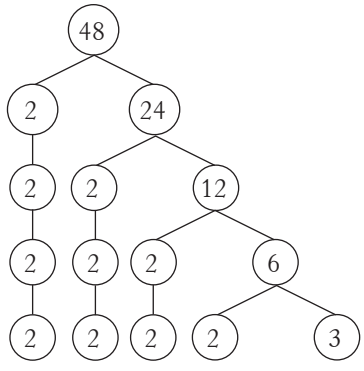
(g) 16 is a factor of 80.
So, HCF of 16 and 80 = 16
and LCM of 16 and 80 = 80

(h) 40 is a factor of 160.
So, HCF of 40 and 160 = 40
and LCM of 40 and 160 = 160

Revision Exercise

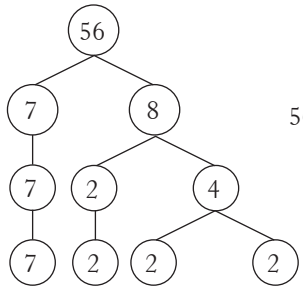
1. 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79

2. (a)



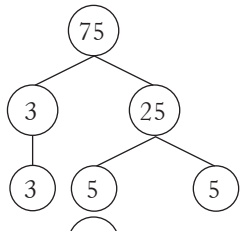
48 = 2 × 2 × 2 × 2 × 3

(b)



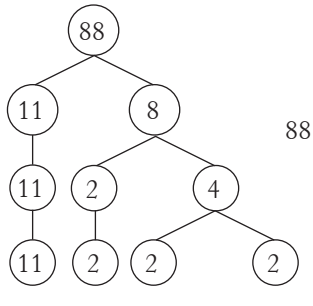
56 = 2 × 2 × 2 × 7

(c)



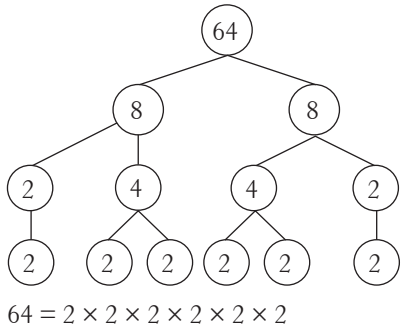
75 = 3 × 5 × 5

(d)



88 = 2 × 2 × 2 × 11

(e)



64 = 2 × 2 × 2 × 2 × 2 × 2

3. (a)

3	69
23	23
	1

$69 = 3 \times 23$

(b)

2	84
2	42
3	21
7	7
	1

$84 = 2 \times 2 \times 3 \times 7$

(c)

2	90
3	45
3	15
5	5
	1

$90 = 2 \times 3 \times 3 \times 5$

(d)

3	105
5	35
7	7
	1

$105 = 3 \times 5 \times 7$

(e)

3	135
3	45
3	15
5	5
	1

$135 = 3 \times 3 \times 3 \times 5$

4.

S.No.	Number	Divisor	Test for divisibility	Is divisible by Divisor?
(a)	8460	4	Number formed by tens and ones digits = 60	8460 is divisible by 4.
		6	Sum of digits = 8 + 4 + 6 + 0 = 18 which is divisible by 3. 8460 is divisible by 2 and 3.	8460 is divisible by 6.
		8	Number formed by last three digits = 460 which is not divisible by 8.	8460 is not divisible by 8.
		9	Sum of digits = 8 + 4 + 6 + 0 = 18 which is divisible by 9.	8460 is not divisible by 9.
		11	6 + 8 = 12 and 4 + 0 = 4, 12 – 4 = 8, which is neither 0 nor a multiple of 11.	8460 is not divisible by 11.
(b)	9420	4	Number formed by last two digits = 20 which is divisible by 4.	9420 is divisible by 4.
		6	9420 is divisible by both 2 and 3.	9420 is divisible by 6.
		8	Number formed by last three digits 420 which is not divisible by 8.	9420 is not divisible by 8.
		9	Sum of digits = 9 + 4 + 2 + 0 = 15 which is not divisible by 9.	9420 is not divisible by 9.
		11	2 + 9 = 11 and 0 + 4 = 4, 11 – 4 = 7 which is neither 0 nor a multiple of 11.	9420 is not divisible by 11.
(c)	8860	4	Number formed by last two digits = 60 which is divisible by 4	8860 is divisible by 4.
		6	Sum of digits = 8 + 8 + 6 + 0 = 22 which is not divisible by 3.	8860 is not divisible by 6.
		8	Number formed by last three digits = 860 which is not divisible by 8.	8860 is not divisible by 8.
		9	Sum of digits = 8 + 8 + 6 + 0 = 22 which is not divisible by 9.	8860 is not divisible by 9.
		11	0 + 8 = 8, 6 + 8 = 14, 14 – 8 = 6 is neither 0 nor a multiple of 11.	8860 is not divisible by 11.

(d)	9396	4	Number formed by last two digits = 96 is divisible by 4.	9396 is divisible by 4.
		6	Sum of digits 9 + 3 + 9 + 6 = 27 which is divisible by 3.	9396 is divisible by 6.
		8	396 is not divisible by 8	9396 is not divisible by 8.
		9	9 + 3 + 9 + 6 = 27 which is divisible by 9.	9396 is divisible by 9.
		11	6 + 3 = 9, 9 + 9 = 18, 18 – 9 = 9 is neither 0 nor a multiple of 11.	9396 is not divisible by 11.
(e)	1008	4	Number formed by last two digits = 08 is divisible by 4.	1008 is divisible by 4.
		6	Sum of digits = 1 + 0 + 0 + 8 = 9 which is divisible by 3.	1008 is divisible by 6.
		8	Number formed by last three digits = 008 which is divisible by 8.	1008 is divisible by 8.
		9	1 + 0 + 0 + 8 = 9 is divisible by 9.	1008 is divisible by 9.
		11	8 + 0 = 8, 0 + 1 = 1, 8 – 1 = 7 is neither 0 nor a multiple of 11	1008 is not divisible by 11.
(f)	2025	4	Number formed by last two digits = 25 which is not divisible by 4.	2025 is not divisible by 4.
		6	Sum of digits 2 + 0 + 2 + 5 = 9 which is not divisible by 2 but is divisible by 3.	2025 is not divisible by 6.
		8	Number formed by last three digits = 25 which is not divisible by 8.	2025 is not divisible by 8.
		9	Sum of digits = 2 + 0 + 2 + 5 = 9 which is divisible by 9.	2025 is divisible by 9.
		11	5 + 0 = 5, 2 + 2 = 4, 5 – 4 = 1 is neither 0 nor a multiple of 11.	2025 is not divisible by 11.
(g)	Similar work to be done.			
(h)	Similar work to be done.			

5. (a)

2	32, 56, 64
2	16, 28, 32
2	8, 14, 16
	4, 7, 8

HCF of 32, 56 and 64
= 2 × 2 × 2 = 8

(b)

3	45, 63, 81
3	15, 21, 27
	5, 7, 9

HCF of 45, 63 and 81
= 3 × 3 = 9

(c)

2	36, 72, 96
2	18, 36, 48
3	9, 18, 24
	3, 6, 8

HCF of 36, 72 and 96 = 2 × 2 × 3 = 12

6. (a)

$$72\overline{)90}\,1 \quad -72 \quad 18\overline{)72}\,4 \quad -72 \quad 0$$

$$18\overline{)108}\,6 \quad -108 \quad 0$$

HCF of 72, 90 and 108 = 18

(b) $36\overline{)54}\,1$ $\quad$ $18\overline{)90}\,5$

-36 $\quad$ -90

$18\overline{)36}\,2$ $\quad$ 0

-36

0

HCF of 36, 54 and 90 = 18

(c) $75\overline{)105}\,1$ $\quad$ $15\overline{)165}\,11$

-75 $\quad$ -15

$30\overline{)75}\,2$ $\quad$ 15

-60 $\quad$ -15

$15\overline{)30}\,2$ $\quad$ 0

-30

0

HCF of 75, 105 and 165 = 15

7. (a) $10 = 2 \times 5$
$30 = 2 \times 3 \times 5$
$90 = 2 \times 3 \times 3 \times 5$
LCM (10, 30, 90) = $2 \times 5 \times 3 \times 3 = 90$.

(b) $12 = 2 \times 2 \times 3$
$44 = 2 \times 2 \times 11$
$66 = 2 \times 3 \times 11$
LCM (12, 44, 66) = $2 \times 2 \times 3 \times 11 = 132$

(c) $64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$
$80 = 2 \times 2 \times 2 \times 2 \times 5$
$120 = 2 \times 2 \times 2 \times 3 \times 5$
LCM (64, 80, 120) = $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 5 = 960$

8. (a)

2	72, 90, 108
2	36, 45, 54
3	18, 45, 27
3	6, 15, 9
	2, 5, 3

LCM = $2 \times 2 \times 3 \times 3 \times 2 \times 5 \times 3 = 1080$

(b)

17	34, 68, 119
2	2, 4, 7
	1, 2, 7

LCM = $17 \times 2 \times 2 \times 7 = 476$

(c)

11	99, 121, 143
	9, 11, 13

LCM = $11 \times 9 \times 11 \times 13 = 14157$

9. (a) First number = 14, second number = 70,
Their HCF = 14
Since first number is a factor of second number.
So, LCM of 14 and 70 is 70.

(b) Second number = 20, HCF = 4, LCM = 80

$$\text{First number} = \frac{\text{LCM} - \text{HCF}}{\text{Second number}}$$

$$= \frac{80 \times 4}{20} = 16.$$

(c) First number = 15, Second number = 45, HCF = 15
Since first number is a factor of second number.
So, LCM of 15 and 45 is 45.

(d) First number = 48, Second number = ?
HCF = 24, LCM = 144

$$\text{Second number} = \frac{\text{LCM} - \text{HCF}}{\text{First number}}$$

$$= \frac{144 \times 24}{48} = 72.$$

(e) First number = 36, Second number = 45, LCM = 180, HCF = ?

$$\text{HCF} = \frac{\text{First number} - \text{Second number}}{\text{LCM}}$$

$$= \frac{36 \times 45}{180} = 9.$$

(f) First number = 48, Second number = ?
HCF = 16, LCM = 192

$$\text{Second number} = \frac{\text{LCM} - \text{HCF}}{\text{First number}}$$

$$= \frac{192 \times 16}{48} = 64.$$

(g) First number = 44, Second number = 99, HCF = 11, LCM = ?

$$\text{LCM} = \frac{\text{First number} \times \text{Second number}}{\text{HCF}}$$

$$= \frac{44 \times 99}{11} = 396.$$

10. HCF = 5, LCM = 48, One number = 40

$$\text{Other number} = \frac{\text{HCF} \times \text{LCM}}{\text{One number}} = \frac{5 \times 48}{40} = 6.$$

11. HCF = 48, One number = 96,

Other number = 144

LCM = $\frac{96\times144}{48}$ = 288.

12. Product of two numbers = 1575,
HCF = 5, LCM = ?

LCM = $\frac{1575}{5}$ = 315.

13. Required number of students that can share will be HCF of 128 and 242.

```
128 ) 242 ( 1
    - 128
    -----
    114 ) 128 ( 1
        - 114
        -----
         14 ) 114 ( 8
            - 112
            -----
              2 ) 14 ( 7
                - 14
                ----
                  0
```

Thus, the required number of students is 2.

14. Required number of garlands containing 96 flowers, 112 flowers, 130 flowers will be their LCM.

LCM = 2 × 2 × 2 × 2 × 6 × 7 × 65 = 43680

2	96, 112, 130
2	48, 56, 65
2	24, 28, 65
2	12, 14, 65
	6, 7, 65

Thus, 43680 flowers are required to make garlands containing 96 flowers, 112 flowers and 130 flowers without any flowers left over.

HOTS

1. 244 – 4 = 240 and 508 – 8 = 500.
Let us find HCF of 240 and 500.

```
240 ) 500 ( 2
    - 480
    -----
     20 ) 240 ( 12
        - 20
        ----
          40
        - 40
        ----
           0
```

Thus, the required number is 20.

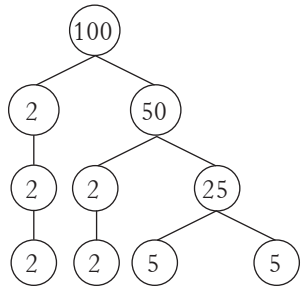
2. Let us find LCM of 34 and 60.

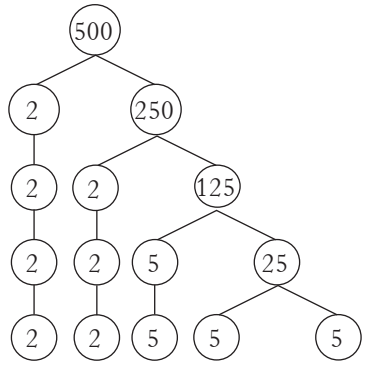
2	34, 60
	17, 30

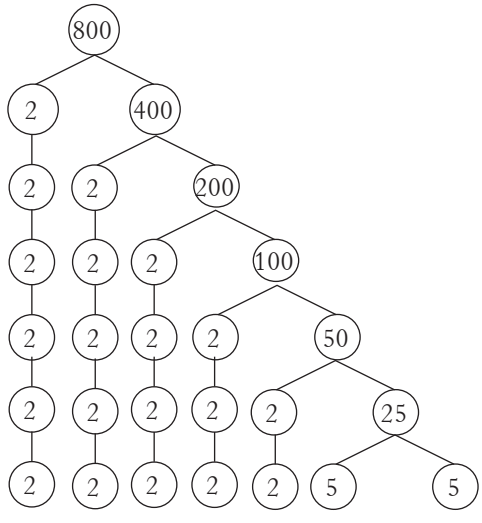
LCM = 2 × 17 × 30 = 1020.
Thus, the required number is 1020.

Case-based Questions

1. Numbers 100, 500, 800 and 1,100 are all divisible by 2, 5 and 10.
None of these numbers is divisible by 3 because the sum of digits is not a multiple of 3.
2. Prime factorisation of 100, 500, 800 and 1,100:







Similar work to be done for the prime factorisation of 1,100:

3. Numbers 100, 500, 800 and 1,100 as the sum of prime numbers are written below.
   $100 = 59 + 41$ $\quad\quad$ $500 = 487 + 13$
   $800 = 5 + 11 + 13 + 31 + 97 + 139 + 193 + 311$
   $1{,}100 = 13 + 149 + 439 + 499$
4. Given that each of the contributors keeps ` 100 with him/her.
   Amounts left with Shubham = ₹ 400
   Amounts left with Pinky = ₹ 700
   Amounts left with Rahul = ₹ 1000
   Maximum number of pens bought by each = HCF pf 400, 700 and 1000 which is 100.
   Thus, each of them can buy maximum of 100 pens.
5. Cost of 1 pen bought by Shubham = ₹ 400 ÷ 100 = ₹ 4
   Cost of 1 pen bought by Pinky = ₹ 700 ÷ 100 = ₹ 7
   Cost of 1 pen bought by Rahul = ₹ 1000 ÷ 100 = ₹ 10
   Thus, Shubham bought pens at the cheapest rate.

Mental Maths

A. 1. 1 is a factor of every number and it is the only multiple of 1.
   2. Every number is a factor of itself.
   3. A number other than 1 can have more than two factors.
   4. Each number is a multiple of itself.
   5. The first odd prime number is 3.
   6. A prime number has only two factors 1 and the number itself.
   7. 1 is neither prime number nor a composite number.
   8. An odd number leaves a remainder 1 when divided by 2.
   9. All even numbers are multiples of 2.
   10. LCM of two or more numbers is the lowest possible number which is exactly divisible by the given numbers.

B. 1. 7 and 9; 13 and 20; 21 and are co-prime number. Thus, (d) is the correct answer.
   2. Examples of prime numbers are 11, 13, 17, 19. Thus, (b) is the correct answer.
   3. If a number is divisible by 2 and 3 both, it will be divisible by 6.
      Thus, (a) is the correct answer.
   4. The LCM of 10 and 25 is 50.

5	10, 25
	2, 5

   LCM = 5 × 2 × 5 = 50
   Thus, (c) is the correct answer.
   5. 17 and 18 are co-prime.
   So, the HCF of 17 and 18 is 1.
   Thus, (d) is the correct answer.

Chapter 6. Fractions

Recap

1. (a) Two-thirds = $\frac{2}{3}$
   (b) Five-ninths = $\frac{5}{9}$
   (c) One-third = $\frac{1}{3}$
   (d) Six-eighths = $\frac{6}{8}$
   (e) Two and four-fifths = $2\frac{4}{5}$
   (f) One hundred eleven and nine-thirteenths = $111\frac{9}{13}$
2. (a) All given fractions are like fractions as their denominators are same.
   (b) All given fractions are unlike fractions as their denominators are not same.
   (c) Fractions $\frac{6}{14}$ and $\frac{2}{14}$ are like fractions as their denominators are same.
   (d) All given fractions are like fractions as their denominators are same.
3.

S.No.	Proper Fractions	Improper Fractions	Unit Fractions
(a)	$\frac{5}{8}, \frac{3}{9}$	$\frac{4}{2}, \frac{6}{2}$	–
(b)	$\frac{2}{15}, \frac{4}{11}$	$\frac{8}{5}, \frac{3}{2}$	–
(c)	$\frac{3}{4}, \frac{3}{7}, \frac{2}{3}$	$\frac{17}{9}$	–
(d)	$\frac{2}{7}$	$\frac{8}{4}$	$\frac{1}{9}, \frac{1}{15}$

4. (a) We have $\frac{4}{5} \square \frac{3}{7}$.

LCM of denominators 5 and 7 = 35

So, $\frac{4}{5} = \frac{4 \times 7}{5 \times 7} = \frac{28}{35}$ and $\frac{3}{7} = \frac{3 \times 5}{7 \times 5} = \frac{15}{35}$

As $28 > 15$, so $\frac{28}{35} > \frac{15}{35}$ or $\frac{4}{5} > \frac{3}{7}$

(b) We have $\frac{4}{9} \square \frac{1}{12}$.

LCM of denominators 9 and 12 = 36

So, $\frac{4}{9} = \frac{4 \times 4}{9 \times 4} = \frac{16}{36}$ and $\frac{1}{12} = \frac{1 \times 3}{12 \times 3} = \frac{3}{36}$

As $16 > 3$, so $\frac{16}{36} > \frac{3}{36}$ or $\frac{4}{9} > \frac{1}{12}$

(c) We have $\frac{19}{22} \square \frac{10}{11}$.

LCM of denominators 11 and 22 = 22

So, $\frac{19}{22} = \frac{19 \times 1}{22 \times 1} = \frac{19}{22}$

and $\frac{10}{11} = \frac{10 \times 2}{11 \times 2} = \frac{20}{22}$

As $19 < 20$, so $\frac{19}{22} < \frac{20}{22}$ or $\frac{19}{22} < \frac{10}{11}$.

5. (a) $\frac{9}{3}$ of $24 = \frac{9}{3} \times 24 = 9 \times 8 = 72$.

(b) $\frac{3}{5}$ of $40 = \frac{3}{5} \times 40 = 3 \times 8 = 24$.

(c) $\frac{6}{12}$ of $96 = \frac{6}{12} \times 96 = 6 \times 8 = 48$.

6. (a) $\frac{2}{3} + \frac{1}{3} = \frac{2+1}{3} = \frac{3}{3} = 1$.

(b) $\frac{5}{18} + \frac{4}{18} = \frac{5+4}{18} = \frac{9}{18} = 2$.

(c) $\frac{9}{28} - \frac{2}{28} = \frac{9-2}{28} = \frac{7}{28} = \frac{1}{4}$.

(d) $\frac{9}{6} + \frac{4}{6} = \frac{9-4}{6} = \frac{5}{6}$.

Exercise 6.1

1. $\frac{1}{2} = \frac{2}{4} = \frac{4}{8} = \frac{8}{16}$

2. (a) $\frac{5}{12} = \frac{5 \times 2}{12 \times 2} = \frac{5 \times 3}{12 \times 3} = \frac{5 \times 4}{12 \times 4} = \frac{5 \times 5}{12 \times 5}$

$= \frac{10}{24} = \frac{15}{36} = \frac{20}{48} = \frac{25}{60}$

Thus, four equivalent fractions for $\frac{5}{12}$ are: $\frac{10}{24}, \frac{15}{36}, \frac{20}{48}$, and $\frac{25}{60}$.

(b) $\frac{6}{18} = \frac{6 \times 2}{18 \times 2} = \frac{6 \times 3}{18 \times 3} = \frac{6 \times 4}{18 \times 4} = \frac{6 \times 5}{18 \times 5}$

$= \frac{12}{36} = \frac{18}{54} = \frac{24}{72} = \frac{30}{90}$

Thus, four equivalent fractions for $\frac{6}{18}$ are: $\frac{12}{36}, \frac{18}{54}, \frac{24}{72}$, and $\frac{30}{90}$.

(c) $\frac{9}{24} = \frac{9 \times 2}{24 \times 2} = \frac{9 \times 3}{24 \times 3} = \frac{9 \times 4}{24 \times 4} = \frac{9 \times 5}{24 \times 5}$

$= \frac{18}{48} = \frac{27}{72} = \frac{36}{96} = \frac{45}{120}$

Thus, four equivalent fractions for $\frac{9}{24}$ are: $\frac{18}{48}, \frac{27}{72}, \frac{36}{96}$ and $\frac{45}{120}$.

(d) $\frac{80}{140} = \frac{80 \div 2}{140 \div 2} = \frac{40}{70}, \frac{80}{140} = \frac{80 \div 4}{140 \div 4}$

$= \frac{20}{35}, \frac{80}{140} = \frac{80 \div 5}{140 \div 5} = \frac{16}{28}, \frac{80}{140}$

$= \frac{80 \div 10}{140 \div 10} = \frac{8}{14}$.

Thus, $\frac{40}{70}, \frac{20}{35}, \frac{16}{28}$ and $\frac{8}{14}$ are any four equivalent fraction of $\frac{80}{140}$.

(e) $\frac{35}{145} = \frac{35 \div 5}{145 \div 5} = \frac{7}{29}, \frac{35}{145} = \frac{35 \times 2}{145 \times 2}$

$= \frac{70}{290}, \frac{35}{145} = \frac{35 \times 3}{145 \times 3} = \frac{105}{435}, \frac{35}{145}$

$= \frac{35 \times 4}{145 \times 4} = \frac{140}{580}$

Thus, $\frac{7}{29}, \frac{70}{290}, \frac{105}{435}$ and $\frac{140}{580}$ are any four equivalent fraction of $\frac{35}{145}$.

3. (a) Since $\frac{3}{5} = \frac{3 \times 3}{5 \times 3} = \frac{9}{15}$, so $\frac{3}{5} = \frac{\boxed{9}}{15}$

(b) Since $\frac{16}{24} = \frac{16 \div 2}{24 \div 2} = \frac{8}{12}$, so $\frac{16}{24} = \frac{8}{\boxed{12}}$

(c) $\frac{40}{36} = \frac{40 \times 2}{36 \times 2} = \frac{80}{72}$, so $\frac{\boxed{80}}{72} = \frac{40}{36}$

(d) $\frac{4}{5} = \frac{4 \times 7}{5 \times 7} = \frac{28}{35}$, so $\frac{4}{5} = \frac{28}{\boxed{35}}$

(e) $\frac{42}{63} = \frac{42 \div 7}{63 \div 7} = \frac{6}{9}$, so $\frac{\boxed{6}}{9} = \frac{42}{63}$

(f) $\frac{66}{72} = \frac{66 \div 6}{72 \div 6} = \frac{11}{12}$, so $\frac{11}{\boxed{12}} = \frac{66}{72}$

4. (a) $\frac{7}{10}$ and $\frac{28}{40}$

By cross multiplication:

$7 \times 40 = 280$ and $28 \times 10 = 280$

Products obtained are same.

So, $\frac{7}{10}$ and $\frac{28}{40}$ are equivalent fractions.

(b) $\frac{50}{80}$ and $\frac{30}{20}$

By cross multiplication:

$50 \times 20 = 1000$ and $30 \times 80 = 2400$

Products obtained are not same.

So, $\frac{50}{80}$ and $\frac{30}{20}$ are not equivalent fractions.

(c) $\frac{72}{90}$ and $\frac{4}{5}$

By cross multiplication:

$72 \times 5 = 360$ and $90 \times 4 = 360$

Products obtained are same.

So, $\frac{72}{90}$ and $\frac{4}{5}$ are equivalent fractions.

(d) $\frac{63}{70}$ and $\frac{14}{35}$

$63 \times 35 = 2205$ and $14 \times 70 = 980$

Products obtained are not same.

So, $\frac{63}{70}$ and $\frac{14}{35}$ are not equivalent fractions.

(e) $\frac{21}{25}$ and $\frac{63}{75}$

$21 \times 75 = 1575$ and $63 \times 25 = 1575$

Products obtained are same.

So, $\frac{21}{25}$ and $\frac{63}{75}$ are equivalent fractions.

(f) $\frac{7}{8}$ and $\frac{12}{16}$

$7 \times 16 = 112$ and $12 \times 8 = 96$

Products obtained are not same.

So, $\frac{7}{8}$ and $\frac{12}{16}$ are not equivalent fractions.

5. (a) Given fraction = $\frac{48}{55}$

Factors of 48 = 1, 2, 3, 4, 6, 8, 12, 16, 24, 48

Factors of 55 = 1, 5, 11, 55

Common factor = 1

Hence, $\frac{48}{55}$ is in its lowest terms.

(b) Given fraction = $\frac{27}{81}$

Factors of 27 = 1, 3, 9, 27

Factors of 81 = 1, 3, 9, 27, 81

Common factors = 1, 3, 9, 27

Hence, $\frac{27}{81}$ is not in its lowest terms.

(c) Given fraction = $\frac{88}{121}$

Factors of 88 = 1, 2, 4, 8, 11, 22, 44, 88

Factors of 121 = 1, 11, 121

Common factors = 1, 11

Hence, $\frac{88}{121}$ is not in its lowest terms.

(d) Given fraction = $\frac{42}{75}$

Factors of 42 = 1, 2, 3, 6, 7, 14, 21, 42

Factors of 75 = 1, 3, 5, 15, 25, 75

Common factors = 1, 3

Hence, $\frac{42}{75}$ is not in its lowest terms.

(e) Given fraction = $\frac{7}{19}$

Factors of 7 = 1, 7

Factors of 19 = 1, 19

Common factors = 1

Hence, $\frac{7}{19}$ is in its lowest terms.

6. (a) $\frac{80}{140} = \frac{80 \div 2}{140 \div 2} = \frac{40}{70} = \frac{40 \div 2}{70 \div 2} = \frac{20}{35}$

$= \frac{20 \div 5}{35 \div 5} = \frac{4}{7}$

Thus, $\frac{4}{7}$ is the required lowest term.

(b) $\frac{24}{40} = \frac{24 \div 2}{40 \div 2} = \frac{12}{20} = \frac{12 \div 2}{20 \div 2} = \frac{6}{10}$

$= \frac{6 \div 2}{10 \div 2} = \frac{3}{5}$

Thus, $\frac{3}{5}$ is the required lowest term.

(c) $\frac{60}{148} = \frac{60 \div 2}{148 \div 2} = \frac{30}{74} = \frac{30 \div 2}{74 \div 2} = \frac{15}{37}$

Thus, $\frac{15}{37}$ is the required lowest term of $\frac{60}{148}$.

(d) $\frac{27}{45} = \frac{27 \div 3}{45 \div 3} = \frac{9}{15} = \frac{9 \div 3}{15 \div 3} = \frac{3}{5}$

Thus, $\frac{3}{5}$ is the required lowest term of $\frac{27}{45}$.

(e) $\frac{36}{54} = \frac{36 \div 2}{54 \div 2} = \frac{18}{27} = \frac{18 \div 3}{27 \div 3} = \frac{6}{9}$

$= \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$

Thus, $\frac{2}{3}$ is the lowest term of $\frac{36}{54}$.

7. (a) Given fraction = $\frac{64}{96}$

HCF of 64 and 96 = 32

So, $= \frac{64}{96} = \frac{64 \div 32}{96 \div 32} = \frac{2}{3}$

2	64, 96
2	32, 48
2	16, 24
2	8, 12
2	4, 6
	2, 3

HCF = $2 \times 2 \times 2 \times 2 \times 2 = 32$

(b) Given fraction = $\frac{51}{102}$

HCF of 51 and 102 = 51

So, $\frac{51}{102} = \frac{51 \div 51}{102 \div 51} = \frac{1}{2}$

51	51, 102
	1, 2

(c) Given fraction = $\frac{84}{144}$

HCF of 84 and 144 = 12

So, $\frac{84}{144} = \frac{84 \div 12}{144 \div 12} = \frac{7}{12}$

2	84, 144
2	42, 72
3	21, 36
	7, 12

HCF = $2 \times 2 \times 3 = 12$

(d) Given fraction = $\frac{72}{192}$

HCF of 72 and 192 = 24

So, $= \frac{72}{192} = \frac{72 \div 24}{192 \div 24} = \frac{3}{8}$

2	72, 192
2	36, 96
2	18, 48
3	9, 24
	3, 8

HCF = $2 \times 2 \times 2 \times 3 = 24$

(e) Given fraction = $\frac{28}{154}$

HCF of 28 and 154 = 14

So, $= \frac{28}{154} = \frac{28 \div 14}{154 \div 14} = \frac{2}{11}$

2	28, 154
7	14, 77
	2, 11

HCF = $2 \times 7 = 14$

Exercise 6.2

1. (a) $\frac{8}{12}, \frac{4}{12}, \frac{3}{15}, \frac{2}{7}$ are unlike fractions as their denominators are not same.

(b) $\frac{3}{10}, \frac{2}{10}, \frac{5}{10}, \frac{5}{10}, \frac{8}{10}$ are like fractions as their denominators are same.

(c) $\frac{9}{15}, \frac{4}{15}, \frac{7}{15}, \frac{24}{15}$ are like fractions as their denominators are same.

(d) $\frac{8}{16}, \frac{3}{16}, \frac{6}{16}, \frac{2}{16}$ are like fractions as their denominators are same.

(e) $\frac{8}{9}, \frac{7}{63}, \frac{5}{18}, \frac{4}{36}$ are unlike fractions as their denominators are not same.

(f) $\frac{2}{7}, \frac{3}{7}, \frac{8}{7}, \frac{9}{7}$ are like fractions as their denominators are same.

2. Proper fractions : (a) $\frac{6}{12}$, (d) $\frac{2}{21}$, (g) $\frac{3}{4}$

Improper fractions : (b) $\frac{8}{5}$, (h) $\frac{8}{9}$, (i) $\frac{16}{3}$

Mixed fractions : (c) $4\frac{3}{7}$, (e) $12\frac{1}{2}$, (f) $8\frac{3}{4}$, (j) $3\frac{7}{9}$

3. Unit fractions : (a) $\frac{1}{19}$, (d) $\frac{1}{18}$, (e) $\frac{1}{21}$, (i) $\frac{1}{45}$ and (j) $\frac{1}{36}$

4. (a) Given fractions are $\frac{2}{6}, \frac{3}{9}, \frac{4}{12}, \frac{6}{18}$

LCM of denominators = 36

2	6, 9, 12, 18
3	3, 9, 6, 9
3	1, 3, 2, 3
	1, 1, 2, 1

LCM = $2 \times 2 \times 3 \times 3 = 36$

So, $\frac{2}{6} = \frac{2 \times 6}{6 \times 6} = \frac{12}{36}, \frac{3}{9} = \frac{3 \times 4}{9 \times 4} = \frac{12}{36}, \frac{4}{12}$

$= \frac{4 \times 3}{12 \times 3} = \frac{12}{36}$ and $\frac{6}{18} = \frac{6 \times 2}{18 \times 2} = \frac{12}{36}$

Thus, $\frac{12}{36}, \frac{12}{36}, \frac{12}{36}, \frac{12}{36}$ are the like fraction.

(b) Given fractions are $\frac{5}{10}, \frac{4}{15}, \frac{3}{20}, \frac{4}{10}$

LCM of 10, 15, 20, 10 = 60

2	10, 15, 20, 10
5	5, 15, 10, 5
	1, 3, 2, 1

LCM = $2 \times 5 \times 3 \times 2 = 60$

So, $\frac{5}{10} = \frac{5 \times 6}{10 \times 6} = \frac{30}{60}, \frac{4}{15} = \frac{4 \times 4}{15 \times 4} = \frac{16}{60}, \frac{3}{20}$

$= \frac{3 \times 3}{20 \times 3} = \frac{9}{60}, \frac{4}{10} = \frac{4 \times 6}{10 \times 6} = \frac{24}{60}$

Thus, $\frac{30}{60}, \frac{16}{60}, \frac{9}{60}, \frac{24}{60}$ are the like fractions.

(c) Given fractions are $\frac{8}{24}, \frac{3}{12}, \frac{4}{6}, \frac{2}{36}$

LCM of denominators = 72

2	24, 12, 6, 36
2	12, 6, 3, 18
3	6, 3, 3, 9
	2, 1, 1, 3

LCM = $2 \times 2 \times 3 \times 2 \times 3 = 72$

So, $\frac{8}{24} = \frac{8 \times 3}{24 \times 3} = \frac{24}{72}, \frac{3}{12} = \frac{3 \times 6}{12 \times 6} = \frac{18}{72}, \frac{4}{6}$

$= \frac{4 \times 12}{6 \times 12} = \frac{48}{72}, \frac{2}{36} = \frac{2 \times 2}{36 \times 2} = \frac{4}{72}$

Thus, $\frac{24}{72}, \frac{18}{72}, \frac{48}{72}, \frac{4}{72}$ are the like fractions.

(d) Given fractions are $\frac{5}{4}, \frac{7}{8}, \frac{6}{12}, \frac{2}{10}$

LCM of denominators = 120

2	4, 8, 12, 10
2	2, 4, 6, 5
	1, 2, 3, 5

LCM = $2 \times 2 \times 2 \times 3 \times 5 = 120$

So, $\frac{5}{4} = \frac{5 \times 30}{4 \times 30} = \frac{150}{120}, \frac{7}{8} = \frac{7 \times 15}{8 \times 15} = \frac{105}{120}, \frac{6}{12}$

$= \frac{6 \times 10}{12 \times 10} = \frac{60}{120}, \frac{2}{10} = \frac{2 \times 12}{10 \times 12} = \frac{24}{120}$

Thus, $\frac{150}{120}, \frac{105}{120}, \frac{60}{120}, \frac{24}{120}$ are like fractions.

5. (a) $5\frac{2}{7} = \frac{5 \times 7 + 2}{7} = \frac{37}{7}$

(b) $4\frac{13}{14} = \frac{4 \times 14 + 3}{14} = \frac{45}{14}$

(c) $9\frac{8}{17} = \frac{9 \times 17 + 8}{17} = \frac{161}{17}$

(d) $6\frac{2}{21} = \frac{6 \times 21 + 2}{21} = \frac{128}{21}$

(e) $4\frac{3}{9} = \frac{4 \times 9 + 3}{9} = \frac{39}{9}$

(f) $11\frac{2}{5} = \frac{11 \times 5 + 2}{5} = \frac{57}{5}$

(g) $6\frac{2}{19} = \frac{6 \times 19 + 2}{19} = \frac{104}{19}$

(h) $4\frac{1}{6} = \frac{4\times6+1}{6} = \frac{25}{6}$

(i) $5\frac{4}{16} = \frac{5\times16+4}{16} = \frac{84}{16}$

(j) $6\frac{2}{18} = \frac{6\times18+2}{18} = \frac{110}{18}$

6. (a) $\frac{33}{5} = 6\frac{3}{5}$ (b) $\frac{26}{7} = 3\frac{5}{7}$

(c) $\frac{14}{9} = 1\frac{5}{9}$ (d) $\frac{20}{19} = 1\frac{1}{19}$

(e) $\frac{60}{18} = 3\frac{6}{18}$ (f) $\frac{130}{7} = 18\frac{4}{7}$

(g) $\frac{212}{8} = 26\frac{4}{8}$ (h) $\frac{139}{15} = 9\frac{4}{15}$

(i) $\frac{249}{21} = 11\frac{18}{21}$ (j) $\frac{305}{18} = 16\frac{17}{18}$

Exercise 6.3

1. (a) $\frac{4}{5}$ and $\frac{3}{5}$ are like fractions.

Since, $3 < 4$, so $\frac{3}{5} < \frac{4}{5}$

(b) $\frac{5}{9}$ and $\frac{7}{9}$ are like fractions.

Since, $5 < 7$, so $\frac{5}{9} < \frac{7}{9}$

(c) $\frac{4}{10}$ and $\frac{7}{10}$ are like fractions.

Since, $4 < 7$, so $\frac{4}{10} < \frac{7}{10}$

(d) $\frac{8}{15}$ and $\frac{2}{15}$ are like fractions.

Since, $2 < 8$, so $\frac{2}{15} < \frac{8}{15}$

2. (a) Fractions $\frac{5}{9}$ and $\frac{5}{7}$ are unlike fractions with same numerator.

Since, $9 > 7$, so $\frac{5}{9} < \frac{5}{7}$

(b) Fractions $\frac{4}{8}$ and $4 = \frac{4}{1}$ are unlike fractions with same numerator.

Since, $8 > 1$, so $\frac{4}{8} < \frac{4}{1}$ or $\frac{4}{8} < 4$.

(c) Fractions $\frac{6}{17}$ and $2\frac{4}{5} = \frac{14}{5}$ are unlike fractions with different numerators.

LCM of denominators 17 and 5 is $17 \times 5 = 85$

So, $\frac{6}{17} = \frac{6\times5}{17\times5} = \frac{30}{85}$

and $\frac{14}{5} = \frac{14\times17}{5\times17} = \frac{238}{85}$

Now, $\frac{30}{85}$ and $\frac{238}{85}$ are like fractions.

Since, $\frac{30}{85} < \frac{238}{85}$, so $\frac{6}{17} < \frac{14}{5}$

(d) Fractions $1\frac{5}{9} = \frac{14}{9}$ and $2\frac{4}{3} = \frac{10}{3}$ are unlike fractions.

LCM of denominators 9 and 3 is 9.

So, $\frac{14}{9}$ and $\frac{10}{3} = \frac{10\times3}{3\times3} = \frac{30}{9}$ are like fractions.

Since, $\frac{14}{9} < \frac{30}{9}$, so $\frac{14}{9} < \frac{10}{3}$ or $1\frac{5}{9} < 2\frac{4}{3}$

3. (a) We have $\frac{7}{8}$ and $\frac{2}{12}$

So, $7 \times 12 = 84$ and $2 \times 8 = 18$

Since, $84 > 16$, So, $\frac{7}{8} \boxed{>} \frac{2}{12}$

(b) We have $\frac{18}{25}$ and $\frac{5}{10}$

So, $18 \times 10 = 180$ and $5 \times 25 = 125$

Since, $180 > 125$, so $\frac{18}{25} \boxed{>} \frac{5}{10}$

(c) We have $\frac{4}{9}$ and $\frac{2}{7}$

So, $4 \times 7 = 28$ and $2 \times 9 = 18$

Since, $28 > 18$, so $\frac{4}{9} \boxed{>} \frac{2}{7}$

(d) We have $1\frac{4}{9} = \frac{13}{9}$ and $18 = \frac{18}{1}$

So, $13 \times 1 = 13$ and $9 \times 18 = 162$

Since, $13 < 162$

So, $\frac{13}{9} < \frac{18}{1}$ or $1\frac{4}{9} \boxed{<} 18$

4. (a) Fractions $\frac{4}{9}, \frac{3}{9}, \frac{7}{9}, \frac{8}{9}, \frac{2}{9}$ are like fractions.

Since, $2 < 3 < 4 < 7 < 8$,

so $\frac{2}{9} \boxed{<} \frac{3}{9} \boxed{<} \frac{4}{9} \boxed{<} \frac{7}{9} \boxed{<} \frac{8}{9}$

(b) Fractions $\frac{21}{26}, \frac{21}{18}, \frac{21}{16}, \frac{21}{25}$ are unlike fractions with same numerators.

Since, $26 < 25 < 18 < 16$, so $\frac{21}{26} < \frac{21}{25} < \frac{21}{18} < \frac{21}{16}$

(c) Fractions $\frac{15}{20}, \frac{4}{15}, \frac{2}{5}, \frac{8}{10}$ are unlike fractions.

LCM of 20, 15, 5, 10 is 60.

So, $\frac{15}{20} = \frac{15 \times 3}{20 \times 3} = \frac{45}{60}, \frac{4}{15} = \frac{4 \times 4}{15 \times 4} = \frac{16}{60}, \frac{2}{5}$

$= \frac{2 \times 12}{5 \times 12} = \frac{24}{60}, \frac{8}{10} = \frac{8 \times 6}{10 \times 6} = \frac{48}{60}$

Since, $16 < 24 < 45 < 48$,

so $\frac{16}{60} < \frac{24}{60} < \frac{45}{60} < \frac{48}{60}$ or $\frac{4}{15} < \frac{2}{5} < \frac{15}{20} < \frac{8}{10}$

(d) We have $1\frac{2}{4} = \frac{6}{4}, 2\frac{4}{9} = \frac{22}{9}$,

$5\frac{3}{7} = \frac{38}{7}$ and $4\frac{1}{8} = \frac{33}{8}$

LCM of 4, 9, 7 and 8 is 504.

$\frac{6}{4} = \frac{6 \times 126}{4 \times 126} = \frac{756}{504}, \frac{22}{9} = \frac{22 \times 56}{9 \times 56} = \frac{1232}{504}$,

2	4, 9, 7, 8
2	2, 9, 7, 4
	1, 9, 7, 2

LCM = $2 \times 2 \times 2 \times 9 \times 7 = 504$

$\frac{38}{7} = \frac{38 \times 72}{7 \times 72} = \frac{2736}{504}, \frac{33}{8} = \frac{33 \times 63}{8 \times 63} = \frac{2079}{504}$

Since $\frac{756}{504} < \frac{1232}{504} < \frac{2079}{504} < \frac{2736}{504}$

so, $1\frac{2}{4} < 2\frac{4}{9} < 4\frac{1}{8} < 5\frac{3}{7}$

5. (a) Fractions $\frac{7}{9}, \frac{4}{9}, \frac{6}{9}, \frac{1}{9}$ are like fractions.

Since, $7 > 6 > 4 > 1$, so $\frac{7}{9} > \frac{6}{9} > \frac{4}{9} > \frac{1}{9}$

(b) $\frac{5}{18}, \frac{5}{10}, \frac{5}{14}, \frac{5}{25}$ are unlike fractions with same numeration.

Since, $10 < 14 < 18 < 25$, so $\frac{5}{10} > \frac{5}{14} > \frac{5}{18} > \frac{5}{25}$

(c) Fractions $\frac{4}{6}, \frac{7}{12}, \frac{6}{24}, \frac{8}{48}$ are unlike fractions.

LCM of denominators = 48

So, $\frac{4}{6} = \frac{4 \times 8}{6 \times 8} = \frac{32}{48}, \frac{7}{12} = \frac{7 \times 4}{12 \times 4} = \frac{28}{48}, \frac{6}{24}$

$= \frac{6 \times 3}{24 \times 3} = \frac{18}{72}$ and $\frac{8}{48}$

Since, $32 > 28 > 18 > 8$, so $\frac{32}{48} > \frac{28}{48} > \frac{18}{48} > \frac{8}{48}$

(d) We have $3\frac{2}{7} = \frac{3 \times 7 + 2}{7} = \frac{23}{7}, 4\frac{2}{3}$

$= \frac{4 \times 3 + 2}{3} = \frac{14}{3}, 6\frac{3}{8} = \frac{6 \times 8 + 3}{8}$

$= \frac{51}{8}, 5\frac{1}{7} = \frac{5 \times 7 + 1}{7} = \frac{36}{7}$

LCM of 7, 3 and 8 = 168

So, $\frac{23}{7} = \frac{23 \times 24}{7 \times 24} = \frac{552}{168}, \frac{14}{3} = \frac{14 \times 56}{3 \times 56}$

$= \frac{784}{168}, \frac{51}{8} = \frac{51 \times 21}{8 \times 21} = \frac{1071}{168}, \frac{36}{7}$

$= \frac{36 \times 24}{7 \times 24} = \frac{864}{168}$

Since, $1071 < 864 < 784 < 552$,

so $6\frac{3}{8} < 5\frac{1}{7} < 4\frac{2}{3} < 5\frac{1}{7}$

6. (a) Portion of cake eaten by Savita = $\frac{3}{8}$

Portion of cake eaten by Ruchi = $\frac{5}{9}$

$\frac{3}{8}$ and $\frac{5}{9}$ are unlike fraction.

LCM of denominators = 72

So, $\frac{3}{8} = \frac{3 \times 9}{8 \times 9} = \frac{27}{72}$ and $\frac{5}{9} = \frac{5 \times 8}{9 \times 8} = \frac{40}{72}$

Since $\frac{27}{72} > \frac{40}{72}$ or $\frac{3}{8} > \frac{5}{9}$

So, Savita eats more portion of cake than Ruchi.

(b) Length of ribbon Sunita has $= 5\frac{3}{4}\text{m} = \frac{23}{4}\text{m}$

Length of ribbon Sonia has $= 4\frac{9}{12}\text{m} = \frac{57}{12}\text{m}$

$\frac{23}{4}$ and $\frac{57}{12}$ are unlike fractions.

LCM of denominators = 12

So, $\frac{23}{4} = \frac{23\times 3}{4\times 3} = \frac{69}{12}$ and $\frac{57}{12}$ are like fraction.

Since, $\frac{57}{12} < \frac{69}{12}$ or $4\frac{9}{12} < 5\frac{3}{4}$

So, Sonia has less ribbon than Sunita.

(c) Distance travelled by Mr. Abir on Monday

$= 35\frac{3}{5}\text{km}$

Distance travelled by Mr. Abir on Tuesday

$= 42\frac{2}{7}\text{km}$

Distance travelled by Mr. Abir on Wednesday

$= 18\frac{2}{12}\text{km}$

Comparing the whole number part of each fraction, we get $42\frac{2}{7}\text{km} > 35\frac{3}{5}\text{km} > 18\frac{2}{12}\text{km}$

So, Mr. Abir travels the most on Tuesday.

Exercise 6.4

1. (a) $\frac{4}{7}+\frac{2}{7}=\frac{4+2}{7}=\frac{6}{7}$

(b) $\frac{2}{9}+\frac{4}{9}=\frac{2+4}{9}=\frac{6}{9}$

(c) $\frac{7}{20}+\frac{2}{20}+\frac{10}{20}=\frac{7+2+10}{20}=\frac{19}{20}$

(d) $\frac{16}{29}+\frac{1}{29}+\frac{3}{29}=\frac{16+1+3}{29}=\frac{20}{29}$

2. (a) $\frac{5}{7}+\frac{5}{9}=\frac{5\times 9}{7\times 9}+\frac{5\times 7}{9\times 7}=\frac{45}{63}+\frac{35}{63}$

[LCM of 7 and 9 = 63]

$=\frac{45+35}{63}=\frac{80}{63}=1\frac{17}{80}$

(b) $\frac{3}{8}+\frac{2}{7}=\frac{3\times 7}{8\times 7}+\frac{2\times 8}{7\times 8}=\frac{21}{56}+\frac{16}{56}$

[LCM of 8 and 7 = 56]

$=\frac{21+16}{56}=\frac{21+16}{56}=\frac{37}{56}$

(c) $\frac{5}{7}+\frac{3}{14}+\frac{1}{2}=\frac{5\times 2}{7\times 2}+\frac{3\times 1}{14\times 1}+\frac{1\times 7}{2\times 7}$

$=\frac{10}{14}+\frac{3}{14}+\frac{7}{14}$ [LCM of 7, 14, 2 is 14]

$=\frac{10+3+7}{14}=\frac{20}{14}=1\frac{6}{14}$

(d) $\frac{1}{2}+\frac{1}{3}+\frac{2}{5}=\frac{1\times 15}{2\times 15}+\frac{1\times 10}{3\times 10}+\frac{2\times 6}{5\times 6}$

$=\frac{15}{30}+\frac{10}{30}+\frac{12}{30}$ [LCM of 2, 3, 5 is 30]

$=\frac{15+10+12}{30}=\frac{37}{30}=1\frac{7}{30}$

3. (a) $4\frac{3}{7}+2\frac{2}{21}=\frac{31}{7}+\frac{44}{21}=\frac{31\times 3}{7\times 3}+\frac{44\times 1}{21\times 1}$

$=\frac{93}{21}+\frac{44}{21}$ [LCM of 7 and 21 is 21]

$=\frac{93+44}{21}=\frac{127}{21}=6\frac{1}{21}$

(b) $5\frac{1}{4}+2\frac{2}{12}=\frac{21}{4}+\frac{26}{12}=\frac{21\times 3}{4\times 3}+\frac{26\times 1}{12\times 1}$

$=\frac{63}{12}+\frac{26}{12}$ [LCM of 4 and 12 is 12]

$=\frac{63+26}{12}=\frac{89}{12}=7\frac{5}{12}$

(c) $3\frac{2}{5}+2\frac{3}{10}+2\frac{1}{4}=\frac{17}{5}+\frac{23}{10}+\frac{9}{4}$

$=\frac{17\times 4}{5\times 4}+\frac{23\times 2}{10\times 2}+\frac{9\times 5}{4\times 5}=\frac{68}{20}+\frac{46}{20}+\frac{45}{20}$

[LCM of 5, 10 and 4 is 20]

$=\frac{68+46+45}{20}=\frac{159}{20}=7\frac{19}{20}$

(d) $1\frac{3}{16}+2\frac{7}{20}+1\frac{3}{10}=\frac{19}{16}+\frac{47}{20}+\frac{13}{10}$

$=\frac{19\times 5}{16\times 5}+\frac{47\times 4}{20\times 4}+\frac{13\times 8}{10\times 8}$

$=\frac{95}{80}+\frac{168}{80}+\frac{104}{80}$

[LCM of 16, 20 and 10 is 80]

$$= \frac{95+168+104}{80} = \frac{367}{80} = 4\frac{47}{80}$$

4. (a) $8 + \frac{2}{4} + 1\frac{3}{5} = \frac{8}{1} + \frac{2}{4} + \frac{8}{5}$

$$= \frac{8\times 20}{1\times 20} + \frac{2\times 5}{4\times 5} + \frac{8\times 4}{5\times 4} = \frac{160}{20} + \frac{10}{20} + \frac{32}{20}$$

[LCM of 4 and 5 is 20]

$$= \frac{160+10+72}{20} = \frac{202}{20} = \frac{101}{10} = 10\frac{1}{10}$$

(b) $1\frac{4}{5} + 16 + \frac{4}{15} = \frac{9}{5} + \frac{16}{1} + \frac{4}{15}$

$$= \frac{9\times 3}{5\times 3} + \frac{16\times 15}{1\times 15} + \frac{4\times 1}{15\times 1}$$

$$= \frac{27}{15} + \frac{240}{15} + \frac{4}{15}$$ [LCM of 5, 15 is 15]

$$= \frac{27+240+4}{15} = \frac{271}{15} = 18\frac{1}{15}$$

(c) $6\frac{2}{4} + \frac{4}{9} + \frac{2}{6} = \frac{26}{4} + \frac{4}{9} + \frac{2}{6}$

$$= \frac{26\times 9}{4\times 9} + \frac{4\times 4}{9\times 4} + \frac{2\times 6}{6\times 6}$$

$$= \frac{234}{36} + \frac{16}{36} + \frac{12}{36}$$ [LCM of 4, 9, 6 = 36]

$$= \frac{234+16+12}{36} = \frac{262}{36} = \frac{131}{18} = 7\frac{5}{18}$$

(d) $\frac{10}{14} + \frac{6}{16} + 5 = \frac{10\times 8}{14\times 8} + \frac{6\times 7}{16\times 7} + \frac{5\times 112}{1\times 112}$

$$= \frac{80}{112} + \frac{42}{112} + \frac{560}{112}$$

[LCM of 14 and 16 = 112]

$$= \frac{80+42+560}{112} = \frac{682}{112} = \frac{341}{56} = 6\frac{5}{56}$$

5. (a) Length of cloth bought by Radhika

$= 2\frac{1}{4}\text{m} = \frac{9}{4}\text{m}$

Length of cloth bought by Kritika

$= 3\frac{5}{12}\text{m} = \frac{41}{12}\text{m}$

Length of cloth bought by Anamika = 4 m

Total Length of cloth they bought

$$= \frac{9}{4} + \frac{41}{12} + 4$$

$$= \frac{9\times 3 + 41\times 1 + 4\times 12}{12}$$

$$= \frac{27+41+48}{12}$$

$$= \frac{116}{12} = \frac{29}{3} = 9\frac{2}{3}\text{m}$$

(b) The part of wall painted by Anuradha = $\frac{3}{8}$

The part of wall painted by Vinayak = $\frac{5}{8}$

Total part of wall painted by both = $\frac{3}{8} + \frac{5}{8}$

$$= \frac{3+5}{8} = \frac{8}{8} = 1$$

(c) Weight of potatoes = $3\frac{1}{2}\text{kg} = \frac{7}{2}\text{kg}$

Weight of tomatoes = $1\frac{1}{2}\text{kg} = \frac{3}{2}\text{kg}$

Weight of garlic = $\frac{1}{4}\text{kg}$

Weight of onions = $2\frac{1}{4}\text{kg} = \frac{9}{4}\text{kg}$

Total weight of vegetables the bought

$$= \frac{7}{2} + \frac{3}{2} + \frac{1}{4} + \frac{9}{4}$$

$$= \frac{14+6+1+9}{4} = \frac{30}{4} = \frac{15}{2} = 7\frac{1}{2}\text{kg}$$

Exercise 6.5

1. (a) $\frac{4}{9} - \frac{2}{9} = \frac{4-2}{9} = \frac{2}{9}$

(b) $\frac{8}{12} - \frac{3}{12} = \frac{8-3}{12} = \frac{5}{12}$

(c) $\frac{6}{11} - \frac{5}{11} = \frac{6-5}{11} = \frac{1}{11}$

(d) $\frac{9}{13} - \frac{2}{13} = \frac{9-2}{13} = \frac{7}{13}$

2. (a) $\frac{8}{15} - \frac{2}{10} = \frac{8\times 2}{15\times 2} - \frac{2\times 3}{10\times 3} = \frac{16}{30} - \frac{6}{30}$

[LCM of 15 and 10 = 30]

$$= \frac{16-6}{30} = \frac{10}{30} = \frac{1}{3}$$

(b) $\frac{3}{14}-\frac{4}{21}=\frac{3\times3}{14\times3}-\frac{4\times2}{21\times2}$

$=\frac{9}{42}-\frac{8}{42}$ [LCM of 14 and 21 = 42]

$=\frac{9-8}{42}=\frac{1}{42}$

(c) $\frac{6}{20}-\frac{4}{15}=\frac{6\times3}{20\times3}-\frac{4\times4}{15\times4}=\frac{18}{60}-\frac{16}{60}$

[LCM of 20 and 15 = 60]

$=\frac{18-16}{60}=\frac{2}{60}=\frac{1}{30}$

(d) $\frac{9}{25}-\frac{4}{50}=\frac{9\times2}{25\times2}-\frac{4\times1}{50\times1}=\frac{18}{50}-\frac{4}{50}$

[LCM of 25 and 50 = 50]

$=\frac{18-4}{50}=\frac{14}{50}=\frac{7}{25}$

3. (a) $8\frac{1}{4}-2\frac{7}{8}=\frac{33}{4}-\frac{23}{4}$ [LCM of 4 and 8 = 8]

$=\frac{33-23}{4}=\frac{10}{4}=\frac{5}{2}=2\frac{1}{2}$

(b) $6\frac{2}{5}-3\frac{4}{8}=\frac{32}{5}-\frac{28}{8}=\frac{32\times8}{5\times8}-\frac{28\times5}{8\times5}$

$=\frac{256}{40}-\frac{140}{40}$ [LCM of 5 and 8 = 40]

$=\frac{256-140}{40}=\frac{116}{40}=\frac{29}{10}=2\frac{9}{10}$

(c) $4\frac{1}{7}-1\frac{4}{5}=\frac{29}{7}-\frac{9}{5}=\frac{29\times5}{7\times5}-\frac{9\times7}{5\times7}$

$=\frac{145}{35}-\frac{63}{35}$ [LCM of 7 and 5 = 35]

$=\frac{145-63}{35}=\frac{82}{35}=2\frac{12}{35}$

(d) $9\frac{3}{8}-4\frac{2}{14}=\frac{75}{8}-\frac{58}{14}=\frac{75\times7}{8\times7}-\frac{58\times4}{14\times4}$

$=\frac{525}{56}-\frac{232}{56}=\frac{525-232}{56}$

$=\frac{293}{56}=5\frac{13}{56}$

4. (a) $15-\frac{4}{5}=\frac{15}{1}-\frac{4}{5}=\frac{15\times5}{1\times5}-\frac{4\times1}{5\times1}$

$=\frac{75}{5}-\frac{4}{5}=\frac{75-4}{5}=\frac{71}{5}=14\frac{1}{5}$

(b) $16-4\frac{3}{8}=\frac{16}{1}-\frac{35}{8}=\frac{16\times8}{1\times8}-\frac{35\times1}{8\times1}$

$=\frac{128}{8}-\frac{35}{8}=\frac{128-35}{8}=\frac{93}{8}=11\frac{5}{8}$

(c) $\frac{14}{21}+4\frac{1}{2}-\frac{5}{8}=\frac{14}{21}+\frac{9}{2}-\frac{5}{8}$

$=\frac{14\times8}{21\times8}+\frac{9\times84}{2\times84}-\frac{5\times21}{8\times21}$

$=\frac{112}{168}+\frac{756}{168}-\frac{105}{168}=\frac{112+756-105}{168}$

$=\frac{868-105}{168}=\frac{763}{168}$

$=4\frac{91}{168}$

$\begin{array}{c|l} 2 & 21, 2, 8 \\ \hline & 21, 1, 4 \end{array}$

$\begin{array}{r} 4 \\ 168\overline{)763} \\ -672 \\ \hline 91 \end{array}$

(d) $9+10\frac{1}{2}-4\frac{1}{4}=\frac{9}{1}+\frac{21}{2}-\frac{17}{4}$

$=\frac{9\times4}{1\times4}+\frac{21\times2}{2\times2}-\frac{17\times1}{4\times1}=\frac{36}{4}+\frac{42}{4}-\frac{17}{4}$

$=\frac{36+42-17}{4}=\frac{78-17}{4}$

$=\frac{61}{4}=15\frac{1}{4}$

5. (a) Part of guava eaten by Lata $=8\frac{1}{2}=\frac{17}{2}$

Part of guava eaten by Sonam $=\frac{9}{2}$

Since, $\frac{17}{2}-\frac{9}{2}=\frac{17-9}{2}=\frac{8}{2}=4$

Thus, Lata ate 2 more guavas than Sonam.

(b) Distance Covered by Rahul

$=60\frac{1}{2}\text{m}=\frac{121}{2}\text{m}$

Distance Covered by Rama

$=52\frac{5}{8}\text{m}=\frac{421}{8}\text{m}$

Since, $\frac{121\times4}{2\times4}=\frac{484}{8}$ and $\frac{421}{8}$

So, $\frac{484}{8}-\frac{421}{8}=\frac{484-421}{8}$

$=\frac{63}{8}=7\frac{7}{8}$m.

Thus, Rahul ran $7\frac{7}{8}$m more than Rama.

(c) The weight of rice bought by Monika

$=20\frac{1}{2}$kg $=\frac{41}{2}$kg

The weight of rice bought by Niharika

$=25\frac{5}{10}$kg $=\frac{255}{10}$kg

Since, $\frac{41}{2}=\frac{41\times5}{2\times5}=\frac{205}{10}$ and $\frac{255}{10}$

And $\frac{255}{10}-\frac{205}{10}=\frac{255-205}{10}=\frac{50}{10}=5$

Thus, Niharika bought 5 kg more rice than Monika.

(d) Quantity of milk bought by Mrs. Leela

$=\frac{15}{4}$L

Quantity of milk consumed in morning

$=1\frac{2}{5}$L $=\frac{7}{5}$L

Quantity of milk consumed in evening

$=1\frac{1}{4}$L $=\frac{5}{4}$L

Quantity of milk left with Mrs. Leela

$=\frac{15}{4}-\frac{7}{5}-\frac{5}{4}=\frac{15\times5}{4\times5}-\frac{7\times4}{5\times4}-\frac{5\times5}{4\times5}$

$=\frac{75}{20}-\frac{28}{20}-\frac{25}{20}=\frac{75-28-25}{20}=\frac{75-53}{20}$

$=\frac{22}{20}=\frac{11}{10}=1\frac{1}{10}$L

Exercise 6.6

1. (a) $\frac{5}{6}\times9=\frac{5\times\cancel{9}^{3}}{\cancel{6}_{2}}=\frac{15}{2}=7\frac{1}{2}$

(b) $\frac{4}{10}\times45=\frac{\cancel{4}^{2}\times\cancel{45}^{9}}{\cancel{10}_{2_1}}=2\times9=18$

(c) $\frac{3}{7}\times8=\frac{3\times8}{7}=\frac{24}{7}=3\frac{3}{7}$

(d) $\frac{6}{24}\times\frac{2}{30}=\frac{\cancel{6}^{1}\times\cancel{2}^{1}}{\cancel{24}_{4_2}\times30}=\frac{1}{2\times30}=\frac{1}{60}$

(e) $\frac{5}{21}\times\frac{6}{42}=\frac{5\times\cancel{6}^{1}}{21\times\cancel{42}_{7}}=\frac{5\times1}{21\times7}=\frac{5}{147}$

(f) $\frac{9}{24}\times\frac{4}{18}=\frac{\cancel{9}^{1}\times\cancel{4}^{1}}{\cancel{24}_{6}\times\cancel{18}_{2}}=\frac{1}{12}$

(g) $\frac{5}{8}\times\frac{3}{8}=\frac{5\times3}{8\times8}=\frac{15}{64}$

(h) $\frac{7}{32}\times\frac{8}{35}=\frac{\cancel{7}^{1}\times\cancel{8}^{1}}{\cancel{32}_{4}\times\cancel{35}_{5}}=\frac{1}{4\times5}=\frac{1}{20}$

2. (a) $3\frac{4}{8}\times16=\frac{28}{8}\times16=\frac{28\times\cancel{16}^{2}}{\cancel{8}_{1}}=56$

(b) $4\frac{1}{12}\times3\frac{1}{8}=\frac{49}{12}\times\frac{25}{8}$

$=\frac{49\times25}{12\times8}$

$=\frac{1225}{96}=12\frac{73}{96}$

$$\begin{array}{r} 12 \\ 96\overline{)1225} \\ -\ 96 \\ \hline 265 \\ -\ 192 \\ \hline 73 \end{array}$$

(c) $4\frac{1}{16}\times2\frac{6}{11}=\frac{65}{\cancel{16}_{4}}\times\frac{\cancel{28}^{7}}{11}=\frac{65\times7}{4\times11}$

$=\frac{455}{44}=10\frac{15}{44}$

(d) $4\frac{2}{25}\times1\frac{1}{9}=\frac{102}{\cancel{25}_{5}}\times\frac{\cancel{10}^{2}}{9}=\frac{204}{45}=4\frac{24}{45}$

$$\begin{array}{r} 4 \\ 45\overline{)204} \\ -\ 180 \\ \hline 24 \end{array}$$

(e) $4\frac{2}{17}\times1\frac{2}{15}=\frac{\cancel{70}^{14}}{\cancel{17}_{1}}\times\frac{\cancel{17}^{1}}{\cancel{15}_{3}}=\frac{14}{3}=4\frac{2}{3}$

(f) $3\frac{1}{3}\times12\frac{3}{4}=\frac{\cancel{10}^{5}}{\cancel{3}_{1}}\times\frac{\cancel{51}^{17}}{\cancel{4}_{2}}=\frac{5\times17}{1\times2}=\frac{85}{2}=42\frac{1}{2}$

(g) $6\frac{1}{4} \times 3\frac{1}{5} = \frac{\cancel{25}^{5}}{\cancel{4}_{1}} \times \frac{\cancel{16}^{4}}{\cancel{5}_{1}} = \frac{5 \times 4}{1 \times 1} = \frac{20}{1} = 20$

(h) $8\frac{1}{6} \times 72 = \frac{49}{\cancel{6}_{1}} \times \frac{\cancel{72}^{12}}{1} = 49 \times 12 = 588$

3. (a) $\frac{1}{3}$ of $\frac{1}{6} = \frac{1}{3} \times \frac{1}{6} = \frac{1 \times 1}{3 \times 6} = \frac{1}{18}$

(b) $\frac{1}{9}$ of $\frac{1}{2} = \frac{1}{9} \times \frac{1}{2} = \frac{1 \times 1}{9 \times 2} = \frac{1}{18}$

(c) $\frac{5}{8}$ of $\frac{4}{6} = \frac{5}{\cancel{8}_{2}} \times \frac{\cancel{4}^{1}}{6} = \frac{5}{2} \times \frac{1}{6} = \frac{5}{12}$

(d) $\frac{3}{8}$ of $64 = \frac{3}{8} \times 64 = \frac{3}{\cancel{8}_{1}} \times \frac{\cancel{64}^{8}}{1} = \frac{3 \times 8}{1 \times 1}$

$= \frac{24}{1} = 24$

(e) $\frac{7}{8}$ of $\frac{16}{42} = \frac{\cancel{7}^{1}}{\cancel{8}_{1}} \times \frac{\cancel{16}^{\cancel{2}^{1}}}{\cancel{42}_{\cancel{6}_{3}}} = \frac{1 \times 1}{1 \times 3} = \frac{1}{3}$

(f) $\frac{4}{5}$ of $2\frac{2}{5} = \frac{4}{5} \times \frac{12}{5} = \frac{48}{25} = 1\frac{13}{25}$

(g) $8\frac{1}{3}$ of $4\frac{1}{5} = \frac{\cancel{25}^{5}}{\cancel{3}_{1}} \times \frac{\cancel{21}^{7}}{\cancel{5}_{1}} = \frac{5 \times 7}{1 \times 1} = \frac{35}{1} = 35$

(h) $\frac{9}{13}$ of $65 = \frac{9}{\cancel{13}_{1}} \times \frac{\cancel{65}^{5}}{1} = \frac{9 \times 5}{1 \times 1} = \frac{45}{1} = 45$

4. (a) The cost of 1 litre of milk $= ₹\, 38\frac{2}{5} = ₹\, \frac{192}{5}$

The cost of $8\frac{1}{2}$ litre of milk $= ₹\, \frac{192}{5} \times 8\frac{1}{2}$

$= ₹\, \frac{\cancel{192}^{96}}{5} \times \frac{17}{\cancel{2}_{1}} = ₹\, \frac{1632}{5} = ₹\, 326\frac{2}{5}$

(b) The cost of 1 dozen of bananas

$= ₹\, 50\frac{1}{4} = ₹\, \frac{201}{4}$

The cost of $6\frac{1}{2} = \frac{13}{2}$ dozen of bananas

$= ₹\, \frac{201}{4} \times \frac{13}{2} = ₹\, \frac{2613}{8} = ₹\, 326\frac{5}{8}$

(c) The weight of 1 basket of mangoes

$= 16\frac{1}{4}\text{kg} = \frac{65}{4}\text{kg}$

The weight of 8 basket of mangoes

$= \frac{65}{\cancel{4}_{1}} \times \cancel{8}^{2} = 130$ kg

(d) The distance covered by Abdul in 1 hour

$= 5\frac{3}{4}\text{km} = \frac{23}{4}\text{km}$

The distance covered by Abdul in $2\frac{1}{8}$,

i.e. $\frac{17}{8}$ hours $= \frac{23}{4} \times \frac{17}{8} = \frac{391}{32} = 12\frac{7}{32}$ kg.

(e) Marks scored by lovely

$= \frac{5}{8}$ of $40 = \frac{5}{\cancel{8}_{1}} \times \cancel{40}^{5} = 5 \times 5 = 25$

Exercise 6.7

1. (a) $12 \div \frac{2}{5} = 12 \times \frac{5}{2} = \frac{\cancel{12}^{6}}{1} \times \frac{5}{\cancel{2}_{1}} = 6 \times 5 = 30$

(b) 24 by $\frac{3}{9} = 24 \div \frac{3}{9} = \frac{\cancel{24}^{8}}{1} \times \frac{9}{\cancel{3}_{1}} = 8 \times 9 = 72$

(c) $\frac{6}{10}$ by $8 = \frac{6}{10} \div 8 = \frac{\cancel{6}^{3}}{10} \times \frac{1}{\cancel{8}_{4}} = \frac{3 \times 1}{10 \times 4} = \frac{3}{40}$

(d) $\frac{34}{12} \div 9 = \frac{34}{12} \times \frac{1}{9} = \frac{\cancel{34}^{17}}{\cancel{108}_{54}} = \frac{17}{54}$

2. (a) $14 \div \frac{4}{9} = \frac{\cancel{14}^{7}}{1} \times \frac{9}{\cancel{4}_{2}} = \frac{7 \times 9}{1 \times 2} = \frac{63}{2} = 31\frac{1}{2}$

(b) $25 \div \frac{5}{8} = \cancel{25}^{5} \times \frac{8}{\cancel{5}_{1}} = 5 \times 8 = 40$

(c) $\frac{18}{24} \div 15 = \frac{\cancel{18}^{\cancel{6}^{1}}}{\cancel{24}_{4}} \div \frac{1}{\cancel{15}_{5}} = \frac{1 \times 1}{4 \times 5} = \frac{1}{20}$

(d) $\frac{33}{198} \div 121 = \frac{\cancel{33}^{\cancel{3}^{1}}}{\cancel{198}_{66}} \times \frac{1}{\cancel{121}_{11}} = \frac{1 \times 1}{66 \times 11} = \frac{1}{726}$

3. (a) $\frac{14}{42} \div \frac{56}{63} = \frac{\cancel{14}^{1}}{\cancel{42}_{\cancel{6}_{2}}} \times \frac{\cancel{63}^{\cancel{9}^{3}}}{\cancel{56}_{4}} = \frac{1 \times 3}{2 \times 4} = \frac{3}{8}$

(b) $\frac{48}{72} \div \frac{60}{63} = \frac{\cancel{48}^{\cancel{4}^{1}}}{\cancel{72}_{\cancel{8}_{2}}} \times \frac{\cancel{63}^{7}}{\cancel{60}_{5}} = \frac{1 \times 7}{2 \times 5} = \frac{7}{10}$

(c) $\frac{32}{42} \div \frac{38}{70} = \frac{\cancel{32}^{16}}{\cancel{42}_{3}} \times \frac{\cancel{70}^{5}}{\cancel{38}_{19}} = \frac{16 \times 5}{3 \times 19} = \frac{80}{57} = 1\frac{23}{57}$

(d) $\frac{15}{45} \div \frac{10}{15} = \frac{\cancel{15}^{1}}{\cancel{45}_{\cancel{3}_{1}}} \times \frac{\cancel{15}^{\cancel{3}^{1}}}{\cancel{10}_{2}} = \frac{1 \times 1}{1 \times 2} = \frac{1}{2}$

4. (a) $8\frac{1}{6} \div 2\frac{3}{4} = \frac{49}{6} \div \frac{11}{4} = \frac{49}{6} \times \frac{\cancel{4}^{2}}{11} = \frac{98}{33} = 2\frac{32}{33}$

(b) $6\frac{3}{8} \div 2\frac{1}{4} = \frac{51}{8} \div \frac{9}{4} = \frac{\cancel{51}^{17}}{\cancel{8}_{2}} \times \frac{\cancel{4}^{1}}{\cancel{9}_{3}} = \frac{17 \times 1}{2 \times 9} = \frac{17}{18}$

(c) $5\frac{3}{4} \div \frac{23}{8} = \frac{23}{4} \div \frac{23}{8} = \frac{\cancel{23}^{1}}{\cancel{4}_{1}} \times \frac{\cancel{8}^{2}}{\cancel{23}_{1}}$

$= \frac{1 \times 2}{1 \times 1} = \frac{2}{1} = 2$

(d) $8\frac{4}{5} \div 33 = \frac{44}{5} \div 33 = \frac{\cancel{44}^{4}}{5} \times \frac{1}{\cancel{33}_{3}} = \frac{4 \times 1}{5 \times 3} = \frac{4}{15}$

5. (a) The cost of $-$ m. i.e. $\frac{42}{5}$ m. of ribbon $= ₹56$

The cost of 1 m of ribbon $= ₹56 \div \frac{42}{5}$

$= ₹\cancel{56}^{8^{4}} \times \frac{5}{\cancel{42}_{6_{3}}} = ₹\frac{20}{3} = ₹6\frac{2}{3}$

(b) The cost of $3\frac{2}{3}$L i.e. $\frac{11}{3}$L of milk

$= ₹15\frac{8}{9} = ₹\frac{143}{9}$

The cost of 1 liter of milk $= ₹\frac{143}{9} \div \frac{11}{3}$

$= ₹\frac{\cancel{143}^{13}}{\cancel{9}_{3}} \times \frac{\cancel{3}^{1}}{\cancel{11}_{1}} = ₹\frac{13 \times 1}{3 \times 1} = ₹\frac{13}{3} = ₹3\frac{4}{3}$

(c) Total length of rope $= 17\frac{1}{2}\text{m} = \frac{35}{2}\text{m}$

Number of pieces in which rope is cut = 15

So, the length of 1 piece of rope $= \frac{35}{2} \div \frac{15}{1}$

$= \frac{\cancel{35}^{7}}{2} \times \frac{1}{\cancel{15}_{3}} = \frac{7 \times 1}{2 \times 3}$

$= \frac{7}{6} = 1\frac{1}{6}\text{m}.$

(d) Total weight of sweets given to 19 children

$= 12\frac{2}{3}\text{kg} = \frac{38}{3}\text{kg}$

weight of sweets given to 1 child

$= \frac{38}{3} \div 19 = \frac{\cancel{38}^{2}}{3} \times \frac{1}{\cancel{19}_{1}}$

$= \frac{2 \times 1}{3 \times 1} = \frac{2}{3}$

(e) Product of two number $= 24\frac{3}{4} = \frac{99}{3}$

One of the given number $= 4\frac{1}{2} = \frac{9}{2}$

Other given number $= \frac{99}{3} \div \frac{9}{2} = \frac{\cancel{99}^{11}}{3} \times \frac{2}{\cancel{9}_{1}}$

$= \frac{11 \times 2}{3 \times 1} = \frac{22}{3} = 7\frac{1}{3}$

(f) Distance travelled by car in $2\frac{1}{5}$ hours $= 121$ km

Distance travelled by car in 1 hour

$= 121 \div 2\frac{1}{5} = 121 \div \frac{11}{5} = \frac{\cancel{121}^{11}}{1} \times \frac{5}{\cancel{11}_{1}}$

$= 11 \times 5 = 55$ km

Revision Exercise

1. (a) $\frac{5}{4} = \frac{5 \times 5}{4 \times 5} = \frac{25}{20}$

so, $\frac{5}{4} = \frac{\boxed{25}}{20}$

(b) $\frac{8}{24} = \frac{8 \div 8}{24 \div 8} = \frac{1}{\boxed{3}}$

so, $\frac{8}{24} = \frac{1}{\boxed{3}}$

(c) $\frac{4}{5} = \frac{4 \times 2}{5 \times 2} = \frac{8}{10}$

so, $\frac{4}{5} = \frac{8}{\boxed{10}}$

(d) $\frac{48}{64} = \frac{48 \div 8}{64 \div 8} = \frac{6}{8}$

so, $\frac{6}{\boxed{8}} = \frac{48}{64}$

2. (a) $3\frac{3}{7} = \frac{3 \times 7 + 3}{7} = \frac{24}{7}$

(b) $5\frac{2}{7} = \frac{5 \times 7 + 2}{7} = \frac{37}{7}$

(c) $11\frac{4}{9} = \frac{11 \times 9 + 4}{9} = \frac{103}{9}$

(d) $20\frac{2}{3} = \frac{20 \times 3 + 2}{3} = \frac{62}{3}$

3. (a) We have $\frac{4}{15}$ and $\frac{8}{35}$

LCM of 15 and 35 is 105

So, $\frac{4}{15}=\frac{4\times7}{15\times7}=\frac{28}{105}$ and $\frac{8}{35}=\frac{8\times3}{35\times3}=\frac{24}{105}$

Since, $\frac{28}{105}<\frac{24}{105}$, so $\frac{4}{15}\boxed{\leq}\frac{8}{35}$

(b) We have $\frac{21}{25}$ and $\frac{5}{8}$

LCM of 8 and 25 = 200

So, $\frac{21}{25}=\frac{21\times8}{25\times8}=\frac{168}{200}$ and $\frac{5}{8}=\frac{5\times25}{8\times25}=\frac{125}{200}$

Since, $\frac{168}{200}>\frac{125}{200}$, so $\frac{21}{25}\boxed{\geq}\frac{5}{8}$

(c) We have $\frac{3}{4}$ and $\frac{15}{14}$

LCM of 4 and 14 is 28

So, $\frac{3}{4}=\frac{3\times7}{4\times7}=\frac{21}{28}$ and $\frac{15}{14}=\frac{15\times2}{14\times2}=\frac{30}{28}$

Since, $\frac{21}{28}<\frac{30}{28}$, so $\frac{3}{4}\boxed{\leq}\frac{15}{14}$

(d) We have $\frac{18}{63}$ and $\frac{10}{45}$

LCM of 63 and 45 is 315

So, $\frac{18}{63}=\frac{18\times5}{63\times5}=\frac{90}{315}=\frac{10}{45}=\frac{10\times7}{45\times7}=\frac{70}{315}$

Since, $\frac{90}{315}<\frac{70}{315}$ or $\frac{18}{63}\boxed{\leq}\frac{10}{45}$

9	63, 45
	7, 5

$35\times9=315$

4. (a) Fractions $\frac{5}{18}, \frac{3}{12}, \frac{4}{24}, \frac{6}{72}, \frac{16}{30}$ are unlike fractions.

LCM of 12, 24, 18, 30, 72 is

So, $\frac{5}{18}=\frac{5\times20}{18\times20}=\frac{100}{360}$,

$\frac{3}{12}=\frac{3\times30}{12\times30}=\frac{90}{360}$,

$\frac{4}{24}=\frac{4\times15}{24\times15}=\frac{60}{360}$,

$\frac{6}{72}=\frac{6\times5}{72\times5}=\frac{30}{360}$,

$\frac{16}{30}=\frac{16\times12}{30\times12}=\frac{192}{360}$

Since, $\frac{192}{360}>\frac{100}{360}>\frac{90}{360}>\frac{60}{360}>\frac{30}{360}$

So, $\frac{16}{30}>\frac{5}{18}>\frac{3}{12}>\frac{4}{24}>\frac{6}{72}$

2	12, 24, 18, 30, 72
2	6, 12, 9, 15, 36
2	3, 6, 9, 15, 18
3	3, 3, 9, 15, 9
3	1, 1, 3, 5, 3
	1, 1, 1, 5, 1

LCM = $2\times2\times2\times3\times3\times5=360$

(b) Fraction $\frac{9}{35}, \frac{7}{30}, \frac{4}{20}, \frac{8}{9}$ are unlike fraction.

LCM of 9, 20, 30 and 35 is 1260

So, $\frac{9}{35}=\frac{9\times36}{35\times36}=\frac{324}{1260}$

$\frac{7}{20}=\frac{7\times63}{20\times63}=\frac{441}{1260}$

$\frac{4}{20}=\frac{4\times63}{20\times63}=\frac{252}{1260}$

$\frac{8}{9}=\frac{8\times140}{9\times140}=\frac{1120}{1260}$

Since, $\frac{1120}{1260}>\frac{441}{1260}>\frac{324}{1260}>\frac{252}{1260}$.

So, $\frac{8}{9}>\frac{7}{20}>\frac{9}{35}>\frac{4}{20}$

2	9, 20, 30, 35
3	9, 10, 15, 35
5	3, 10, 5, 35
	3, 2, 1, 7

5. (a) $\frac{4}{18}+\frac{2}{18}=\frac{4+2}{18}=\frac{6}{18}=\frac{1}{3}$

(b) $\frac{13}{6}-\frac{5}{6}=\frac{13-5}{6}=\frac{7}{6}=1\frac{1}{6}$

(c) $8\frac{1}{9}+5\frac{1}{7}=\frac{73}{9}+\frac{36}{7}=\frac{73\times7}{9\times7}+\frac{36\times9}{7\times9}$

$= \frac{511}{63} + \frac{324}{63} = \frac{511+324}{63} = \frac{835}{63} = 13\frac{16}{63}$

(d) $8\frac{3}{17} - 3\frac{2}{17} = \frac{139}{17} - \frac{53}{17} = \frac{139-53}{17}$

$= \frac{86}{17} = 5\frac{1}{17}$

(e) $\frac{3}{9} \times \frac{2}{4} = \frac{3 \times \cancel{2}^{1}}{9 \times \cancel{4}_{2}} = \frac{3 \times 1}{9 \times 2} = \frac{\cancel{3}^{1}}{\cancel{18}_{6}} = \frac{1}{6}$

(f) $12\frac{7}{8} \times 3\frac{11}{5} = \frac{103}{\cancel{8}_{4}} \times \frac{\cancel{26}^{13}}{5} = \frac{1339}{20} = 66\frac{19}{20}$

(g) $9 \div \frac{3}{4} = \frac{\cancel{9}^{3}}{1} \times \frac{4}{\cancel{3}_{1}} = \frac{3 \times 4}{1 \times 1} = \frac{12}{1} = 12$

(h) $5\frac{3}{4} \div 2\frac{1}{2} = \frac{23}{4} \div \frac{5}{2} = \frac{23}{\cancel{4}_{2}} \times \frac{\cancel{2}^{1}}{5} = \frac{23}{10} = 2\frac{3}{10}$

6. (a) $\frac{1}{4}$ of a day $= \frac{1}{4}$ of 24 hours

$= \frac{1}{\cancel{4}_{1}} \times \frac{\cancel{24}^{6}}{1} = \frac{1 \times 6}{1 \times 1} = 6$ hours

(b) $\frac{5}{6}$ of an hour $= \frac{5}{6}$ of 60 minutes

$= \frac{5}{\cancel{6}_{1}} \times \frac{\cancel{60}^{10}}{1} = \frac{5 \times 10}{1 \times 1} = 50$ minutes

(c) $\frac{1}{7}$ of week $= \frac{1}{7}$ of 7 days $= \frac{1}{\cancel{7}_{1}} \times \frac{\cancel{7}^{1}}{1} = 1$ day

(d) $\frac{2}{5}$ of a rupee $= \frac{2}{5}$ of 100 paise

$= \frac{2}{\cancel{5}_{1}} \times \frac{\cancel{100}^{20}}{1} = \frac{2 \times 20}{1 \times 1} = 40$ paise

7. (a) The cost of toothbrush $= ₹ 25\frac{1}{2} = ₹ \frac{51}{2}$

The cost of 12 toothbrushes

$= ₹ \frac{51}{\cancel{2}_{1}} \times \frac{\cancel{12}^{6}}{1} = ₹51 \times 6 = ₹306$

(b) Part of watermelon eaten by Raveena $= \frac{3}{16}$

Part of watermelon eaten by Sushma $= \frac{5}{16}$

Part of watermelon they eat altogether

$= \frac{3}{16} + \frac{5}{16} = \frac{3+5}{16} = \frac{8}{16} = \frac{1}{2}$

Since, $\frac{5}{16} > \frac{3}{16}$, so $\frac{5}{16} > \frac{3}{16} = \frac{5-3}{16} = \frac{2}{16} = \frac{1}{8}$

(c) The weight of apples $= 5\frac{1}{2}$ kg $= \frac{11}{2}$ kg

The weight of guavas $= 4\frac{3}{4}$ kg $= \frac{19}{4}$ kg

The weight of oranges $= 2\frac{5}{8}$ kg $= \frac{21}{8}$ kg

The total weight of all fruits $= \frac{11}{2} + \frac{19}{4} + \frac{21}{8}$

$= \frac{11 \times 4 + 19 \times 2 + 21}{8} = \frac{44 + 38 + 21}{8}$

$= \frac{103}{8} = 12\frac{7}{8}$ kg

(d) The length of cloth bought by Seema

$= 2\frac{1}{4} = \frac{9}{4}$m

The length of cloth used by Seema

$= 1\frac{2}{3} = \frac{5}{3}$m

The length of cloth left with Seema

$= \frac{9}{4} - \frac{5}{3} = \frac{27-20}{12} = \frac{7}{12}$

The length of cloth bought by Riya

$= 2\frac{1}{8} = \frac{17}{8}$m

The length of cloth used with Riya = 2m

The length of cloth left by Riya

$= \frac{17}{8} - \frac{2}{1} = \frac{17-16}{8} = \frac{1}{8}$

(e) Perimeter of square $= 12\frac{1}{3}$m $= \frac{37}{3}$m

The length of one side $= \frac{37}{3} \div 4$

$= \frac{37}{3} \times \frac{1}{4} = \frac{37}{12} = 3\frac{1}{12}$m

(f) The cost of $5\frac{1}{2}$kg, i.e. $\frac{11}{2}$kg of manure

$= ₹ 120\frac{1}{2} = ₹ \frac{241}{2}$

The cost of 1 kg of manure $= ₹ \frac{241}{2} \div \frac{11}{2}$

$= ₹\frac{241}{\cancel{2}} \times \frac{\cancel{2}}{11} = ₹\frac{241}{11} = ₹ 21\frac{10}{11}$

HOTS

1. $1\frac{2}{5}$ of $3\frac{3}{10}$ of $1\frac{4}{11}$ of $\frac{2}{7}$ of $\frac{1}{6}$

$= \frac{7}{5}$ of $\frac{33}{10}$ of $\frac{15}{11}$ of $\frac{2}{7}$ of $\frac{1}{6}$

$= \frac{\cancel{7}^{1}}{\cancel{5}_{1}} \times \frac{\cancel{33}^{3}}{10} \times \frac{\cancel{15}^{1}}{\cancel{11}_{1}} \times \frac{\cancel{2}^{1}}{\cancel{7}_{1}} \times \frac{1}{\cancel{6}_{\cancel{3}_{1}}}$

$= \frac{1 \times 3 \times 1 \times 1 \times 1}{1 \times 10 \times 1 \times 1 \times 1} = \frac{3}{10}$.

2. Total number of sweets = 300.
Number of sweets used by Namita

$= \frac{18}{24}$ of 300 $= \frac{\cancel{18}^{3}}{\cancel{24}_{4_{1}}} \times \cancel{300}^{75} = 3 \times 75 = 225$.

Number of children among which 225 sweets were distributed = 25

So, the number of sweets received by each child $= 225 \div 25 = 9$.

Case-based Questions

Vehicles	Road	Bridge	Parking	Total
Cars	8	6	5	19
Bikes	3	5	4	12
Buses	2	3	3	8
Total	13	14	12	39

1. (a) Total number of vehicles = 39
Number of cars on the road = 8
Required fraction of cars on the road $= \frac{8}{39}$

(b) Number of cars on the bridge = 6
Required fraction of cars on the bridge $= \frac{6}{39} = \frac{2}{13}$

(c) Number of cars in the parking = 5
Required fraction of cars in the parking $= \frac{5}{39}$

2. (a) Number of bikes on the road = 3
Required fraction of bikes on the road $= \frac{3}{39} = \frac{1}{13}$

(b) Number of bikes on the bridge = 5
Required fraction of bikes on the bridge $= \frac{5}{39}$

(c) Number of bikes in the parking = 4
Required fraction of bikes in the parking $= \frac{4}{39}$

3. (a) Number of buses on the road = 2
Required fraction of buses on the road $= \frac{2}{39}$

(b) Number of buses on the bridge = 3
Required fraction of buses on the bridge $= \frac{3}{39} = \frac{1}{13}$

(c) Number of buses in the parking = 3
Required fraction of buses in the parking $= \frac{3}{39}$

4. (a) Sum of fractions of traffic counted on the road
$= \frac{8}{39} + \frac{3}{39} + \frac{2}{39} = \frac{13}{39} = \frac{1}{3}$.

(b) Sum of fractions of traffic counted on the bridge
$= \frac{6}{39} + \frac{5}{39} + \frac{3}{39} = \frac{14}{39}$.

(c) Sum of fractions of traffic counted in the parking
$= \frac{5}{39} + \frac{4}{39} + \frac{3}{39} = \frac{12}{39} = \frac{4}{13}$.

5. (a) Parking charge for 1 vehicle = ₹ 25
Number of cars in the parking = 5
Parking charge for 8 cars = ₹ 25 × 5 = ₹ 125.

(b) Parking charge for 1 vehicle = ₹ 25
Number of buses in the parking = 3
Parking charge for 3 buses = ₹ 25 × 3 = ₹ 75.

(c) Parking charge for 1 vehicle = ₹ 25
Number of bikes in the parking = 4
Parking charge for 4 bikes = ₹ 25 × 4 = ₹ 100.

Mental Maths

A 1. $\frac{5}{7} + 0 = \frac{5}{7}$ 2. $\frac{8}{16} + \frac{8}{16} = 1$

3. $1\frac{2}{9} - 0 = 1\frac{2}{9}$ 4. $\frac{9}{18} \times 0 = \frac{0}{-}$

5. $\frac{8}{14}+\frac{14}{8}=1$ 6. $5\frac{4}{7}\div\frac{1}{-}=5\frac{4}{7}$

7. $6\frac{2}{9}\div 6\frac{2}{9}=1$ 8. $\frac{0}{-}\div\frac{5}{7}=0$

9. $2\frac{1}{4}+2\frac{1}{4}=\frac{9}{4}+\frac{9}{4}=\frac{18}{4}=\frac{9}{2}=4\frac{1}{2}$

B 1. $\frac{1}{3}+\frac{1}{3}+\frac{1}{3}=\frac{1+1+1}{3}=\frac{3}{3}=1$

Thus, (a) is the correct answer.

2. $\frac{1}{6}$ of one year $=\frac{1}{6}$ of 12 month

$=\frac{1}{6}\times 12=2$ month.

Thus, (b) is the correct answer.

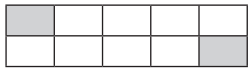
3. $1\frac{1}{3}-\frac{1}{3}=\frac{4}{3}-\frac{1}{3}=\frac{4-1}{3}=\frac{3}{3}=1$

Thus, (b) is the correct answer.

Chapter 7. Decimals

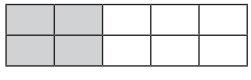
Recap

1. (a) $\frac{2}{10}$, 0.2



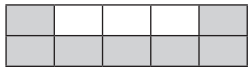
Fraction = $\frac{2}{10}$, Decimals = 0.2

(b) $\frac{4}{10}$, 0.4



Fraction = $\frac{4}{10}$, Decimals = 0.4

(c) $\frac{7}{10}$, 0.7



Fraction = $\frac{7}{10}$, Decimals = 0.7

2. (a) $\frac{5}{10}$ Five-tenth

(b) $\frac{9}{100}$ Nine hundredth

(c) $\frac{16}{1000}$ Sixteen thousandth

(d) 1.45 One point four five

(e) 23.05 Twenty three point zero five

(f) 142.345 One hundred forty two point three four five

3. (a) 5.28 = 5 + 0.2 + 0.08

(b) 11.04 = 10 + 1 + 0.4

(c) 245.2 = 200 + 40 + 5 + 0.2

(d) 19.348 = 10 + 9 + 0.3 + 0.04 + 0.008

4. (a) In 94.3$\underline{7}$, the place value of underlined digit, i.e. 7 is 0.07

(b) In 17.$\underline{7}$04, the place value of underlined digit, i.e. 7 is 0.7

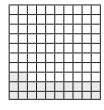
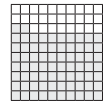
(c) In $\underline{9}$3.245, the place value of underlined digit, i.e. 9 is 90

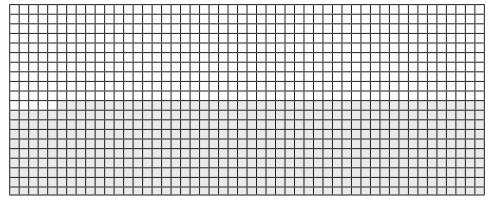
(d) In 541.34$\underline{5}$, the place value of underlined digit, i.e. 5 is 0.005

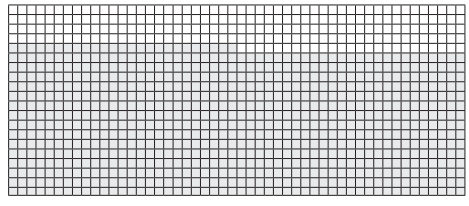
(e) In 173.0$\underline{4}$2, the place value of underlined digit, i.e. 4 is 0.04

(f) In 88.$\underline{0}$09, the place value of underlined digit, i.e. 0 is 0

Exercise 7.1

1. (a)  (b)  (c) 

(d) 

(e) 

2. (a) Number of shaded parts = 8

Total number of parts = 10

Fraction of shaded parts = $\frac{8}{10}$

Decimal of shaded parts = 0.8

(b) Number of shaded parts = 52

Total number of parts = 100

Fraction of shaded parts = $\frac{52}{100}$

Decimal of shaded parts = 0.52

(c) Number of shaded parts = 83

Total number of parts = 100

Fraction of shaded parts = $\frac{83}{100}$

Decimal of shaded parts = 0.83

3.

S.No.	Th	H	T	O	Decimal	Tth	Hth	Thth
(a)			5	1	.	2		
(b)		1	0	1	.	4	5	
(c)	4	5	8	5	.	2	1	4

4.

S. No.	Number	Underlined digit	Place value of underlined digit
(a)	16$\underline{4}$.32	4	4 ones = 4
(b)	53.$\underline{9}$43	9	9 tenths = $\frac{4}{10}$ = 0.4
(c)	85.00$\underline{7}$	7	7 thousandths = $\frac{7}{1000}$ = 0.007
(d)	137.2$\underline{7}$8	7	7 hundredths = $\frac{7}{100}$ = 0.07
(e)	109.$\underline{0}$54	0	0 tenths = $\frac{0}{10}$ = 0
(f)	41$\underline{1}$.276	1	1 ones = 1
(g)	51.97$\underline{4}$	4	4 thousandths = $\frac{4}{1000}$ = 0.004
(h)	64.43$\underline{8}$	8	8 thousandths = $\frac{8}{1000}$ = 0.008

5. (a) $51.734 = 50 + 1 + \frac{7}{10} + \frac{3}{100} + \frac{4}{1000}$
$= 50 + 1 + 0.7 + 0.03 + 0.004$

(b) $824.264 = 800 + 20 + 4 + \frac{2}{10} + \frac{6}{100} + \frac{4}{1000}$
$= 800 + 20 + 4 + 0.2 + 0.06 + 0.004$

(c) $19.048 = 10 + 9 + \frac{0}{10} + \frac{4}{100} + \frac{8}{1000}$
$= 10 + 9 + 0.04 + 0.008$

(d) $120.504 = 100 + 20 + 0 + \frac{5}{10} + \frac{0}{100} + \frac{4}{1000}$
$= 100 + 20 + 0.5 + 0.004$

(e) $91.357 = 90 + 1 + \frac{3}{10} + \frac{5}{100} + \frac{7}{1000}$
$= 90 + 1 + 0.3 + 0.05 + 0.007$

(f) $125.008 = 100 + 20 + 5 + \frac{0}{10} + \frac{0}{100} + \frac{8}{1000}$
$= 100 + 20 + 5 + 0 + 0 + 0.008$

(g) 3454.203
$= 3000 + 400 + 50 + 4 + \frac{2}{10} + \frac{0}{100} + \frac{3}{1000}$
$= 3000 + 400 + 50 + 4 + 0.2 + 0.003$

(h) $34.976 = 30 + 4 + \frac{9}{10} + \frac{7}{100} + \frac{6}{1000}$
$= 30 + 4 + 0.9 + 0.07 + 0.006$

6. (a) 18.54 = Eighteen point five four
(b) 9.37 = Nine point three seven
(c) 124.248 = One hundred twenty-four point two four eight
(d) 170.264 = One hundred seventy point two six four
(e) 54.307 = Fifty-four point three zero seven
(f) 88.176 = Eighty-eight point one seven six
(g) 1426.107 = One thousand four hundred twenty-six point one zero seven
(h) 840.396 = Eight hundred forty point three nine six

7. (a) Two hundred sixty-five and five tenths = 265.5
(b) Fifteen and eighty-six hundredths = 15.86
(c) Sixty-five point nine six two = 65.962
(d) Fifty-six point three nine eight = 56.398
(e) Sixty-four and three hundred twenty-three thousandths = 64.323
(f) Three thousand eight hundred five point zero zero six = 3805.006

Exercise 7.2

1. (a) $3.2 = \frac{32}{10}$ (b) $5.42 = \frac{542}{100}$
(c) $0.685 = \frac{685}{1000}$ (d) $5.143 = \frac{5143}{1000}$
(e) $1.04 = \frac{104}{100}$ (f) $43.24 = \frac{4334}{100}$
(g) $836.1 = \frac{8361}{10}$
(h) $9362.205 = \frac{9362205}{1000}$

2. (a) $\frac{4}{10} = 0.4$ (b) $\frac{12}{10} = 1.2$
(c) $\frac{154}{10} = 15.4$ (d) $\frac{5}{100} = 0.05$
(e) $\frac{21}{1000} = 0.021$ (f) $\frac{496}{100} = 4.96$
(g) $1\frac{2}{1000} = 1.002$ (h) $4\frac{497}{1000} = 4.497$

3. (a) $\frac{5}{4} = \frac{5 \times 25}{4 \times 25} = \frac{125}{100} = 1.25$

(b) $\frac{3}{5} = \frac{3 \times 20}{5 \times 20} = \frac{60}{100} = 0.60$

(c) $\frac{7}{20} = \frac{7 \times 5}{20 \times 5} = \frac{35}{100} = 0.35$

(d) $3\frac{1}{2} = \frac{7}{2} = \frac{7 \times 50}{2 \times 50} = \frac{350}{100} = 3.50$

(e) $6\frac{1}{25} = \frac{151}{25} = \frac{151 \times 4}{25 \times 4} = \frac{604}{100} = 6.04$

(f) $8\frac{3}{50} = \frac{403}{50} = \frac{403 \times 2}{50 \times 2} = \frac{806}{100} = 8.06$

(g) $\frac{72}{200} = \frac{72 \times 5}{200 \times 5} = \frac{360}{1000} = 0.360$

(h) $3\frac{1}{250} = \frac{751}{250} = \frac{751 \times 4}{250 \times 4} = \frac{3004}{1000} = 3.004$

4. (a) Given fraction $= \frac{18}{4}$

$$\begin{array}{r} 4.5 \\ 4\overline{)\,1\;8} \\ -\,1\;6 \\ \hline 2\;0 \\ -\,2\;0 \\ \hline 0 \end{array}$$

Thus, $\frac{18}{4} = 4.5$

(b) Given fraction $= \frac{52}{8}$

$$\begin{array}{r} 6.5 \\ 8\overline{)\,5\;2} \\ -\,4\;8 \\ \hline 4\;0 \\ -\,4\;0 \\ \hline 0 \end{array}$$

Thus, $\frac{52}{8} = 6.5$

(c) Given fraction $= 5\frac{3}{12} = \frac{63}{12}$

$$\begin{array}{r} 5.25 \\ 12\overline{)\,6\;3} \\ -\,6\;0 \\ \hline 3\;0 \\ -\,2\;4 \\ \hline 6\;0 \\ -\,6\;0 \\ \hline 0 \end{array}$$

Thus, $5\frac{3}{12} = 5.25$

(d) Given fraction $= 282\frac{1}{4} = \frac{1129}{4}$

$$\begin{array}{r} 282.25 \\ 4\overline{)\,1\;1\;2\;9} \\ -\;\;8 \\ \hline 3\;2 \\ -\,3\;2 \\ \hline 0\;9 \\ -\;8 \\ \hline 1\;0 \\ -\;8 \\ \hline 2\;0 \\ -\,2\;0 \\ \hline 0 \end{array}$$

Thus, $282\frac{1}{4} = 282.25$

(e) Given fraction $= 4\frac{5}{16} = \frac{69}{16}$

$$\begin{array}{r} 4.3125 \\ 16\overline{)\,6\;9} \\ -\,6\;4 \\ \hline 5\;0 \\ -\,4\;8 \\ \hline 2\;0 \\ -\,1\;6 \\ \hline 4\;0 \\ -\,3\;2 \\ \hline 8\;0 \\ -\,8\;0 \\ \hline 0 \end{array}$$

Thus, $4\frac{5}{16} = 4.3125$

(f) Given fraction $= 26\frac{5}{8} = \frac{213}{8}$

$$\begin{array}{r} 26.625 \\ 8\overline{)\,2\;1\;3} \\ -\,1\;6 \\ \hline 5\;3 \\ -\,4\;8 \\ \hline 5\;0 \\ -\,4\;8 \\ \hline 2\;0 \\ -\,1\;6 \\ \hline 4\;0 \\ -\,4\;0 \\ \hline 0 \end{array}$$

Thus, $26\frac{5}{8} = 26.625$

(g) Given fraction $= \frac{90}{12}$

$$\begin{array}{r} 7.5 \\ 12\overline{)\,9\;0} \\ -\,8\;4 \\ \hline 6\;0 \\ -\,6\;0 \\ \hline 0 \end{array}$$

Thus, $\frac{90}{12} = 7.5$

(h) Given fraction $= \frac{38}{4}$

$$\begin{array}{r} 9.5 \\ 4\overline{)\,3\;8} \\ -\,3\;6 \\ \hline 2\;0 \\ -\,2\;0 \\ \hline 0 \end{array}$$

Thus, $\frac{38}{4} = 9.5$

Exercise 7.3

1. (a) 3.1 = 3.10 = 3.100 = 3.1000
   Thus, 3.10, 3.100 and 3.1000 are any three equivalent decimals of 3.1

   (b) 4.2 = 4.20 = 4.200 = 4.2000
   Thus, 4.20, 4.200 and 4.2000 are any three equivalent decimals of 4.2

   (c) 8.5 = 8.50 = 8.500 = 8.5000
   Thus, 8.50, 8.500 and 8.5000 are any three equivalent decimals of 8.5

   (d) 9.7 = 9.70 = 9.700 = 9.7000
   Thus, 9.70, 9.700 and 9.7000 are any three equivalent decimals of 9.7

   (e) 42.2 = 42.20 = 42.200 = 42.2000
   Thus, 42.20, 42.200 and 42.2000 are any three equivalent decimals of 42.2

   (f) 72.5 = 72.50 = 72.500 = 72.5000
   Thus, 72.50, 72.500 and 72.5000 are any three equivalent decimals of 72.5

   (g) 82.6 = 82.60 = 82.600 = 82.6000
   Thus, 82.60, 82.600 and 82.6000 are any three equivalent decimals of 82.6

   (h) 120.2 = 120.20 = 120.200 = 120.2000
   Thus, 120.20, 120.200 and 120.2000 are any three equivalent decimals of 120.2

   (i) 172.4 = 172.40 = 172.400 = 172.4000
   Thus, 172.40, 172.400 and 172.4000 are any three equivalent decimals of 172.4

   (j) 844.3 = 844.30 = 844.300 = 844.3000
   Thus, 844.30, 844.300 and 844.3000 are any three equivalent decimals of 844.3

2. (a) 4.20, 5.73, 0.90, 2.60

   (b) 0.300, 2.750, 8.345, 4.400

   (c) 1.379, 0.500, 6.750, 1.000

   (d) 5.800, 3.920, 5.247, 12.000

   (e) 16.200, 21.260, 9.768, 11.000

   (f) 116.250, 0.500, 804.290, 900.173

3. (a) Given decimals are 4.022 and 4.22 = 4.220
   Ones digits in both decimals are same.
   Comparing tenths digits,
   we get 0 tenths < 2 tenths
   So, 4.022 < 4.220 or 4.022 $\boxed{<}$ 4.22

   (b) Given decimals are 50.04 and 50.4 = 50.40
   Tens and ones digits of both numbers same.
   Comparing tenths digits,
   we get 0 tenths < 4 tenths
   So, 50.04 < 50.40 or 50.04 $\boxed{<}$ 50.4

   (c) Given decimals are 0.23 and 0.3 = 0.30
   Ones digits of both numbers are same.
   Comparing tenths digits,
   we get 2 tenths $\boxed{<}$ 3 tenths
   So, 0.23 < 0.30 or 0.23 < 0.3

   (d) Given decimals are 8.8 = 8.800 and 8.088
   Ones digits of both numbers are same.
   Comparing tenths digits,
   we get 8 tenths < 0 tenths
   So, 8.800 < 8.088 or 8.8 $\boxed{<}$ 8.088

   (e) Given decimals are 7.3 = 7.300 and 7.237
   Ones digits of both numbers are same.
   Comparing tenths digits,
   we get 3 tenths < 2 tenths
   So, 7.300 > 7.237 or 7.3 $\boxed{>}$ 7.237

   (f) Given decimals are 9.071 and 9.07 = 9.070
   Ones, tenths and hundredths digits of both numbers are same.
   Comparing thousandths digits,
   we get 1 thousandths < 0 thousandths
   So, 9.071 < 9.070 or 9.071 $\boxed{<}$ 9.07

(g) Given decimals are 86.220 and 86.22
= 86.220
All the digits of both numbers are same.
So, both numbers are same,
i.e. 86.220 = 86.220

(h) Given decimals are 0.5 = 0.5 00 and 2.745
Comparing ones digits,
we get 0 ones < 2 tens
So, 0.500 < 2.745 or 0.5 < 2.745

(i) Given decimals are 0.4 = 0.40 and 7.14
Comparing ones digits,
we get 0 ones < 7 ones
So, 0.40 < 7.14 or 0.4 < 7.14

4. (a) 0.3 < 72.3 < 114.53 < 402 < 800.253
(b) 3.9 < 4.248 < 8.5 < 9.9 < 42.48
(c) 4.136 < 41.364 < 413.64 < 4136.4
(d) 0.79 < 7.98 < 8.05 < 9.273
(e) 4.136 < 41.364 < 413.64 < 4136.4
(f) 8.03 < 8.713 < 8.76 < 9.97

5. (a) 24.80 > 16.5 > 16.024 > 13.243
(b) 500.3 > 169.2 > 84.2 > 18.7
(c) 163.48 > 16.34 > 8.6 > 8.543
(d) 20.04 > 10.57 > 5.24 > 0.45
(e) 932.8 > 93.278 > 93.27 > 9.327
(f) 1.578 > 0.403 > 0.145 > 0.043

Exercise 7.4

1. (a)
```
  16.800
  15.540
+131.279
 163.619
```
(b)
```
   0.099
  12.780
+199.400
 212.279
```
(c)
```
 143.012
+ 98.765
 241.777
```
(d)
```
  74.906
   1.580
+ 48.000
 124.486
```
(e)
```
 8415.000
    0.246
+    1.847
 8417.093
```
(f)
```
  16.005
  24.730
+15.000
 55.735
```
(g)
```
 124.800
   3.790
+118.964
 247.554
```
(h)
```
  11.40
   3.80
+587.45
 602.65
```
(i)
```
  84.076
  24.186
+  0.760
 109.022
```

2. (a)
```
   0 11 13  9 13 10
  1 2 4 . 0 4 0
–   7 9 . 9 7 6
    4 4 . 0 6 4
```
(b)
```
     4 13  12
  7 5 4 . 2 4 8
–   3 7 . 9 4 0
  7 1 6 . 3 0 8
```
(c)
```
    3 11  9  9 10
  3 4 2 . 0 0 0
–   1 5 . 8 6 4
  3 2 6 . 1 3 6
```
(d)
```
     8 10  9  9 11
  9 1 . 0 0 1
– 8 5 . 7 6 9
    5 . 2 3 2
```
(e)
```
   1  9  9  9 10
  2 0 . 0 0 0
– 1 8 . 7 4 6
    1 . 2 5 4
```
(f)
```
  8 6 . 9
– 7 2 . 0
  1 4 . 9
```

3. (a)
```
   72.764
+  28.240
  101.004
```
```
  101.004
–  95.004
    6.000
```
Thus, 72.764 + 28.240 – 95.004 = 6

(b)
```
  112.496
+4624.000
 4736.496
```
```
 4736.496
–   15.340
 4721.156
```
Thus, 112.496 + 4624 – 15.340 = 4721.156

(c)
```
  21.450
+ 24.284
  45.734
```
```
  45.734
– 11.000
  34.734
```
Thus, 21.45 + 24.284 – 11 = 34.734

(d)
```
  126.97
+ 405.27
  532.24
```
```
  532.24
–  64.00
  468.24
```
Thus, 126.97 + 405.27 – 64 = 468.24

(e)
```
  88.705
– 30.150
  58.555
```
```
  58.555
+ 12.104
  70.659
```
Thus, 88.705 – 30.15 + 12.104 = 70.659

(f)
```
   94.264
+  15.760
  110.024
```
```
  110.024
–  16.448
   93.576
```
Thus, 94.264 +15.760 – 16.448 = 93.576

4. (a) Annual rainfall in 2005 = 110.4 cm
Annual rainfall in 2006 = 116.8 cm
Annual rainfall in 2007 = 110.5 cm

```
  110.4 cm
  116.8 cm
+ 110.5 cm
  337.7 cm
```

Total rainfall in three years = 337.7 cm
Thus, the total rainfall in three years was 337.7 cm

(b) The weight of Raja = 24.975 kg
The weight of Nayan = 24.430 kg

```
  24.975 kg
– 24.430 kg
   0.545 kg
```
Difference = 0.545 kg

Thus, the difference between their weights.

(c) The distance covered by Ravi on first day = 110.740 km

The distance covered by Ravi on second day = 160.248 km

The distance covered by Ravi on third day = 105.945 km

```
  110.740 km
  160.248 km
+ 105.945 km
  376.933 km
```

Thus, the total distance covered by Ravi during these three days is 376.933 km

(d) The sum of two decimal numbers = 458.769
Out of the two, smaller numbers = 140.780

```
  458.769
– 140.780
  317.989
```

Bigger numbers = 317.989

Thus, the larger number is 317.989

(e) Money required to purchase a *saree* = ₹750.75

Money available with Garima = ₹555.00

```
  ₹ 750.75
– ₹ 555.00
  ₹ 195.75
```

Difference = ₹195.75

Thus, Garima need ₹195.75 more to buy the *saree*.

Exercise 7.5

1. (a) 5.2 × 10 = 52 (b) 8.46 × 10 = 84.6
(c) 92.02 × 10 = 920.2 (d) 164.02 × 100 = 16402
(e) 18.45 × 100 = 1845
(f) 0.006 × 1000 = 6
(g) 16.62 × 1000 = 16620
(h) 9.5 × 100 = 950

2. (a)
```
  72.2
×  8
577.6
```
(b)
```
  125.66
×     7
879.62
```
(c)
```
   38.34
×    16
 23004
+38340
 613.44
```
(d)
```
   42.12
×   105
  21060
  00000
+42120
 4422.60
```
(e)
```
    8.412
×     342
   16824
  336480
+2523600
 2876.904
```
(f)
```
    1.403
×     225
   7015
  28060
+280600
 315.715
```
(g)
```
   86.85
×    85
 43425
+6948 00
 7382.25
```
(h)
```
   0.043
×    121
   0043
  00860
+004300
  5.203
```

3. (a)
```
  11.2
× 5.4
  448
+5600
 60.48
```
(b)
```
  11.6
× 0.4
  464
+0000
 4.64
```
(c)
```
  0.94
×0.7
  658
+0000
0.658
```
(d)
```
   49.087
×   3.5
  245435
+1472610
171.8045
```

(e)
$$\begin{array}{r} 6.004 \\ \times\ 0.002 \\ \hline 12\,008 \\ 00\,000 \\ 000\,000 \\ +\ 00000\,000 \\ \hline 0.0012\,008 \end{array}$$

(f)
$$\begin{array}{r} 7.964 \\ \times\ 5.24 \\ \hline 31\,856 \\ 159\,280 \\ +\ 13982\,000 \\ \hline 41.73\,136 \end{array}$$

(g)
$$\begin{array}{r} 4.165 \\ \times\ 0.143 \\ \hline 12\,495 \\ 166\,600 \\ +\ 416\,500 \\ \hline .595\,595 \end{array}$$

(h)
$$\begin{array}{r} 0.001 \\ \times\ 1.001 \\ \hline 0\,001 \\ 00\,000 \\ 000\,000 \\ +\ 0000\,000 \\ \hline 0.000\,001 \end{array}$$

4. (a) $5.4 \times 1 = \underline{5.4}$
   (b) $8.76 \times \underline{1} = 8.76$
   (c) $19.78 \times 0 = \underline{0}$
   (d) $112.28 \times 0 = \underline{0}$
   (e) $21.46 \times 15.756 = 15.756 \times \underline{21.46}$
   (f) $5.23 \times 5.23 \times 0 = \underline{0}$
   (g) $11.26 \times 3.48 \times \underline{1.64} = 11.26 \times 1.64 \times 11.26$

5. (a) The cost of 1 pen = ₹28.75
   The cost of 72 pens
   = ₹28.75 × 72
   = ₹2070

   (b) The cost of 1 m of cloth = ₹105.25
   The cost of 12.2 m of cloth
   = ₹105.25 × 12.2
   = ₹1284.05

   (c) The distance covered by train in 1 hour = 85.5 km
   The distance covered by train in 2.5 hour
   = 85.5 × 2.5 km
   = 213.75 km

   (d) The weight of 1 bag of rice = 45.575 kg
   The weight of 112 bags of rice
   = 45.575 × 112
   = 5104.4 kg

   (e) The cost of 1 kg of sugar = ₹42.50
   The cost of 15.200 kg of sugar
   = ₹42.50 × 15.200
   = ₹646.00

   (f) The weight of 1 watermelon = 8.325 kg
   The weight of 18 watermelons
   = 8.325 × 18 kg
   = 149.85 kg

   (g) The weight of Saket's bag = 8.45 kg
   The weight of Saransh bag
   = 8.45 kg × 1.2
   = 10.14 kg

Exercise 7.6

1. (a) 19.7 ÷ 10 = 1.97
   (b) 5.498 ÷ 10 = 0.5498
   (c) 240.01 ÷ 10 = 24. 001
   (d) 845.24 ÷ 10 = 84.524
   (e) 945.73 ÷ 100 = 9.4573
   (f) 44.68 ÷ 1000 = 0.04468
   (g) 3.245 ÷ 100 = 0.03245
   (h) 0.564 ÷ 1000 = 0.000564

2. (a) 5.49 ÷ 3

$$\begin{array}{r} 1.83 \\ 3\overline{)5.49} \\ -\ 3 \\ \hline 24 \\ -\ 24 \\ \hline 09 \\ 9 \\ \hline 0 \end{array}$$

   Thus, 5.49 ÷ 3 = 1.83

   (b) 92.24 ÷ 5

$$\begin{array}{r} 18.448 \\ 5\overline{)92.24} \\ -\ 5 \\ \hline 42 \\ -\ 40 \\ \hline 22 \\ -\ 20 \\ \hline 24 \\ -\ 20 \\ \hline 40 \\ 40 \\ \hline 0 \end{array}$$

   Thus, 92.24 ÷ 5 = 18.448

(c) $603.96 \div 8$

$$
\begin{array}{r}
75.495 \\
8\overline{)6\,0\,3.9\,6} \\
-\,5\,6 \\
\hline
\quad 4\,3 \\
-\,4\,0 \\
\hline
\quad\;\; 3\,9 \\
-\,3\,2 \\
\hline
\quad\;\;\; 7\,6 \\
-\,7\,2 \\
\hline
\quad\;\;\;\; 4\,0 \\
-\,4\,0 \\
\hline
\quad\;\;\;\;\; 0
\end{array}
$$

Thus, $603.96 \div 8 = 75.495$

(d) $54.264 \div 16$

$$
\begin{array}{r}
3.3915 \\
16\overline{)5\,4.2\,6\,4} \\
-\,4\,8 \\
\hline
\quad 6\,2 \\
-\,4\,8 \\
\hline
\quad 1\,4\,6 \\
-\,1\,4\,4 \\
\hline
\quad\;\;\; 2\,4 \\
-\,1\,6 \\
\hline
\quad\;\;\;\; 8\,0 \\
-\,8\,0 \\
\hline
\quad\;\;\;\;\; 0
\end{array}
$$

Thus, $54.264 \div 16 = 3.3915$

(e) $16.247 \div 11$

$$
\begin{array}{r}
1.477 \\
11\overline{)1\,6.2\,4\,7} \\
-\,1\,1 \\
\hline
\quad 5\,2 \\
-\,4\,4 \\
\hline
\quad\;\; 8\,4 \\
-\,7\,7 \\
\hline
\quad\;\;\; 7\,7 \\
-\,7\,7 \\
\hline
\quad\;\;\;\; 0
\end{array}
$$

Thus, $16.247 \div 11 = 1.477$

(f) $83.246 \div 5$

$$
\begin{array}{r}
16.6492 \\
5\overline{)8\,3.2\,4\,6} \\
-\,5 \\
\hline
\quad 3\,3 \\
-\,3\,0 \\
\hline
\quad\;\; 3\,2 \\
-\,3\,0 \\
\hline
\quad\;\;\; 2\,4 \\
-\,2\,0 \\
\hline
\quad\;\;\;\; 4\,6 \\
-\,4\,5 \\
\hline
\quad\;\;\;\;\; 1\,0 \\
-\,1\,0 \\
\hline
\quad\;\;\;\;\; 0
\end{array}
$$

Thus, $83.246 \div 5 = 16.6492$

(g) $420.048 \div 18$

$$
\begin{array}{r}
23.336 \\
18\overline{)4\,2\,0.0\,4\,8} \\
-\,3\,6 \\
\hline
\quad 6\,0 \\
-\,5\,4 \\
\hline
\quad\;\; 6\,0 \\
-\,5\,4 \\
\hline
\quad\;\;\; 6\,4 \\
-\,5\,4 \\
\hline
\quad\;\;\;\; 1\,0\,8 \\
-\,1\,0\,8 \\
\hline
\quad\;\;\;\;\; 0
\end{array}
$$

Thus, $420.048 \div 18 = 23.336$

(h) $248.766 \div 21$

$$
\begin{array}{r}
11.846 \\
21\overline{)2\,4\,8.7\,6\,6} \\
-\,2\,1 \\
\hline
\quad 3\,8 \\
-\,2\,1 \\
\hline
\quad\;\; 1\,7\,7 \\
-\,1\,6\,8 \\
\hline
\quad\;\;\;\; 9\,6 \\
-\,8\,4 \\
\hline
\quad\;\;\;\; 1\,2\,6 \\
-\,1\,2\,6 \\
\hline
\quad\;\;\;\;\; 0
\end{array}
$$

Thus, $248.766 \div 21 = 11.846$

3. (a) $26.28 \div 0.4 = \frac{26.28}{0.4} \times \frac{10}{10} = \frac{262.8}{4}$

$$
\begin{array}{r}
65.7 \\
4\overline{)\,2\;6\;2.8} \\
-\;2\;4 \\
\hline
\quad 2\;2 \\
-\;2\;0 \\
\hline
\quad\;\; 2\;8 \\
-\;2\;8 \\
\hline
\quad\;\; 0
\end{array}
$$

Thus, $262.8 \div 4 = 65.7$
or $26.28 \div 0.4 = 65.7$

(b) $736.254 \div 1.2 = \frac{736.254}{1.2} \times \frac{10}{10} = \frac{7362.54}{12}$

$$
\begin{array}{r}
613.545 \\
12\overline{)\,7\;3\;6\;2.5\;4} \\
-\;7\;2 \\
\hline
\quad 1\;6 \\
-\;1\;2 \\
\hline
\quad\;\; 4\;2 \\
-\;3\;6 \\
\hline
\quad\;\;\; 6\;5 \\
-\;6\;0 \\
\hline
\quad\;\;\;\; 5\;4 \\
-\;4\;8 \\
\hline
\quad\;\;\;\;\; 6\;0 \\
-\;6\;0 \\
\hline
\quad\;\;\;\;\; 0
\end{array}
$$

Thus, $7362.54 \div 1.2 = 613.545$
or, $736.254 \div 1.2 = 613.545$

(c) $804.12 \div 2.4 = \frac{804.12}{2.4} \times \frac{10}{10} = \frac{8041.2}{24}$

$$
\begin{array}{r}
335.05 \\
24\overline{)\,8\;0\;4\;1.2} \\
-\;7\;2 \\
\hline
\quad 8\;4 \\
-\;7\;2 \\
\hline
\quad\;\; 1\;2\;1 \\
-\;1\;2\;0 \\
\hline
\quad\;\;\;\; 1\;2\;0 \\
-\;1\;2\;0 \\
\hline
\quad\;\;\;\;\; 0
\end{array}
$$

Thus, $8041.2 \div 24 = 335.05$
or $804.12 \div 2.4 = 335.05$

(d) $927.815 \div 3.5 = \frac{927.815}{3.5} \times \frac{10}{10} = \frac{9278.15}{35}$

$$
\begin{array}{r}
265.09 \\
35\overline{)\,9\;2\;7\;8.1\;5} \\
-\;7\;0 \\
\hline
\quad 2\;2\;7 \\
-\;2\;1\;0 \\
\hline
\quad\;\; 1\;7\;8 \\
-\;1\;7\;5 \\
\hline
\quad\;\;\;\; 3\;1\;5 \\
-\;3\;1\;5 \\
\hline
\quad\;\;\;\;\; 0
\end{array}
$$

Thus, $9278.15 \div 35 = 265.09$
or $927.815 \div 3.5 = 265.09$

(e) $413.82 \div 12.1 = \frac{413.82}{12.1} \times \frac{10}{10} = \frac{4138.2}{121}$

$$
\begin{array}{r}
34.2 \\
121\overline{)\,4\;1\;3\;8.2} \\
-\;3\;6\;3 \\
\hline
\quad\;\; 5\;0\;8 \\
-\;4\;8\;4 \\
\hline
\quad\;\;\;\; 2\;4\;2 \\
-\;2\;4\;2 \\
\hline
\quad\;\;\;\;\; 0
\end{array}
$$

Thus, $4138.2 \div 121 = 34.2$
or, $413.82 \div 12.1 = 34.2$

(f) $303.435 \div 1.5 = \frac{303.435}{1.5} \times \frac{10}{10} = \frac{3034.35}{15}$

$$
\begin{array}{r}
202.29 \\
15\overline{)\,3\;0\;3\;4.3\;5} \\
-\;3\;0 \\
\hline
\quad 0\;3\;4 \\
-\;3\;0 \\
\hline
\quad\;\; 4\;3 \\
-\;3\;0 \\
\hline
\quad\;\;\; 1\;3\;5 \\
-\;1\;3\;5 \\
\hline
\quad\;\;\;\;\; 0
\end{array}
$$

Thus, $3034.35 \div 15 = 202.29$
or $303.435 \div 1.5 = 202.29$

(g) $269.808 \div 2.8 = \frac{269.808}{2.8} \times \frac{10}{10} = \frac{2698.08}{28}$

$$
\begin{array}{r}
96.36 \\
28\overline{)2698.08} \\
-252 \\
\hline
178 \\
-168 \\
\hline
100 \\
-84 \\
\hline
168 \\
-168 \\
\hline
0
\end{array}
$$

Thus,
$2698.08 \div 28 = 96.36$
or
$269.808 \div 2.8 = 96.36$

(h) $31027.936 \div 3.2 = \dfrac{31027.936}{3.2} \times \dfrac{10}{10}$

$= \dfrac{310279.36}{32}$

$$
\begin{array}{r}
9696.23 \\
32\overline{)310279.36} \\
-288 \\
\hline
222 \\
-192 \\
\hline
307 \\
-288 \\
\hline
199 \\
-192 \\
\hline
73 \\
-64 \\
\hline
96 \\
-96 \\
\hline
0
\end{array}
$$

Thus, $310279.36 \div 32 = 9696.23$
or $31027.936 \div 3.2 = 9696.23$

4. (a) Product of two decimal numbers = 258.428
One given decimal number = 2.3
Other decimal number = $258.428 \div 2.3$

$= \dfrac{258.428}{2.3} \times \dfrac{10}{10}$

$= \dfrac{2584.28}{23} = 112.36.$

$$
\begin{array}{r}
112.36 \\
23\overline{)2584.28} \\
-23 \\
\hline
28 \\
-23 \\
\hline
54 \\
-46 \\
\hline
82 \\
-69 \\
\hline
138 \\
-138 \\
\hline
0
\end{array}
$$

Thus, the other number is 112.36

(b) The price of 2.5 dozen bananas = ₹138.75
The price of 1 dozen bananas = ₹$138.75 \div 2.5$

$= ₹ \dfrac{138.75}{2.5} \times \dfrac{10}{10}$

$= ₹ \dfrac{1387.5}{25} = ₹55.50$

$$
\begin{array}{r}
55.5 \\
25\overline{)1387.5} \\
-125 \\
\hline
137 \\
-125 \\
\hline
125 \\
-125 \\
\hline
0
\end{array}
$$

Thus, the price of 1 dozen bananas is ₹112.36.

(c) The cost of 12.4 m of cloth = ₹1838.30
The cost of 1 m of cloth = ₹$1838.30 \div 12.4$

$= ₹ \dfrac{1838.30}{12.4} \times \dfrac{10}{10}$

$= ₹ \dfrac{18383}{124}$

$= ₹148.25$

$$
\begin{array}{r}
148.25 \\
124\overline{)1838.30} \\
-124 \\
\hline
598 \\
-496 \\
\hline
1023 \\
-992 \\
\hline
310 \\
-248 \\
\hline
620 \\
-620 \\
\hline
0
\end{array}
$$

Thus, the cost 1 m of cloth is ₹148.25.

(d) Total length of ribbon = 24.48 m

Number of pieces got from ribbon = 18

So, length of 1 piece of ribbon
= 24.48 ÷ 18 = 1.36 m

$$
\begin{array}{r}
1.36 \\
18\overline{)24.48} \\
-18 \\
\hline
64 \\
-54 \\
\hline
108 \\
-108 \\
\hline
0
\end{array}
$$

(e) Length of pipe produced in 5 days
= 24365.24 m

Length of pipe produced in 1 day
= 24365.24 ÷ 5 m = 4873.048 m

$$
\begin{array}{r}
4873.048 \\
5\overline{)24365.24} \\
-20 \\
\hline
43 \\
-40 \\
\hline
36 \\
-35 \\
\hline
15 \\
-15 \\
\hline
024 \\
-20 \\
\hline
40 \\
-40 \\
\hline
0
\end{array}
$$

Thus, required length of pipe is 4873.048 m.

Revision Exercise

1. (a) 86.4000, 9.1100, 0.0256, 18.3760

   (b) 35.640, 0.200, 75.000, 85.967

   (c) 110.245, 18.400, 261.240, 0.840

2.

S. No.	Decimal Number	Fraction Number	Expand of form	Number of Decimal places
(a)	0.4	$\frac{4}{10}$	0.4	1
(b)	1.2	$\frac{12}{10}$	10 + 0.2	1
(c)	84.22	$84\frac{22}{100}$	80 + 4 + 0.2 + 0.02	2
(d)	16.24	$16\frac{24}{100}$	10 + 6 + 0.2 + 0.04	2

3. (a) 0.204 < 0.36 < 0.58 < 2.04

   (b) 0.062 < 1.04 < 3.036 < 3.23 < 3.574

   (c) 0.988 < 2.42 < 8.99 < 9.88

   (d) 0.432 < 2.403 < 37.567 < 84.26

4. (a) 793.04 > 79.69 > 79.68 > 7.968

   (b) 426.2 > 426.02 > 42.624 > 42.264

   (c) 72.5 > 72.436 > 72.346 > 72.342

   (d) 124.2 > 124.05 > 11.44 > 11.04

5. (a)
$$
\begin{array}{r}
15.246 \\
+\ 304.360 \\
\hline
319.606
\end{array}
\qquad
\begin{array}{r}
319.606 \\
-\ 242.840 \\
\hline
76.766
\end{array}
$$

   Thus, 15.246 + 304.360 – 242.840 = 76.766.

   (b)
$$
\begin{array}{r}
9.045 \\
-\ 0.264 \\
\hline
8.781
\end{array}
\qquad
\begin{array}{r}
8.781 \\
+\ 12.264 \\
\hline
21.045
\end{array}
$$

   Thus, 9.045 – 0.264 + 12.264 = 21.045

   (c)
$$
\begin{array}{r}
243.300 \\
+\ 0.438 \\
\hline
243.738
\end{array}
\qquad
\begin{array}{r}
243.738 \\
-\ 62.004 \\
\hline
181.734
\end{array}
$$

   Thus, 243.300 + 0.438 – 62.004 = 181.734.

   (d)
$$
\begin{array}{r}
18.46 \\
-\ 3.10 \\
\hline
15.36
\end{array}
\qquad
\begin{array}{r}
15.36 \\
+\ 40.20 \\
\hline
55.56
\end{array}
$$

   Thus, 18.46 – 3.10 + 40.20 = 55.56

6. (a) 5.4 × 10 = 54

   (b) 26.78 ÷ 10 = 2.678

   (c) 273.2 × 100 = 27320

   (d) 242.84 ÷ 100 = 2.4284

   (e) 0.964 × 100 = 0.00964

   (f) 4.268 × 100 = 426.8

(g) $5.4 \times 1000 = 5400$

(h) $0.943 \div 1000 = 0.000943$

(i) $4 \div 1000 = 0.004$

7. (i) (a) The weight of A = 12.430 kg
The weight of B = + 16.500 kg
Total weight of A and B = 28.930 kg

(b) The weight of packet B = 16.500 kg
The weight of packet D = + 25.425 kg
Total weight of B and D = 41.925 kg

(c) The weight of packet C = 18.250 kg
The weight of packet E = + 10.155 kg
Total weight of C and E = 28.405 kg

(d) The weight of packet A = 12.430 kg
The weight of packet B = 16.500 kg
The weight of packet C = 18.250 kg
The weight of packet D = 25.425 kg
The weight of packet E = + 10.155 kg
Total weight of all packets = 82.760 kg

(e) The packet D is the heaviest.

(ii) (a) The weight of packet B = 16.500 kg
The weight of packet A = − 12.430 kg
Difference = 4.070 kg

(b) The weight of packet D = 25.425 kg
The weight of packet E = − 10.155 kg
Difference = 15.270 kg

(c) The weight of packet D = 25.425 kg
The weight of packet B = − 16.500 kg
Difference = 8.925 kg

(d) The weight of packet C = 18.250 kg
The weight of packet E = − 10.155 kg
Difference = 8.095 kg

(e) The weight of packet A = 12.430 kg
The weight of packet E = − 10.155 kg
Difference = 2.275 kg

8. (a) The price of a bat = ₹450.25
The price of a ball = ₹110.85
The price of gloves = ₹212.90
The price of water bottle = + ₹ 18.25
Total cost of all items = ₹792.25

(b) The length of rope having Rajesh = 193.55 m

The difference in length of rope having Rajesh and Sanjay = 42.75 m

$$\begin{array}{r} 193.55\text{ m} \\ -\ 42.75\text{ m} \\ \hline 150.80\text{ m} \end{array}$$

The length of rope having Sanjay = 150.80 m

(c) The cost of 1 ball = ₹275.60

The cost of 85 balls = ₹275.60 × 88
= ₹24252.80

$$\begin{array}{r} 275.60 \\ \times\ 88 \\ \hline 22048\,0 \\ +\ 220480\,0 \\ \hline 24252.80 \end{array}$$

(d) The distance covered by train in 22 hours = 1120.46 km

The distance covered by train in 1 hour = 1120.46 km ÷ 22 = 50.93 km.

$$\begin{array}{r} 50.93 \\ 22\overline{)1120.46} \\ -\ 110 \\ \hline 204 \\ -\ 198 \\ \hline 66 \\ -\ 66 \\ \hline 0 \end{array}$$

HOTS

1. (a) $12.5 + 8.4 \div 12 \times 3.6 - 10.4$
$= 12.5 + 0.7 \times 3.6 - 10.4$
$= 12.5 + 2.52 - 10.4$
$= 15.02 - 10.4 = 4.62.$

(b) $5.2\,[3.6 + 2.4\,\{1.2 \times 0.9 \div 0.3\,(5.2 - 0.8)\}]$
$= 5.2\,[3.6 + 2.4\,\{1.2 \times 0.9 \div 0.3\,(4.4)\}]$
$= 5.2\,[3.6 + 2.4\,\{1.2 \times 0.9 \div 1.32\}]$
$= 5.2\,[3.6 + 2.4\,\{1.2 \times 0.9 \div 0.68\}]$
$= 5.2\,[3.6 + 2.4\,\{1.2 \times 1.32\}]$
$= 5.2\,[3.6 + 2.4 \times 1.59]$
$= 5.2\,[3.6 + 3.8]$
$= 5.2 \times 7.4$
$= 38.54$

2. The cost of 1.5 kg of grapes = ₹105.50 × 1.5
= ₹158.25

The cost of 1.5 kg of apples = ₹90.60 × 1.5
= ₹135.90

Total cost of grapes and apples = ₹294.15

Money had Mrs. Archna = ₹823.50
Money spent by Mrs. Archna = – ₹294.15
Money left with Mrs. Archna = ₹529.35

Case-based Questions

1. The rainfall recorded at Lodhi Road = 71.4 — seventy-one point four mm.
   The rainfall recorded at Ridge = 41.4 — forty-one point four mm.
   The rainfall recorded at Aya Nagar = 106.2 — one hundred six point two mm.
   The rainfall recorded at Pusa Road = 51.5 — fifty-one point five mm.
   The rainfall recorded at Palam = 102.0 — one hundred two point zero mm.
2. The rainfall recorded at Lodhi Road = 71.4
   $= \frac{714}{10}$ mm.
   The rainfall recorded at Ridge = 41.4 = $\frac{414}{10}$ mm.
   The rainfall recorded at Aya Nagar = 106.2
   $= \frac{1062}{10}$ mm.
   The rainfall recorded at Pusa Road = 51.5
   $= \frac{515}{10}$ mm.
   The rainfall recorded at Palam = 102.0
   $= \frac{1020}{10}$ mm.
3. Aya Nagar has the maximum rainfall and Ridge has the minimum rainfall.
4. Total rainfall recorded at all these places
   = (71.4 + 41.4 + 106.2 + 51.5 + 102.0) mm
   = 372.5 mm.
5. The rainfall recorded at Aya Nagar = 106.2
   The rainfall recorded at Lodhi Road = 71.4
   Difference = 106.2 mm – 71.4 mm = 34.8 mm.

Mental Maths

1. If the decimal point moves two places to the right in a number, the value of the decreases $\frac{1}{100}$ times.
   Thus, (d) is the correct answer.
2. Out of the given numbers, $\frac{1}{10} = 0.1$ is less than 1.5
   Thus, (c) is the correct answer.
3. $5\frac{1}{4} = \frac{21}{4} = \frac{21 \times 25}{4 \times 25} = \frac{525}{100} = 5.25$
   Thus, (d) is the correct answer.
4. 18.4 – 1.84 = 18.40 – 1.84 = 16.56
   Thus, (c) is the correct answer.
5. $\frac{126}{10} = 12.6$
   Thus, (b) is the correct answer.

Chapter 8. Unitary Method, Average & Percentage

Exercise 8.1

1. The cost of 18 bangles = ₹216
   The cost of 1 bangle = ₹ $\frac{216}{18}$ = ₹12
   The cost of 21 bangles = ₹12 × 21 = ₹252.
2. Number of pen in 6 packets = 108
   Number of pen in 1 packet = $\frac{108}{6} = 18$
   Number of pen in 12 packets = 18 × 12 = 216
3. The capacity of 12 water tanks = 660 litres
   The capacity of 1 water tank = $\frac{660}{12}$ = 55 litres
   The capacity of 30 water tanks = 55 × 30 litres
   = 1650 litres
   Thus 30 water tanks can hold 1650 litres of water.
4. The cost of 26 shirts of same size = ₹10530
   The cost of 1 shirt of same size = ₹ $\frac{10530}{26}$ = ₹405
   The cost of 12 shirts of same size = ₹405 × 12
   = ₹4860
5. The length of 9 pieces of cloth = 27 m
   The length of 1 piece of cloth = $\frac{27}{9}$ m = 3 m
   The length of 16 pieces of cloth = 3 × 16 m
   = 48 m
6. The distance covered by Pawan in 6 hours = 30 km
   The distance covered by Pawan in 1 hour
   = $\frac{30}{6}$ km = 5 km.
   The distance covered by Pawan in 8 hours
   = 5 × 8 = 40 km
7. The weight of 15 bags of sugar = 1050 kg

The weight of 1 bag of sugar = $\frac{1050}{15}$ = 70 kg

The weight of 8 bags of sugar = 70 × 8 kg
= 560 kg

8. Number of passengers carried by bus in 8 trips = 360

Number of passengers carried by bus in 1 trip
= $\frac{360}{8}$ = 45

Number of passengers carried by bus in 20 trips
= 45 × 20 = 900

9. Number of drums filled in 6 hours = 4

Number of drums filled in 1 hour = $\frac{4}{6} = \frac{2}{3}$

Number of drums filled in 12 hours

$= \frac{2}{\cancel{3}_1} \times \cancel{12}^4 = 8$

10. Number of TV sets sold in 8 days = 168

Number of TV sets sold in 1 day = $\frac{168}{8}$ = 21

Number of TV sets sold in 10 days = 21 × 10
= 210

Exercise 8.2

1. The average speed of the car = $\frac{\text{Sum of the distance covered in successive hours}}{\text{Number of hours}}$

$= \frac{45+48+55+40+44+50}{6} = \frac{282}{6}$ = 47 km per hours.

2. Average monthly income = $\frac{\text{Sum of the income of given months}}{\text{Number of months}}$

$= \frac{10200+15300+14600+8500+21000+15000+18000+16000}{8}$ = ₹14825.

3. The average weight of students = $\frac{\text{Sum of weight of all students}}{\text{Number of students}}$

$= \frac{30+35+28+30+29+24+50+31+38+40+34.500+35.500}{12}$ kg = $\frac{405}{12}$ kg = 33 kg 750 g.

4. The average number of bulbs in the boxes = $\frac{\text{Sum of the number of bulbs}}{\text{Number of boxes}}$

$= \frac{24+28+30+32+25+18+40+35+35+30+32+40+26+28+38+35}{16} = \frac{496}{16}$ = 31 bulbs.

5. The average of first 12 numbers = $\frac{1+2+3+4+5+6+7+8+9+10+11+12}{12} = \frac{78}{12} = 6\frac{1}{2}$ = 6.5.

6. The average of first 10 multiples of 4 = $\frac{4+8+12+16+20+24+28+32+36+40}{10} = \frac{220}{10}$ = 22

7. The average attendance of the class = $\frac{30+28+32+36+32+34}{6} = \frac{192}{6}$ = 32

8. The average rainfall = $\frac{80+65+65+40}{4}$ mm = $\frac{250}{4} = 62\frac{1}{2}$ = 62.5

9. The average temperature = $\frac{42+40+38+38.5+41.5+42+38}{7}$ °C = $\frac{280}{7}$ =40

Exercise 8.3

1. (a) $5\% = \frac{\boxed{5}}{100}$ (b) $29\% = \frac{\boxed{29}}{100}$

   (c) $65\% = \frac{\boxed{65}}{100}$ (d) $33\% = \frac{\boxed{33}}{100}$

2. (a) $20\% = \frac{20}{100} = \frac{20 \div 20}{100 \div 20} = \frac{1}{5}$

   (b) $2\% = \frac{2}{100} = \frac{2 \div 2}{100 \div 2} = \frac{1}{50}$

   (c) $2\frac{1}{2}\% = \frac{5}{2}\% = \frac{\cancel{5}^{4}}{2} \times \frac{1}{\cancel{100}_{20}} = \frac{1 \times 1}{2 \times 20} = \frac{1}{40}$

   (d) $50\% = \frac{50}{100} = \frac{50 \div 50}{100 \div 50} = \frac{1}{2}$

   (e) $75\% = \frac{75}{100} = \frac{75 \div 25}{100 \div 25} = \frac{3}{4}$

   (f) $8\% = \frac{8}{100} = \frac{8 \div 4}{100 \div 4} = \frac{2}{25}$

   (g) $210\% = \frac{210}{100} = \frac{210 \div 10}{100 \div 10} = \frac{21}{10} = 2\frac{1}{10}$

   (h) $100\% = \frac{100}{100} = \frac{100 \div 100}{100 \div 100} = \frac{1}{1} = 1$

   (i) $2.5\% = \frac{2.5}{100} = \frac{25}{1000} = \frac{25 \div 25}{1000 \div 25} = \frac{1}{40}$

   (j) $5\frac{3}{4}\% = \frac{23}{4}\% = \frac{\cancel{25}^{1}}{4} \times \frac{1}{\cancel{100}_{4}} = \frac{1 \times 1}{4 \times 4} = \frac{1}{16}$

3. (a) $34\% = \frac{34}{100} = 0.34$ (b) $38\% = \frac{38}{100} = 0.38$

   (c) $85\% = \frac{85}{100} = 0.85$ (d) $50\% = \frac{50}{100} = 0.50$

   (e) $125\% = \frac{125}{100} = 1.25$ (f) $60\% = \frac{60}{100} = 0.6$

   (g) $145\% = \frac{145}{100} = 1.45$ (h) $0.5\% = \frac{0.5}{100} = 0.005$

   (i) $5.25\% = \frac{5.25}{100} = 0.0525$

   (j) $3\frac{1}{4}\% = \frac{13}{4}\% = \frac{13}{4 \times 100} = \frac{3.25}{100} = 0.0325$

4. (a) $\frac{1}{4} = \frac{1 \times 25}{4 \times 25} = \frac{25}{100} = 25\%$

   (b) $\frac{2}{5} = \frac{2 \times 20}{5 \times 20} = \frac{40}{100} = 40\%$

   (c) $\frac{8}{10} = \frac{8 \times 10}{10 \times 10} = \frac{80}{100} = 80\%$

   (d) $\frac{16}{25} = \frac{16 \times 4}{25 \times 4} = \frac{64}{100} = 64\%$

   (e) $\frac{25}{100} = 25\%$

   (f) $\frac{15}{20} = \frac{15 \times 5}{20 \times 5} = \frac{75}{100} = 75\%$

   (g) $\frac{32}{50} = \frac{32 \times 2}{50 \times 2} = \frac{64}{100} = 64\%$

   (h) $\frac{25}{40} = \frac{25 \div 5}{40 \div 5} = \frac{5}{8} = \frac{5 \times 12.5}{8 \times 12.5} = \frac{62.5}{100} = 62.5\%$

   (i) $\frac{3}{8} = \frac{3 \times 12.5}{8 \times 12.5} = \frac{37.5}{100} = 37.5\%$

   (j) $2\frac{1}{12} = \frac{25}{12} \times \frac{100}{100} = \frac{2500}{12 \times 100}$

   $= \frac{208.33}{100} = 208.33\%$

5. (a) $0.2 = 0.2 \times 100\% = 20\%$

   (b) $0.25 = 0.25 \times 100\% = 25\%$

   (c) $0.05 = 0.05 \times 100\% = 5\%$

   (d) $0.08 = 0.08 \times 100\% = 8\%$

   (e) $4.5 = 4.5 \times 100\% = 450\%$

   (f) $0.14 = 0.14 \times 100\% = 14\%$

   (g) $2.25 = 2.25 \times 100\% = 225\%$

   (h) $1.05 = 1.05 \times 100\% = 105\%$

   (i) $0.075 = 0.075 \times 100\% = 7.5\%$

   (j) $3.25 = 3.25 \times 100\% = 325\%$

6. (a) 20 cm out of 40 cm

   $= \frac{20 \text{ cm}}{40 \text{ m}} \times 100\% = \frac{\cancel{20}^{1} \text{ cm}}{\cancel{4000}_{200_{2}} \text{ cm}} \times \cancel{100}^{1}\%$

   $= \frac{1 \times 1}{2}\% = \frac{1}{2}\%$

   (b) 21 minutes out of 35 minutes.

   $= \frac{21 \text{ minutes}}{35 \text{ minutes}} \times 100\% = \frac{\cancel{21}^{3}}{\cancel{35}_{5_{1}}} \times \cancel{100}^{20}\%$

   $= \frac{3 \times 20}{1}\% = 60\%$

(c) 42 marks out of 60 marks :

$$\frac{42\text{ marks}}{60\text{ marks}} \times 100\% = \frac{\cancel{42}^{7}}{\cancel{60}_{\cancel{10}_{1}}} \times \cancel{100}^{10}\%$$

$$= \frac{7 \times 10}{1}\% = 70\%$$

(d) 12 kg out of 30 kg

$$= \frac{12\text{ kg}}{30\text{ kg}} \times 100\% = \frac{\cancel{12}^{4}}{\cancel{30}_{\cancel{3}_{1}}} \times \cancel{100}^{10}\%$$

$$= \frac{4 \times 10}{1}\% = 40\%$$

(e) 220 mL out of 4 L

$$= \frac{220\text{ mL}}{4\text{L}} \times 100\% = \frac{220\text{ mL}}{4000\text{mL}} \times 100\%$$

$$= \frac{\cancel{220}^{11}\text{ mL}}{\cancel{4000}_{\cancel{200}_{2}}\text{ mL}} \times \cancel{100}^{1}\% = \frac{11 \times 1}{2}\%$$

$$= \frac{11}{2}\% = 5.5\%$$

(f) 30 minutes out of 1 hour

$$= \frac{30\text{ minutes}}{1\text{ hour}} \times 100\% = \frac{30\text{ minutes}}{60\text{ minutes}} \times 100\%$$

$$= \frac{\cancel{30}^{1}}{\cancel{60}_{2_{1}}} \times \cancel{100}^{50}\% = \frac{1 \times 50}{1} = 50\%$$

7. (a) 35% of ₹570 = 35% × 570

$$= \frac{\cancel{35}^{7}}{\cancel{100}_{\cancel{20}_{2}}} \times \cancel{570}^{57} = \frac{7 \times 57}{2} = \frac{399}{2} = ₹2199.5$$

(b) 30% of ₹910 = 30% × 910

$$= \frac{\cancel{30}^{3}}{\cancel{100}_{\cancel{10}_{1}}} \times \cancel{910}^{91} = 3 \times 91 = ₹273$$

(c) 15% of 8 L = 15% × 8000 mL

$$= \frac{15}{\cancel{100}_{1}} \times \cancel{8000}^{80} = 1200\text{ mL} = 12\text{ L}$$

(d) 90% of 40 kg = 90% × 40

$$= \frac{\cancel{90}^{9}}{\cancel{100}_{\cancel{10}_{1}}} \times \cancel{40}^{4} = 9 \times 4 = 36\text{ kg}$$

(e) 40% of 2 km = 40% × 2

$$= \frac{40}{100} \times 2 = \frac{80}{100} = 0.800\text{ km}$$

(f) $2\frac{1}{2}\%$ of ₹20

$$= \frac{5}{2}\% \times 20 = \frac{\cancel{5}^{1}}{2} \times \frac{1}{\cancel{100}_{\cancel{5}_{1}}} \times \cancel{20}^{1}$$

$$= \frac{1 \times 1}{2 \times 1} = \frac{1}{2} = ₹0.5$$

(g) 2.5% of ₹20 = 2.5% × 20

$$= \frac{2.5}{100} \times 20 = \frac{25 \times 20}{100} = \frac{500}{1000} = 0.5$$

(h) 2.8% of ₹56 kg = 2.8% × 56

$$= \frac{2.8}{100} \times 56 = \frac{28 \times 56}{1000} = \frac{1568}{100} = 15.68$$

8. Total marks = 80
Marks obtained = 56

$$56\text{ out of }80 = \frac{\cancel{56}^{14}}{\cancel{80}_{\cancel{4}_{1}}} \times \cancel{100}^{5}\%$$

$$= 14 \times 5\% = 70\%$$

Thus, Priya scored 70% in her weekly unit test.

9. Money Rahul had = ₹500
Money spent on bat = ₹280

$$280\text{ out of }500 = \frac{\cancel{200}^{40}}{\cancel{500}_{\cancel{5}_{1}}} \times \cancel{100}^{1} = 40\%$$

Thus, 40% of money Rahul spent.

10. Total marks of examination = 500
Marks scored by Abraham = 93% of 500

$$= \frac{93}{\cancel{100}_{1}} \times \cancel{500}^{5} = 465$$

Thus, Abraham scored 465 marks in exam.

11. The price of a shirt and a bag = ₹1820
Discount offered by showroom = 10% of ₹1820

$$= \frac{\cancel{10}^{1}}{\cancel{100}_{\cancel{10}_{1}}} \times \cancel{1820}^{182} = ₹182$$

Thus, Mr. Sagar got ₹182 as discount.

12. The monthly income of Mr. Gupta = ₹30,500
The amount donated by him = 12% of ₹30,500

$$= \frac{12}{\cancel{100}_{1}} \times \cancel{30500}^{305} = ₹3660$$

Thus, Mr. Gupta donates ₹3660 to the orphanage.

Revision Exercise

1. The cost of 8 kg apples = ₹544

The cost of 1 kg apples = $₹\frac{544}{8} = ₹68$

The cost of 12 kg apples = ₹68 × 12 = ₹816

2. Time taken to read 65 pages = 8 hours

Time taken to read 1 page = $\frac{8}{65}$

Time taken to read 2080 pages

$= \frac{8}{\cancel{65}_{\cancel{13}_1}} \times \frac{\cancel{2080}^{\cancel{416}^{32}}}{} = 8 \times 32 = 256$ hours

3. Number of cartons required to pack 216 packets = 12

Number of cartons required to pack 1 packet

$= \frac{12}{216}$

Number of cartons required to pack 936 packets

$= \frac{\cancel{12}^1}{\cancel{216}_{\cancel{18}_1}} \times \cancel{936}^{52} = \frac{1 \times 52}{1} = 52$

4. (a) **Situation I:** Unit cost of pens = ₹$\frac{96}{8}$ = ₹12

Situation II: Unit cost of pens = ₹$\frac{110}{10}$ = ₹11

Thus, 10 pens for ₹110 is a better purchasing.

(b) **Situation I:** Unit cost of apples = ₹$\frac{210}{3\frac{1}{2}}$

= ₹$\frac{210}{\frac{7}{2}}$ = ₹$\frac{\cancel{210}^{30}}{\cancel{7}_1} \times 2$ = ₹ 30 × 2 = ₹60

Situation II: Unit cost of apples = ₹$\frac{420}{5\frac{1}{4}}$

= ₹$\frac{420}{\frac{21}{4}}$ = ₹$\frac{\cancel{420}^{20}}{\cancel{21}_1} \times 4$ = ₹80

Thus, apples cost is ₹60 is a better purchasing.

5. The average age = $\frac{10 + 11 + 12 + 11}{4}$ years

$= \frac{44}{4} = 11$ years

6. The average run per match

$= \frac{72 + 60 + 56 + 102 + 90}{5} = \frac{380}{5} = 76$

7. The average rainfall

$= \frac{120 \text{ cm} + 160 \text{ cm} + 90 \text{ cm} + 140 \text{ cm} + 220 \text{ cm}}{5}$

$= \frac{730}{5} = 146$ cm

8. Total number of students = 48
Number of girls = 18

Percentage of girls = $\frac{\cancel{18}^3}{\cancel{48}_8} \times 100\% = \frac{300}{8}\%$

= 37.5%

9. Total quantity of water in water bottle = 1.5 L = 1500 mL

Quantity of water drunk by Mridu = 450 mL

Percentage of water drunk by Mridu

$= \frac{450\text{mL}}{1500\text{mL}} \times 100\% = \frac{\cancel{450}^{30}}{\cancel{1500}_{\cancel{15}_1}} \times \cancel{100}^1\% = 30\%$

10. Distance travelled using fuel = 580
Distance travelled using unloaded fuel
= 112% of 580

$= \frac{112}{100} \times 584 = 654.08$

HOTS

1. Distance travelled by train = 80 km

Distance travelled by autorickshaw = 20 km

Percentage distance travelled by autorickshaw

$= \frac{\cancel{20}^1}{\cancel{80}_{\cancel{4}_1}} \times \cancel{100}^{25}\% = 25\%$

2. Number of matched played = 12
Number of matched lost = 8
Number of matched won = 12 – 8 = 4

(a) Required percentage = = $\frac{100}{3}\%$ = $33\frac{1}{3}\%$

(b) Required percentage = $\frac{\cancel{8}^2}{\cancel{12}_3} \times 100\%$

$= \frac{200}{3}\% = 66\frac{2}{3}\%$

3. Let the fourth number be A.

Then average of four number = $\frac{30 + 40 + 20 + A}{4}$

$24 = \frac{90 + A}{4}$

or 90 + A = 24 × 4 = 96
or A = 96 – 90 = 6
Thus, fourth number is 6.

Case-based Questions

1. Total quantity of water used = 150 L

Quantity of water used for drinking = 3 L

Percentage of water used for drinking

$= (3 \times 100) \div 150 = 300 \div 150 = 2\%$.

2. Total quantity of water used = 150 L
   Quantity of water used for cooking = 4 L
   Percentage of water used for drinking
   $= (4 \times 100) \div 150 = 400 \div 150 = 2.67\%$.
3. Total quantity of water used = 150 L
   Quantity of water used for bathing, sanitation and gardening = 20 L + 40 + 23 l = 83 L
   Percentage of water used in these activities
   $= (83 \times 100) \div 150 = 8300 \div 150 = 53.33\%$.
4. Cost of 5 L of packaged water = ₹ 125 L
   Cost of 1 L of packaged water = ₹ 125 L ÷ 5
   = ₹25.
   Cost of 12 L of packaged water = ₹ 25 L × 12
   = ₹300.
   Thus, the cost of 25 L of packaged water is ₹300.
5. Total water consumed by 5 families
   = 140 L + 148 L + 160 L + 150 L + 180 L
   = 778 L
   Required average = 778 L ÷ 5 = 155.6 L.

Mental Math

1. Number of pens in 17 boxes = 306
   Number of pens in 1 box = $\frac{306}{17} = 18$
   Number of pens in 21 boxes = 18 × 21 = 378
   Thus, number of pens in 21 boxes will be 378
2. In ₹840, number of watermelons can be buy = 15
   In ₹1, number of watermelons can be buy = $\frac{15}{840}$
   In ₹1120, number of watermelons can be buy
   $= \frac{15}{840} \times 1120 = \frac{16800}{840} = 20$
   Thus, Rahman can buy 20 watermelon for ₹1120.
3. Required average = $\frac{8+10+12+18}{4} = \frac{48}{4} = 12$
   Thus, the average of 8, 10, 12 and 18 is 12.
4. Let the missing number be A.
   Thus, average = $\frac{15+13+A}{3}$
   or $10 = \frac{28+A}{3}$
   or 28 + A = 30
   or A = 30 – 28 = 2
   Thus, 10 is the average numbers 15, 13 and 2.
5. The Latin word *percentum* means out of 100.

Test Your Knowledge — 2 (Chapters 4 – 8)

1. (a) LHS = 15 + 52 ÷ 13 = 15 + 4 = 19
   RHS = 19
   Since LHS = RHS, so the given statement is true.
   (b) LHS = 52 – 102 ÷ 17 = 52 – 6 = 46
   RHS = 56
   Since LHS ≠ RHS, so the given statement is false.
   (c) LHS = 12 + 36 ÷ 6 × 5
   = 12 + 6 × 5 = 12 + 30 = 42
   RHS = 86
   Since LHS ≠ RHS, so the given statement is false.
   (d) LHS = 19 × 3 – 72 ÷ 12
   = 19 × 3 – 6 = 57 – 6 = 51.
   RHS = 51
   As LHS = RHS, so the given statement is true.
2. (a) 1, 23 (b) 1, 5, 25
   (c) 1, 2, 5, 10, 13, 26, 65, 130
   (d) 1, 2, 5, 7, 10, 14, 25, 35, 50, 70, 175, 350
3. (a)

2	90
3	45
3	15
5	5
	1

   $90 = 2 \times 3 \times 3 \times 5$

   (b)

2	32
2	16
2	8
2	4
2	2
	1

   $32 = 2 \times 2 \times 2 \times 2 \times 2$

   (c)

2	36
2	18
3	9
3	3
	1

   $36 = 2 \times 2 \times 3 \times 3$

(d)

2	56
2	28
2	14
7	7
	1

$56 = 2 \times 2 \times 2 \times 7$

4. (a)

2	18, 24
3	9, 12
	3, 4

HCF $= 2 \times 3 = 6$

(b)

2	28, 54
	14, 27

HCF = 2

(c)

2	72, 92
2	36, 46
	18, 23

HCF $= 2 \times 2 = 4$

(d)

5	85, 90
	7, 18

HCF = 5

5. (a)

2	32, 48
2	16, 24
2	8, 12
2	4, 6
	2, 3

LCM $= 2 \times 2 \times 2 \times 2 = 16$

(b)

5	50, 75
5	10, 15
	2, 3

LCM $= 5 \times 5 = 25$

(c)

2	72, 92
2	36, 46
	18, 23

LCM $= 2 \times 2 = 4$

6. (a) $\frac{3}{7}+\frac{4}{9} = \frac{3\times9+4\times7}{63} = \frac{27+28}{63} = \frac{55}{63}$

(b) $1\frac{5}{8}+\frac{2}{20} = \frac{13}{8}+\frac{2}{20} = \frac{65+4}{40} = \frac{69}{40} = 1\frac{19}{40}$

(c) $\frac{4}{26}-\frac{2}{14} = \frac{4\times7-2\times13}{182} = \frac{28-26}{182} = \frac{2}{182} = \frac{1}{91}$

(d) $3\frac{5}{18}-\frac{5}{30} = \frac{59}{18}-\frac{5}{30} = \frac{59\times5-5\times3}{90}$

$= \frac{295-15}{90} = \frac{280}{90} = \frac{28}{9} = 3\frac{1}{9}$

7. (a) $\frac{\cancel{4}^{1}}{9}\times\frac{\cancel{2}^{1}}{\cancel{24}_{6_3}} = \frac{1\times1}{9\times3} = \frac{1}{27}$

(b) $\frac{\cancel{5}^{1}}{\cancel{28}_{7}}\times\frac{\cancel{16}^{4}}{\cancel{55}_{11}} = \frac{1\times4}{7\times11} = \frac{4}{77}$

(c) $\frac{4}{16}\div4 = \frac{\cancel{4}^{1}}{16}\times\frac{1}{\cancel{4}_{1}} = \frac{1\times1}{16\times1} = \frac{1}{16}$

(d) $\frac{8}{72}\div\frac{6}{10} = \frac{\cancel{8}^{1}}{\cancel{72}_{9}}\times\frac{\cancel{10}^{5}}{\cancel{6}_{3}} = \frac{1\times5}{9\times3} = \frac{5}{27}$

8. $4.015 < 4.052 < 4.52 < 4.521$

9. (a)
$$\begin{array}{r} 55.240 \\ +\ 372.600 \\ \hline 427.840 \end{array}$$

(b)
$$\begin{array}{r} 170.04 \\ -\ 94.98 \\ \hline 75.06 \end{array}$$

(c)
$$\begin{array}{r} 142.36 \\ \times\ 2.4 \\ \hline 56944 \\ +\ 184720 \\ \hline 231.764 \end{array}$$

(d)
$$\begin{array}{r} 0.683 \\ 8\overline{)5.468} \\ -\ 48 \\ \hline 66 \\ -\ 64 \\ \hline 28 \\ -\ 24 \\ \hline 4 \end{array}$$

10. (a) Total number of sweets = 272

Number of sweets to be packed $= \frac{5}{8}$ of 272

$= \frac{5}{\cancel{8}_{1}} \times \cancel{272}^{34} = 5 \times 34 = 140$

Number of sweets left with man = 272 – 140 = 132.

(b) Let the part of land having the man = 1

So, the part of land sold by him $= \frac{1}{4}$ of $1 = \frac{1}{4}$

Remaining part of land $= 1 - \frac{1}{4} = \frac{3}{4}$

The part of land given to son $= \frac{1}{2}$ of $\frac{3}{4}$

$= \frac{1}{2}\times\frac{3}{4} = \frac{3}{8}$

The part of land left with man $= \frac{3}{4} - \frac{3}{8}$

$= \frac{6-3}{8} = \frac{3}{8}$.

(c) The weight of 1 bag = 42.8 kg

The weight of 372 bags = 42.8 × 372

= 15921.6 kg.

(d) Quantity of milk Anu had = 36.45 L

Quantity of milk sold by Anu = 12.25 L

Quantity of milk used by Anu = 8.5 L

The quantity of remaining milk

= 36.45 L – (12.25L + 8.5L)

= 36.45 L – 20.75 L = 15.7 L

(e) Required average

$= \frac{14+16+25+15+18+32}{6} = \frac{120}{6} = 20$

Model Test Paper — 1 (Chapters 1 – 8)

1.

S. No.	Numbers	Place value of underlined digit in the Indian system	Place value of underlined digit in the International system
(a)	4712261	2,000	2,000
(b)	750499	7,00,000	7,00,000
(c)	4422000	0	0
(d)	936.4815	0.001	0.001

2. Do it yourself.

3. (a) 15 + 32 ÷ 16 × 20 of 4

= 15 + 32 ÷ 16 × 80

= 15 + 2 × 80 = 15 + 160 = 175.

(b) 107 – 125 ÷ 25 + 39 × 3

= 107 – 5 + 39 × 3

= 107 – 5 + 117

= 107 + 117 – 5

= 224 – 5 = 219.

(c) 77 ÷ 7 × 21 – 18

= 11 × 21 – 18

= 231 – 18 = 213.

(d) (18 × 5) ÷ 15 – 6 + 72

= 90 ÷ 15 – 6 + 72

= 6 – 6 + 72

= 0 + 72 = 72.

4. (a) Given digits are 3, 0, 4, 7, 5, 8

The required greatest member = 875430

The required smallest member = + 304578

Sum = 1180008

(b)

$$\begin{array}{r} 4937261 \\ +1264378 \\ \hline 6201639 \end{array} \qquad \begin{array}{r} 8626975 \\ -1264378 \\ \hline 7362577 \end{array}$$

Thus, 8626975 – (4937261 + 1264378)

= 7362577

(c)

$$\begin{array}{r} 584360 \\ -492648 \\ \hline 91712 \end{array}$$

Thus, the difference between 492648 and 584360 is 91712.

(d) The sum of two numbers = 983643356

One of two numbers = – 324814454

Other number = 658829 02

(e) 52486 < 4926324 < 7386436 < 82154364

(f) 900000 + 40000 + 3000 + 500 + 40 + 8

= 943548

(g) (i) LXXVII = 50 + 10 + 10 + 7 = 77

(ii) XXXI = 10 + 10 + 11 = 31

(iii) LXXXVIII = 50 + 10 + 10 + 10 + 8 = 88

(iv) XCV = 100 – 10 + 5 = 95

5. (a)

$$\begin{array}{r} 26352 \\ \times\ 218 \\ \hline 210816 \\ 263520 \\ +\ 5270400 \\ \hline 5744736 \end{array}$$

(b)

$$\begin{array}{r} 40905 \\ \times\ 444 \\ \hline 163620 \\ 1636200 \\ +\ 16362000 \\ \hline 18161820 \end{array}$$

(c)

$$\begin{array}{r} 25464 \\ \times\ 856 \\ \hline 152784 \\ 1273200 \\ +\ 20371200 \\ \hline 21797184 \end{array}$$

6. (a)
$$\begin{array}{r} 174 \\ 145\overline{)25272} \\ -145 \\ \hline 1077 \\ -1015 \\ \hline 622 \\ -580 \\ \hline 42 \end{array}$$

Q = 174, R = 42

(b)
$$\begin{array}{r} 1575 \\ 124\overline{)195305} \\ -124 \\ \hline 713 \\ -620 \\ \hline 930 \\ -868 \\ \hline 625 \\ -620 \\ \hline 5 \end{array}$$

Q = 1575, R = 5

(c)
$$\begin{array}{r} 1649 \\ 325\overline{)536164} \\ -325 \\ \hline 2111 \\ -1950 \\ \hline 1616 \\ -1300 \\ \hline 3164 \\ -2925 \\ \hline 239 \end{array}$$

Q = 1649, R = 239

7. The product of two numbers = 7386884

One of the two numbers = 268

Other number = 7386884 ÷ 268

= 27563.

Thus, the other number is 27563.

$$\begin{array}{r} 27563 \\ 268\overline{)7386884} \\ -536 \\ \hline 2026 \\ -1876 \\ \hline 1508 \\ -1340 \\ \hline 1688 \\ -1608 \\ \hline 804 \\ -804 \\ \hline 0 \end{array}$$

8. Number of pages in 1 book = 348

Number of pages in 408 books

= 348 × 428 = 1,48,944

$$\begin{array}{r} 348 \\ \times\ 428 \\ \hline 2784 \\ 6960 \\ +\ 139200 \\ \hline 148944 \end{array}$$

9. Number of packets required to pack 36 balls = 1

Number of packets required to pack 1 ball = $\frac{1}{36}$

Number of packets required to pack 164232 balls

$= \frac{1}{36} \times 164232 = 4562$

$$\begin{array}{r} 4562 \\ 36\overline{)164232} \\ -144 \\ \hline 202 \\ -180 \\ \hline 223 \\ -216 \\ \hline 72 \\ -72 \\ \hline 0 \end{array}$$

Thus,4562 packets are required to pack 164232 balls.

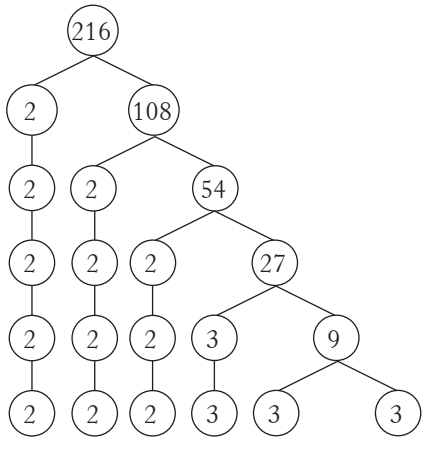
10. $[\{180 - (6 \div \overline{3-2}) \times 3 \times 7\} + 4]$

$= [\{180 - (6 \div 1) \times 3 \times 7\} + 4]$

$= [\{180 - 6 \times 3 \times 7\} + 4]$

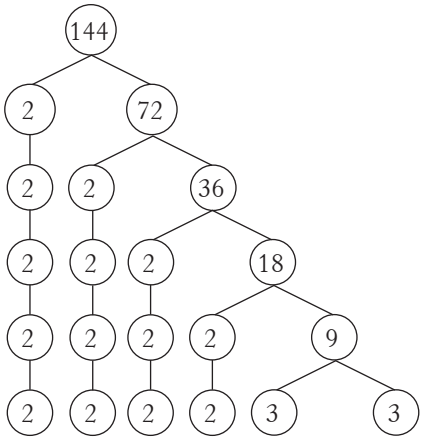
$= [\{180 - 126\} + 4] = [54 + 4] = 58.$

11. (a)



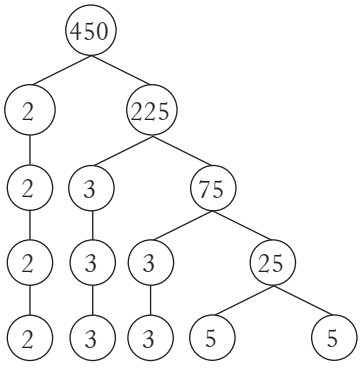
216 = 2 × 2 × 2 × 3 × 3 × 3

(b)



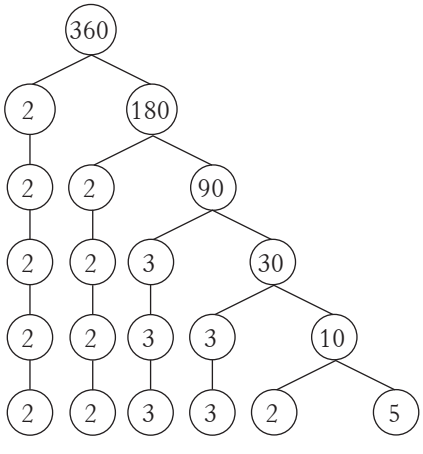
$144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$

(c)



$450 = 2 \times 3 \times 3 \times 5 \times 5$

(d)



$360 = 2 \times 2 \times 2 \times 3 \times 3 \times 5$

12. (a) $144 \overline{)240}\ 1$
-144
$96 \overline{)144}\ 1$
-96
$48 \overline{)96}\ 2$
-96
0

HCF (144, 240) = 48

(b) $264 \overline{)520}\ 1$
-264
$256 \overline{)264}\ 1$
-256
$8 \overline{)256}\ 32$
-24
16
-16
0

HCF (264, 520) = 8

13. (a)

2	36, 42, 80
2	18, 21, 40
3	9, 21, 20
	3, 7, 20

LCM = $2 \times 2 \times 3 \times 3 \times 2 \times 20 = 5040$

(b)

2	35, 60, 90
2	35, 30, 45
5	35, 10, 15
	7, 2, 3

LCM = $2 \times 3 \times 5 \times 7 \times 2 \times 3 = 1260$

14. (a) $\frac{4}{5} = \frac{4 \times 2}{5 \times 2} = \frac{8}{10}, \frac{4}{5} = \frac{4 \times 3}{5 \times 3} = \frac{12}{15},$
$\frac{4}{5} = \frac{4 \times 4}{5 \times 4} = \frac{16}{20}$

Thus, $\frac{8}{10}, \frac{12}{15}$ and $\frac{16}{20}$ are the required three equivalent fractions.

$\frac{6}{7} = \frac{6 \times 2}{7 \times 2} = \frac{12}{14}, \frac{6}{7} = \frac{6 \times 3}{7 \times 3} = \frac{18}{21},$
$\frac{6}{7} = \frac{6 \times 4}{7 \times 4} = \frac{24}{28}$

Thus, $\frac{12}{14}, \frac{18}{21}$ and $\frac{24}{28}$ are the required three equivalent fractions.

$\frac{5}{12} = \frac{5\times2}{12\times2} = \frac{10}{24}, \frac{5}{12} = \frac{5\times3}{12\times3} = \frac{15}{36}, \frac{5}{12} = \frac{5\times4}{12\times4} = \frac{20}{48}$

Thus, $\frac{10}{24}, \frac{15}{36}$ and $\frac{20}{48}$ are the required three equivalent fractions.

(b) $\frac{21}{5} = 4\frac{1}{5}, \frac{24}{7} = 3\frac{3}{7}, \frac{95}{12} = 7\frac{11}{12}$

(c) $3\frac{2}{5} = \frac{3\times5+2}{5} = \frac{7}{5}, 4\frac{3}{8} = \frac{4\times8+3}{8} = \frac{35}{8}, 5\frac{4}{15} = \frac{5\times15+4}{15} = \frac{79}{15}$

15. (a) $4\frac{1}{3} + 2\frac{1}{8} = \frac{13}{3} + \frac{17}{8} = \frac{13\times8+17\times3}{24} = \frac{104+51}{24} = \frac{155}{24} = 6\frac{11}{24}$

(b) $3\frac{4}{9} - 2\frac{2}{5} = \frac{31}{9} - \frac{12}{5} = \frac{31\times5-12\times9}{45} = \frac{155-108}{45} = \frac{47}{45} = 1\frac{2}{45}$

(c) $3\frac{5}{9} + 2\frac{1}{6} + 1\frac{1}{2}$

$= \frac{3\times9+5}{9} + \frac{2\times6+1}{6} + \frac{1\times2+1}{2}$

$= \frac{32}{9} + \frac{13}{6} + \frac{3}{2}$

$= \frac{32\times2+13\times3+3\times9}{18}$

$= \frac{64+39+27}{18} = \frac{\cancel{130}^{65}}{\cancel{18}_{9}}$

$= \frac{65}{9} = 7\frac{2}{9}$

(d) $\frac{5}{\cancel{8}_{4}} \times \frac{\cancel{6}^{3}}{7} = \frac{5\times3}{4\times7} = \frac{15}{28}$

(e) $\frac{\cancel{3}^{1}}{\cancel{4}_{2}} \times \frac{\cancel{2}^{1}}{8} \times \frac{5}{\cancel{9}_{3}} = \frac{1\times1\times5}{2\times8\times3} = \frac{5}{48}$

(f) $3\frac{1}{5} \div \frac{1}{6} = \frac{16}{5} \div \frac{1}{6} = \frac{16}{5} \times \frac{6}{1} = \frac{96}{5} = 19\frac{1}{5}$

(g) $2\frac{3}{4} + 2\frac{1}{2} \times 2 = \frac{11}{4} + \frac{5}{2} \times 2 = \frac{11}{4} + 5 = \frac{11+20}{4} = \frac{31}{4} = 7\frac{3}{4}$

(h) $\frac{\cancel{4}^{2}}{\cancel{9}_{3}} \times \frac{\cancel{3}^{1}}{\cancel{2}_{1}} - \frac{1}{3} = \frac{2\times1}{3\times1} - \frac{1}{3} = \frac{2}{3} - \frac{1}{3} = \frac{2-1}{3} = \frac{1}{3}$

16. (a) Distance travelled on Monday $= 18\frac{1}{2}$ km

$= \frac{37}{2}$ km

Distance travelled on Tuesday $= 24\frac{3}{4}$ km

$= \frac{99}{4}$ km

Distance travelled on Wednesday $= 25\frac{9}{16}$ km

$= \frac{409}{16}$ km

Total distance travelled in these three days

$= \frac{37}{2} + \frac{99}{4} + \frac{409}{16} = \frac{37\times8+99\times4+409\times1}{16}$

$= \frac{296+396+409}{16} = \frac{1101}{16} = 68\frac{13}{16}$ km

(b) Amount deposited in account = ₹50000

Amount donated to an old-age home

$= \frac{1}{10}$ of ₹50000 = ₹5000

Amount donated to an orphanage

$= \frac{1}{5}$ of ₹50000 = ₹10000

Amount left in the account

= ₹50000 – (₹5000 + ₹10000)

= ₹50000 – ₹15000 = ₹35000.

(c) The weight of one bag $= 25\frac{1}{4}$ kg $= \frac{101}{4}$ kg

The weight of 12 bags $= \frac{101}{4} \times 12$ kg

$= 101 \times 3$ kg $= 303$ kg.

(d) Length of ribbon Renu has = $18\frac{1}{2}\text{m} = \frac{37}{2}\text{m}$

Length of one piece of ribbon = $1\frac{1}{2}\text{m} = \frac{3}{2}\text{m}$

Number of pieces cut from the ribbon

$= \frac{37}{2} \div \frac{3}{2} = \frac{37}{\cancel{2}_1} \times \frac{\cancel{2}^1}{3} = \frac{37}{3} = 12\frac{1}{3} = 12.$

Thus, 12 pieces cut be from the ribbon.

17. (a) $\frac{4}{10} = 0.4$ (b) $\frac{109}{100} = 1.09$ (c) $\frac{24539}{1000} = 24.539$

18.
$$\begin{array}{r} 16.243 \\ 3.005 \\ +\ 272.800 \\ \hline 292.048 \end{array}$$

19.
$$\begin{array}{r} 309.100 \\ -\ 14.678 \\ \hline 294.422 \end{array}$$

20. (a)
$$\begin{array}{r} 12.48 \\ \times\ 9 \\ \hline 112.32 \end{array}$$

(b)
$$\begin{array}{r} 8.417 \\ \times\ 2.6 \\ \hline 50502 \\ +\ 168340 \\ \hline 21.8842 \end{array}$$

(c)
$$\begin{array}{r} 3.33 \\ \times\ 3\,3.3 \\ \hline 999 \\ 9990 \\ +\ 99900 \\ \hline 110.889 \end{array}$$

21.
$$\begin{array}{r} 31.91875 \\ 8\overline{)255.35} \\ -\ 24 \\ \hline 15 \\ -\ 8 \\ \hline 73 \\ -\ 72 \\ \hline 15 \\ -\ 8 \\ \hline 70 \\ -\ 64 \\ \hline 60 \\ -\ 56 \\ \hline 40 \\ -\ 40 \\ \hline 0 \end{array}$$

22. (a) $\frac{7}{25} = \frac{7 \times 4}{25 \times 4} = \frac{28}{100} = 28\%$

(b) $\frac{7}{4} = \frac{7 \times 25}{4 \times 25} = \frac{175}{100} = 175\%$

(c) $\frac{3}{5} = \frac{3 \times 20}{5 \times 20} = \frac{60}{100} = 60\%$

(d) $\frac{15}{5} = \frac{15 \times 20}{5 \times 20} = \frac{300}{100} = 300\%$

23. Average expenditure

$= ₹\frac{500 + 450 + 840 + 1120 + 360}{5}$

$= ₹\frac{3270}{5} = ₹654$

Chapter 9. Geometry

Recap

1. (a) A point has no length, breadth and thickness.

(b) A line segment has two end points.

(c) A line goes indefinitely in both directions.

(d) A ray extends endlessly in one direction.

(e) A triangle is a closed shape with three sides and three corners.

(f) A rectangle is a closed shape with 4 sides (only equal opposite sides) and four corners.

(g) A square is a closed shape with four equal sides and four corners.

(h) A circle is a closed shape with no corner or side.

(i) The boundary of a circle is called its circumference.

(j) The radius is a line segment that joins the centre of a circle to any point on the circle.

(k) The length of the radius is half that of the diameter.

2. (a) AB = 4 cm, BC = 4 cm, and AC = 4 cm

(b) AB = 3.5 cm, BC = 5 cm, and DC = 2.2 cm, ED = 3.5 cm, EF = 1.3 cm, and AF = 1.5 cm

(c) PR = 2.9 cm, RS = 4 cm, QS = 2.9 cm, and PQ = 2.8 cm

3.

Shape	Name	Number of sides/faces	Number of vertices/edges
(a)	Triangle	3	3
(b)	Square	4	4
(c)	Rectangle	4	4
(d)	Circle	0	0
(e)	Cuboid	6	8/12
(f)	Cylinder	3	2

4. (a) Centre : O
   (b) Radii : OX, OY, OR
   (c) Diameter : XY
   (d) Chords : XP, PQ, XY

Exercise 9.1

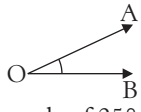
1. (a) Point, X (b) Point, L
   (c) Line, $\overleftrightarrow{ST}$ (d) Ray, $\overrightarrow{PQ}$
   (e) Ray, $\overleftarrow{NM}$ (f) Line segment, $\overline{AB}$
   (g) Plane
2. (a) Ray ST (b) Line UV
   (c) Point P (d) Line segment LM
   (e) Ray PS (f) Point L
3. (a) Points: A, F, O, D, G, B, E, C
   (b) Rays: $\overrightarrow{OA}$, $\overrightarrow{OE}$, $\overrightarrow{OC}$, $\overrightarrow{OD}$, $\overrightarrow{OB}$
   (c) Lines: $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$
   (d) Line segments: $\overline{AF}$, $\overline{FO}$, $\overline{AO}$, $\overline{OG}$, $\overline{BO}$, $\overline{EO}$, $\overline{CO}$, $\overline{DO}$, $\overline{CD}$, $\overline{AB}$
4. (a) Intersecting lines (b) Intersecting lines
   (c) Parallel lines (d) Intersecting lines
5. Ten parallel lines, namely :
   AB || GH, EF || CD, AB || CD, GH || EF,
   AG || CE, BH || DF, AC || GE, BO || HF,
   BH || AG, CE || DF
6. (a) Collinear points
   (b) Non-collinear points
   (c) Collinear points

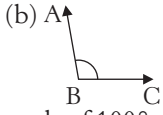
Exercise 9.2

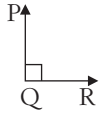
1. (c), (d), (g) and (h)

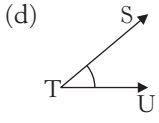
2.

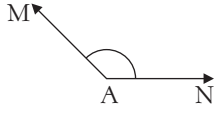
S.No.	(a)	(b)	(c)	(d)
Arms	CB, CD	KA, KM	ED, EF	US, UN
Vertex	C	K	E	U
Names of angles	∠BCD, ∠DCB, ∠C	∠AKM, ∠MKA, ∠K	∠DEF, ∠FED, ∠E	∠SUN, ∠NUS, ∠U

3. (a) Three, ∠AOB, ∠BOC and ∠AOC
   (b) Six, ∠GOH, ∠HOI, ∠IOJ, ∠GOI, ∠HOJ and ∠GOJ
   (c) Six, ∠UOX, ∠VOW, ∠XOW, ∠UOV, ∠UOW, ∠XOV
   (d) Eighteen, ∠POU, ∠POT, ∠POS, ∠UOT, ∠UOS, ∠UOR, ∠TOS, ∠TOR, ∠TOQ, ∠SOR, ∠SOQ, ∠SOP, ∠ROQ, ∠ROP, ∠ROU, ∠QOP, ∠QOU, ∠QOT
4. (a) B, D, and C (b) L (c) P, Q, and R
5. (a) 105°, (b) 55°, (c) 90°, (d) 95°
6. (a) 

angle of 25°
(b) 

angle of 100°
(c) 

angle of 90°
(d) 

angle of 40°
(e) angle of 135°


7. (a) Acute angle (b) Right angle
   (c) Obtuse angle (d) Straight angle
8. (a) Obtuse angle (b) Acute angle
   (c) Zero angle (d) Right angle
   (e) Obtuse angle (f) Obtuse angle
   (g) Reflex angle (h) Straight angle
   (i) Reflex angle (j) Complete angle
9. (a) ∠ABC = 115°, ∠PQR = 55°
   Hence, ∠ABC > ∠PQR
   (b) ∠JKL = 90°, ∠STU = 115°
   Hence, ∠JKL < ∠STU
   (c) ∠UVW = 65°, ∠XYZ = 80°
   Hence, ∠UVW < ∠XYZ

10. (a) $65° + 25° = 90°$
Thus, 65° and 25° are complementary angles.

(b) $28° + 42° = 70°$
Thus, 28° and 42° are not complementary angles.

(c) $80° + 15° = 95°$
Thus, 80° and 15° are not complementary angles.

(d) $55° + 35° = 90°$
Thus, 55° and 35° are complementary angles.

11. (a) $95° + 85° = 180°$
Thus, 95° and 85° are supplementary angles.

(b) $65° + 125° = 180°$
Thus, 65° and 125° are supplementary angles.

(c) $128° + 52° = 180°$
Thus, 128° and 52° are supplementary angles.

(d) $72° + 108° = 180°$
Thus, 72° and 108° are supplementary angles.

12. (a) Since $90° - 32° = 58°$
Thus, complement of 32° is 58°.

(b) Since $90° - 46° = 44°$
Thus, complement of 46° is 44°.

(c) Since $90° - 24° = 66°$
Thus, complement of 24° is 66°.

(d) Since $90° - 17° = 73°$
Thus, complement of 17° is 73°.

13. (a) Since $180° - 124° = 56°$
Thus, 56° is supplement of 124°.

(b) Since $180° - 32° = 148°$
Thus, 148° is supplement of 32°.

(c) Since $180° - 90° = 90°$
Thus, 90° is supplement of 90°.

(d) Since $180° - 84° = 96°$
Thus, 96° is supplement of 84°.

Exercise 9.3

1.

S.No.	Vertices	Sides	Angles
(a)	A, B, C	AB, AC, BC	$\angle A, \angle B, \angle C$
(b)	P, Q, R	PQ, PR, QR	$\angle P, \angle Q, \angle R$
(c)	S, T, U	ST, SU, TU	$\angle S, \angle T, \angle U$
(d)	A, B, T	AB, AT, BT	$\angle A, \angle B, \angle T$

2. (a) In the given triangle, each side is same.
So, the given triangle is an equilateral triangle.

(b) In the given triangle, two sides are of same length.
So, the given triangle is an isosceles triangle.

(c) In the given triangle, all sides are of different length.
So, the given triangle is a scalene triangle.

(d) In the given triangle, each side is of same length.
So, the given triangle is an equilateral triangle.

3. (a) In the given triangle, each angle is an acute ($<90°$).
So, the given triangle is an acute-angled triangle.

(b) In the given triangle, each angle is acute ($<90°$).
So, the given triangle is an acute-angled triangle.

(c) In the given triangle, an angle is of 90°, i.e. right angle.
So, the given triangle is a right-angled triangle.

(d) In the given triangle, an angle is obtuse ($>90°$).
So, the given triangle is an obtuse-angled triangle.

4. (a) No (b) No (c) Yes
(d) Yes (e) Yes (f) No

5. (a) In the given triangle, let the missing angle be $x°$.
So, $40° + 80° + x° = 180°$
[Angle sum properly of a triangles]
or $120° + x° = 180°$
or $x° = 180° - 120° = 60°$
So, the missing angle is of 60°.

(b) In the given triangle, let the missing angle be $x°$.
So, $45° + 65° + x° = 180°$
[Angle sum properly of a triangles]
or $110° + x° = 180°$
or $x° = 180° - 110° = 70°$
So, the missing angle is of 70°.

(c) In the given triangle, let the missing angle be x°.
So, $45° + 45° + x° = 180°$
[Angle sum properly of a triangles]
or $90° + x° = 180°$
or $x° = 180° - 90° = 90°$
So the missing angle is of 90°.

(d) In the given triangle, let the missing angle be $x°$.
So, $110° + 25° + x° = 180°$
[Angle sum properly of a triangles]
or $135° + x° = 180°$
or $x° = 180° - 135° = 45°$
or $x° = 45°$
So the missing angle is of 45°.

6. (a) Three acute angles are possible in a triangle.
(b) One right angle is possible in a triangle.
(c) One obtuse angle is possible in a triangle.
(d) None obtuse angles are possible in a triangle.
(e) One obtuse angle is possible in a triangle.

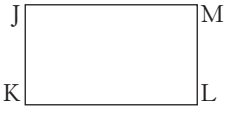
7. (a) A triangle has 6 parts.
(b) An equilateral triangle has all angle equal.
(c) An isosceles triangle has two sides equal.
(d) In a scalene triangle, all angles are unequal.
(e) Hypotenuse is the side apposite to the right angle.
(f) The sum of the angles of a triangle is 180°.

Exercise 9.4

1.

S. No.	Sides	Angles	Vertices	Diagonals	Pair of opposite sides
(a)	AB, BC, CD, AD	∠A, ∠B, ∠C, ∠D	A, B, C, D	AC, BD	AB, DC; BC, AD
(b)	PQ, RS, QS, PR	∠P, ∠Q, ∠R, ∠S	P, Q, R, S	PS, RQ	PQ, RS; PR, QS
(c)	UX, XW, VW, UV	∠U, ∠X, ∠W, ∠V	U, X, W, V	UW, VX	UX, VW; UV, XW

2. (a) ML
(b) ∠J
(c) JL, KM



3. (a) Square (b) Rectangle
(c) Parallelogram (d) Trapezium
(e) Rhombus

4. (a) True (b) True
(c) False (d) True
(e) True

Exercise 9.5

1. (a) A circle is a shape with all points at the same distance from the centre.
(b) The diameter of a circle is the distance across the circle through its centre.
(c) The radius of a circle is the distance from the centre of a circle to any point on it.
(d) The diameter of a circle is the longest chord.

2. (a) Arc : $\overset{\frown}{ADE}$
(b) Diameter : AB
(c) Chord : DE or AB
(d) Radii : CD, CE, CB, CA

3. (a) Radius = 4 cm
Diameter = 2 × Radius
= 2 × 4 cm = 8 cm.

(b) Radius = 3 cm
Diameter = 2 × Radius
= 2 × 3 cm = 6 cm.

(c) Radius = 6 cm
Diameter = 2 × Radius
= 2 × 6 cm = 12 cm.

(d) Radius = 8 cm
Diameter = 2 × Radius
= 2 × 8 cm = 16 cm.

(e) Radius = 12 cm
Diameter = 2 × Radius = 2 × 12 cm = 24 cm.

4. (a) Diameter = 10 cm
$\text{Radius} = \frac{\text{Diameter}}{2} = \frac{10 \text{ cm}}{2} = 5 \text{ cm}.$

(b) Diameter = 14 cm
$\text{Radius} = \frac{\text{Diameter}}{2} = \frac{14 \text{ cm}}{2} = 7 \text{ cm}.$

(c) Diameter = 16 cm
$\text{Radius} = \frac{\text{Diameter}}{2} = \frac{16 \text{ cm}}{2} = 8 \text{ cm}.$

(d) Diameter = 20 cm
$\text{Radius} = \frac{\text{Diameter}}{2} = \frac{20 \text{ cm}}{2} = 10 \text{ cm}.$

(e) Diameter = 18 cm
$\text{Radius} = \frac{\text{Diameter}}{2} = \frac{18 \text{ cm}}{2} = 9 \text{ cm}.$

5. (a) Radius = 2 cm
Circumference = Radius × 6.28
= 2 × 6.28 = 12.56 cm.

(b) Radius = 4 cm
Circumference = Radius × 6.28
= 4 × 6.28 = 25.12 cm

(c) Radius = 6 cm
Circumference = Radius × 6.28
= 6 × 6.28 = 37.68 cm.

(d) Radius = 3 cm
Circumference = Radius × 6.28
= 3 × 6.28 = 18.84 cm.

(e) Radius = 5 cm
Circumference = Radius × 6.28
= 5 × 6.28 = 31.4 cm.

6. (a) Diameter = 6 cm
Circumference = Diameter × 3.14
= 6 × 3.14 = 18.84 cm.

(b) Diameter = 4.8 cm
Circumference = Diameter × 3.14
= 4.8 × 3.14 = 15.072 cm.

(c) Diameter = 3 cm
Circumference = Diameter × 3.14
= 3 × 3.14 = 9.42 cm.

(d) Diameter = 12 cm
Circumference = Diameter × 3.14
= 12 × 3.14 = 37.68 cm.

(e) Diameter = 24 cm
Circumference = Diameter × 3.14
= 24 × 3.14 = 75.36 cm.

7. Do it yourself.
8. (a) There are 4 concentric circles in the given figure.
(b) There are 5 concentric circles in the given figure.

Revision Exercise

1. (a) Rays:
$\overrightarrow{GC}$, $\overrightarrow{GI}$, $\overrightarrow{GB}$, $\overrightarrow{GA}$, $\overrightarrow{GE}$, $\overrightarrow{FE}$, $\overrightarrow{FD}$, $\overrightarrow{HD}$, $\overrightarrow{HB}$
(b) Lines: $\overleftrightarrow{IC}$, $\overleftrightarrow{AE}$
(c) Line segments: $\overline{GF}$, $\overline{HG}$, $\overline{HF}$, $\overline{CG}$, $\overline{IG}$, $\overline{DF}$
(d) Pair of intersecting lines: $\overleftrightarrow{EA}$ and $\overleftrightarrow{IC}$
(e) Collinear paints: A, G, F, E; H, F, D; I, G, C
(f) Angles: $\angle H$, $\angle G$, $\angle F$
2. (a) Parallel lines and intersecting lines
(b) Parallel lines and intersecting lines
(c) Intersecting lines
3. (a) OA is a ray. (b) ED is a line.
(c) JH is a line segment. (d) IB is a ray.
(e) OJ is a line segment. (f) JG is a ray.
(g) OI is a line segment. (h) OE is a ray.
4. (a) The lengths of sides of the given triangle are equal. So, it is an equilateral triangle.
(b) The length of all the sides of the given triangle are different. So, it is an isosceles triangle.
(c) The length of two sides of the given triangle is equal. So, it is an isosceles triangle.
(d) The length of all sides of the given triangle are different. So,it is a scalene triangle.
5. (a) One of the angles of the given triangle is an obtuse angle. So, it is an obtuse-angled triangle.
(b) Each angle of the given triangle is an acute angle. So, it is an acute-angled triangle.
(c) One of the angles of the given triangle is a right angle.
(d) Each angle of the given triangle is an acute angle. So, it is an acute-angled triangle.
6. (a) The given quadrilateral is a rectangle as its opposite sides are equal and each angle is 90°.
(b) The given quadrilateral is a trapezium as only one pair of opposite sides of it is parallel.
(c) The given quadrilateral is a parallelogram as its both pairs of opposite sides are parallel and equal to each other.
(d) The given quadrilateral is a rhombus as its all sides are equal and opposite sides are parallel.
7. (a) Radius = 8 cm
Diameter = 2 × 8 cm = 16 cm
(b) Radius = 7 cm
Diameter = 2 × 7 cm = 14 cm
(c) Radius = 9 cm
Diameter = 2 × 9 cm = 18 cm
(d) Radius = 4.5 cm
Diameter = 2 × 4.5 cm = 9 cm
8. (a) Diameter = 7 cm
Radius = $\frac{7}{2}$cm = 3.5 cm
(b) Diameter = 12 cm
Radius = $\frac{12}{2}$cm = 6 cm
(c) Diameter = 11 cm

Radius $= \frac{11}{2}$ cm $= 5.5$ cm

(d) Diameter = 16 cm

Radius $= \frac{16}{2}$ cm $= 8$ cm

9. (a) Diameter = 12 cm

Circumference = Diameter × 3.14

= 12 cm × 3.14 = 37.68 cm

(b) Diameter = 16 cm

Circumference = Diameter × 3.14

= 16 cm × 3.14 = 50.24 cm.

(c) Diameter = 18 cm

Circumference = Diameter × 3.14

= 18 cm × 3.14 = 56.52 cm.

(d) Diameter = 15 cm

Circumference = Diameter × 3.14

= 15 cm × 3.14 = 14.1 cm.

10. (a) Radius = 3.4 cm

Circumference = Radius × 6.28

= 3.4 cm × 6.28 = 21.35 cm

(b) Radius = 4.5 cm

Circumference = Radius × 6.28

= 4.5 cm × 6.28 = 28.26 cm.

(c) Radius = 7 cm

Circumference = Radius × 6.28

= 7 cm × 6.28 = 43.96 cm.

(d) Radius = 8.2 cm

Circumference = Radius × 6.28

= 8.2 cm × 6.28 = 51.496 cm.

HOTS

1. There are 11 triangles in the given figure.
2. The hour and minute hands of the clock shown here make an angle of 90°.

Case-based Questions

1. $a = 180° - (65° + 55°) = 180° - 120° = 60°$.

   $b = 180° - (42° + 55°) = 180° - 97° = 83°$.

   $c = 180° - (90° + 50°) = 180° - 140° = 40°$.

   $d = 180° - (11° + 37°) = 180° - 48° = 132°$.

   $e = 180° - (45° + 45°) = 180° - 90° = 90°$.

   $f = 180° - (75° + 31°) = 180° - 106° = 74°$.

2. In the given figure:
   Two triangles are right-angled triangles.
   One triangle is obtuse-angled triangles.
   Three triangles are acute-angled triangles.
3. The sum of all angles of each triangle is 180°.
4. Placing two triangles side by side, we will get a quadrilateral.
5. The children will do it themselves.

Mental Maths

A. 1. True 2. False 3. True
4. False 5. False 6. True
7. False

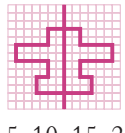
B. 1. A simple closed curve made up of only line segments is called a triangle.

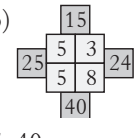
So, (b) is the correct answer.

2. A right angled triangle can have maximum one right angle.
   Thus, (b) is the correct answer.
3. The sum of all the angles of a triangle is 180°.
   Thus, (a) is the correct answer.
4. A parallelogram each of where angles measures 90°, is rectangle.
   Thus, (a) is the correct answer.
5. A parallelogram where all sides are equal is called rhombus.
   Thus, (a) is the correct answer.
6. In a rectangle diagonals are equal to each other.
   Thus, (a) is the correct answer.
7. Centre of a circle is fixed and is at equal distance from all paints on the circle.
   Thus, (d) is the correct answer.
8. The distance from the centre to any point on the circle is called radius.
   Thus, (b) is the correct answer.

Chapter 10. Symmetry & Patterns

Recap

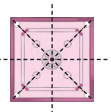
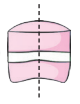
1. (a) 

(b) 

2. (a) 5, 10, 15, 20, 25, 30, 35, 40
   (b) 1, 4, 9, 16, 25, 36, 49, 64, 81
   (c) 2, 4, 6, 8, 10, 12, 14, 16, 18, 20
   (d) 24, 264, 2664, 26664, 266664, 2666664, 26666664
   (e) 5, 15, 25, 35, 45, 55, 65, 75

Exercise 10.1

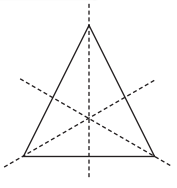
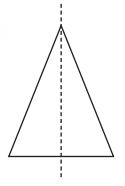
1. (a), (b), (c), (f) and (g) are symmetrical figures.

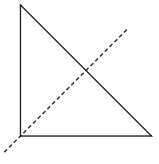
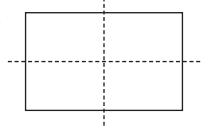
2. (a)  (b) 

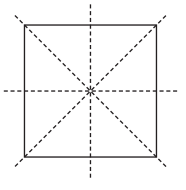
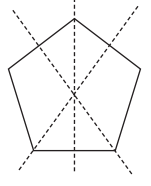
(c)  (d) 

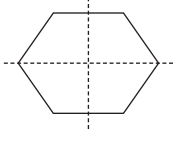
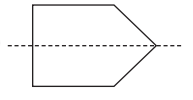
3. (a) C, D, E, K
   (b) A, M, T, U, V, W, Y
   (c) H, I, O, X
   (d) B, F, G, J, L, N, P, Q, R, S, Z

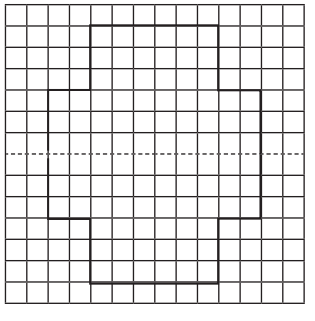
Exercise 10.2

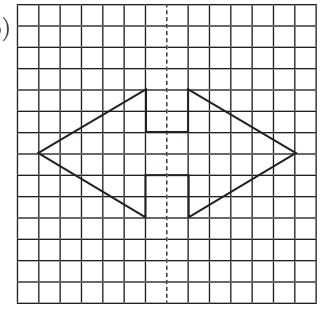
1. (a)  (b) 

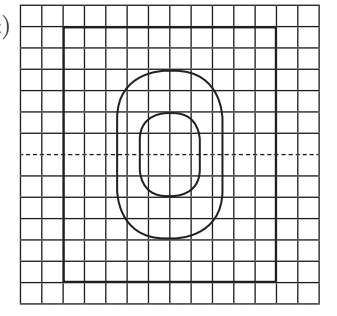
(c)  (d) 

(e)  (f) 

(g)  (h) 

2. (a) 

(b) 

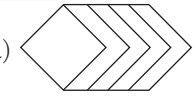
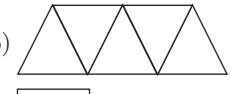
(c) 

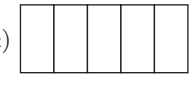
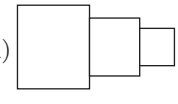
(d) The children will do it themselves.
(e) The children will do it themselves.
(f) The children will do it themselves.

Exercise 10.3

1. (a) 2 (b) 4
   (c) 2 (d) 4
   (e) 4 (f) 2
2. (a) 1 (b) 1
   (c) 1 (d) 2
   (e) 1 (f) 2
   (g) 1 (h) 2
   (i) 1 (j) 2

Exercise 10.4

1. (a)  (b) 

(c)  (d) 

2. (a) 2, 4, 6, 8, 10, 12, 14, 16, 18
   (b) 3, 6, 9, 12, 15, 18, 21, 24
   (c) 6, 10, 14, 18, 22, 26, 30, 34
   (d) 3, 8, 13, 18, 23, 28, 33, 38
   (e) 4, 13, 22, 31, 40, 49, 58, 67
   (f) 28, 24, 20, 16, 12, 8, 4, 0
   (g) 1, 1, 2, 3, 5, 8, 13, 21, 34, 55
   (h) 1, 4, 9, 16, 25, 36, 49, 64, 81

3. (a) $2 \times 11 = 22$
$22 \times 11 = 242$
$222 \times 11 = 2442$
$2222 \times 11 = 24442$
$22222 \times 11 = 244442$
$222222 \times 11 = 2444442$
$2222222 \times 11 = 24444442$

(b) $99 \times 11 = 1089$
$999 \times 11 = 10989$
$9999 \times 11 = 109989$
$99999 \times 11 = 1099989$
$999999 \times 11 = 10999989$
$9999999 \times 11 = 109999989$
$99999999 \times 11 = 1099999989$

(c) $88 \times 11 = 968$
$888 \times 11 = 9768$
$8888 \times 11 = 97768$
$88888 \times 11 = 977768$
$888888 \times 11 = 9777768$
$8888888 \times 11 = 97777768$
$88888888 \times 11 = 977777768$

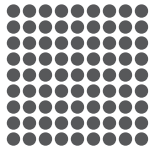
(d) $9 \times 1 - 1 = 8$
$9 \times 21 - 1 = 188$
$9 \times 321 - 1 = 2888$
$9 \times 4321 - 1 = 38888$
$9 \times 54321 - 1 = 488888$
$9 \times 654321 - 1 = 5888888$
$9 \times 7654321 - 1 = 68888888$

(e) $(3 + 1) \times 2 = 8$
$(6 + 1) \times 2 = 14$
$(9 + 1) \times 2 = 20$
$(12 + 1) \times 2 = 26$
$(15 + 1) \times 2 = 32$
$(18 + 1) \times 2 = 38$

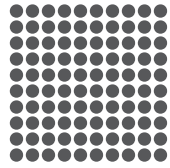
(f) $3 \times 4 = 12$
$33 \times 34 = 1122$
$333 \times 334 = 111222$
$3333 \times 3334 = 11112222$
$33333 \times 33334 = 1111122222$
$333333 \times 333334 = 111111222222$

4. 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121

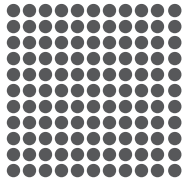
5. (a) $81 = 9 \times 9$



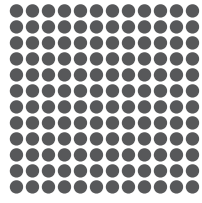
(b) $100 = 10 \times 10$



(c) $121 = 11 \times 11$



(d) $144 = 12 \times 12$



6. (a) $1 + 3 + 5 + 7 = 16$
(b) $1 + 3 + 5 + 7 + 9 = 25$
(c) $1 + 3 + 5 + 7 + 9 + 11 = 36$
(d) $1 + 3 + 5 + 7 + 9 + 11 + 13 = 49$

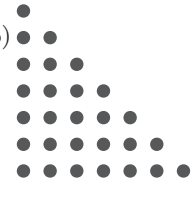
7. (a) $4 \times 4 = 16 = 1 + 2 + 3 + 4 + 3 + 2 + 1$
$5 \times 5 = 25 = 1 + 2 + 3 + 4 + 5 + 4 + 3 + 2 + 1$
$6 \times 6 = 36$
$= 1 + 2 + 3 + 4 + 5 + 6 + 5 + 4 + 3 + 2 + 1$

(b) $5 \times 5 - 4 \times 4 = 2 \times 5 - 1 = 9$
$6 \times 6 - 5 \times 5 = 2 \times 6 - 1 = 11$

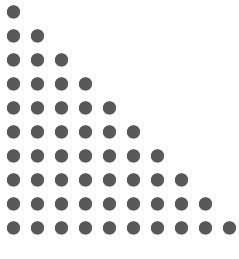
8. 1, 3, 6, 10, 15, 21, 28, 36, 45, 55

9. (a)

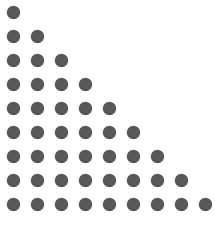
(b)



(c)



(d)

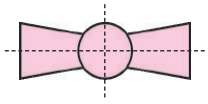
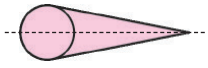


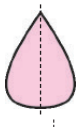
10. (a) 36 (b) 78
(c) 136 (d) 190

11. (a) 1 (b) 2 (c) 4
(d) 8 (e) 16 (f) 32

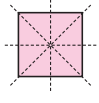
Revision Exercise

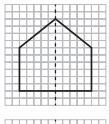
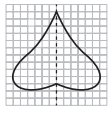
1. (c), (e) and (g) are not symmetrical

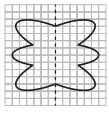
2. (a)  (b) 

(c)  (d) 

(e)  (f) 

(g)  (h) 

3. (a)  (b) 

(c) 

4. (a) 1 (b) 2 (c) 4 (d) 5
(e) 4 (f) 2 (g) 1 (h) 1

5. (a) 3, 6, 7, 10, 11, 14, 15, 18
(b) 9, 13, 14, 18, 19, 23, 24, 28
(c) 8, 16, 23, 31, 38, 29, 36, 38
(d) 8, 17, 23, 32, 38, 47, 53, 62
(e) 9, 11, 18, 20, 27, 29, 36, 38
(f) 9, 13, 22, 26, 35, 39, 48, 52

6. (a)
$1 \times 9 + 2 = 11$
$12 \times 9 + 3 = 111$
$123 \times 9 + 4 = 1111$
$1234 \times 9 + 5 = 11111$
$12345 \times 9 + 6 = 111111$
$123456 \times 9 + 7 = 1111111$

(b)
$12 - 1 = 11$
$123 - 12 = 111$
$1234 - 123 = 1111$
$12345 - 1234 = 11111$
$123456 - 12345 = 111111$
$1234567 - 123456 = 1111111$

(c)

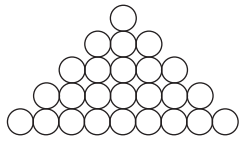
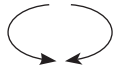
				110					
			54		56				
		30		24		32			
	15		15		9		23		
5		10		5		4		19	

Case-based Questions

1. Yes; Latin Cross, Crescent and Star, Dharmachakra, Torii Gate, Khanda, Star of David
2. The children will do it themselves.
3. Khanda has one line of symmetry which is vertical.
4. Latin Cross – 1 line of symmetry, Crescent and Star – 1 line of symmetry, Dharmachakra – infinite lines of symmetry, Torii Gate – 1 line of symmetry, Star of David – 6 lines of symmetry
5. See answers given in the book.

Mental Maths

A. 1. The number of times a figure coincide with itself as it rotates through 360° is called the order of the rotational symmetry.
2. The line of symmetry divides a symmetrical figure into two equal halves.
3. A symmetrical figure can have more than one line of symmetry.
4. Figure shown along side has two lines of symmetry.
5. A hexagon has six line of symmetry.

B. 1. The given figure has 2 lines of symmetry.
Thus, (b) is the correct answer.
2. The given five-pointed star has 5 lines of symmetry.
Thus, (b) is the correct answer.
3. 
Thus, (a) is the correct answer.
4. 
Thus, (a) is the correct answer.

5. Latter M has reflection symmetry about a vertical mirror.
Thus, (a) is the correct answer.

6. 4, 6, 9, 11, 14, 16
Thus, (b) is the correct answer.

Chapter 11. Perimeter, Area & Volume

Recap

1. (b) Perimeter
= (10 + 3 + 4 + 4 + 6 + 8) cm
= 35 cm

(c) Perimeter
= (18 + 14 + 12 + 8 + 6 + 12)cm
= 70 cm

(d) Perimeter
= (6 + 4 + 6 + 4)cm
= 20 cm

(e) Perimeter
= (6 + 6 + 6 + 6)cm
= 24 cm

(f) Perimeter
= (12 + 10 + 10)cm
= 32 cm

2. (b) There are 19 shaded squares in the given figure.
So, the area of shaded parts = 19 sq. cm.

(c) There are 12 shaded squares in the given figure.
So, the area of shaded parts = 12 sq. cm.

(d) There are 14 shaded squares in the given figure.
So, the area of shaded parts = 14 sq. cm.

(e) There are 9 shaded squares in the given figure.
So, the area of shaded parts = 9 sq. cm.

(f) There are 15 shaded squares in the given figure.
So, the area of shaded parts = 15 sq. cm.

3. (a) The sum of measures of all the sides of a closed figure is called its perimeter.

(b) The space occupied by the closed plane figure is called its area.

(c) The unit of perimeter is same as the unit of length.

(d) Area is measured in square units of length.

(e) The length and breadth are always expressed in the same unit.

Exercise 11.1

1. (a) Perimeter = (4 + 7 + 6) cm = 17 cm

(b) Perimeter = (3 + 8 + 8) cm = 19 cm

(c) Perimeter = (6 + 6 + 6) cm = 18 cm

(d) Perimeter = (8 + 10 + 12) cm = 30 cm

2. (a) Perimeter of the triangle
= (6 + 5.2 + 5)cm
= 16.2 cm

(b) Perimeter of the triangle
= (2.7 + 3.6 + 4.8) cm
= 11.1 cm

(c) Perimeter of the triangle
= (8 + 8 + 10) cm
= 26 cm

(d) Perimeter of the triangle
= (4.5 + 5.5 + 7) cm
= 17 cm

3. We know that all sides of an equilateral triangle are equal in length.

(a) Side = 4.5 cm
Perimeter = 3 × 4.5 cm = 13.5 cm

(b) Side = 8 cm
Perimeter = 3 × 8 cm = 24 cm

(c) Side = 2.9 cm
Perimeter = 3 × 2.9 cm = 8.7 cm

(d) Side = 6 cm
Perimeter = 3 × 6 cm = 18 cm

4. (a) l = 6 cm, b = 4 cm
Perimeter of rectangle
= 2 (l + b)
= 2 (6 cm + 4 cm)
= 2 × 10 cm = 20 cm

(b) l = 9.5 cm, b = 5.1 cm
Perimeter of rectangle
= 2 (l + b)
= 2 (9.5 cm + 5.1 cm)
= 2 × 14.6 cm = 29.2 cm

(c) l = 7 cm, b = 3.6 cm
Perimeter of rectangle
= 2 (l + b)
= 2 (7 cm + 3.6 cm)
= 2 × 10.6 cm = 21.2 cm

(d) $l = 4.8$ cm, $b = 2.4$ cm

Perimeter of rectangle
$= 2(l + b)$
$= 2$ (4.8 cm + 2.4 cm)
$= 2 \times 7.2$ cm $= 14.4$ cm

5. (a) Length of square = 5 cm

Perimeter $= 4 \times 5$ cm $= 20$ cm

(b) Length of square = 7.5 cm

Perimeter $= 4 \times 7.5$ cm $= 30$ cm

(c) Length of square = 2.45 m

Perimeter $= 4 \times 2.45$ cm $= 9.80$ m

(d) Length of square = 8.36 m

Perimeter $= 4 \times 8.36$ m $= 33.44$ m

6. (a) Perimeter of square = 24 cm

$4 \times$ side = 24 cm

$\text{side} = \frac{24}{4}\text{cm} = 6$ cm

(b) Perimeter of square = 16 m

$4 \times$ side = 16 m

$\text{side} = \frac{16}{4}\text{ m} = 4$ m

(c) Perimeter of square = 30 cm

$4 \times$ side = 30 cm

$\text{side} = \frac{30}{4}\text{cm} = 7.5$ cm

(d) Perimeter of square = 15 cm

$4 \times$ side = 15 cm

$\text{side} = \frac{15}{4}\text{cm} = 3.75$ cm

7. (a) Length = 720 cm

Breadth = 5.4 m $= 5.4 \times 100$ cm $= 540$ cm

Perimeter of rectangle = 2 (length + breadth)
$= 2$(720 cm + 540 cm)
$= 2 \times 1260$ cm
$= 2520$ cm $= 25.20$ m

(b) Perimeter of rectangle = 756 cm

Breadth of rectangle = 188 cm

Perimeter = 2 (length + breadth)

$$\text{Length} = \frac{\text{Perimeter}}{2} - \text{Breadth}$$
$$= \frac{756\text{ cm}}{2} - 188\text{ cm}$$
$= 378$ cm $- 188$ cm $= 190$ cm

(c) Perimeter of rectangle = 40.5 km

Breadth of rectangle = 9 km

Perimeter = 2 (length + breadth)

$$\text{Length} = \frac{\text{Perimeter}}{2} - \text{Breadth}$$
$$= \frac{40.5}{2}\text{km} - 9\text{km}$$
$= 20.25$ km $- 9$ km $= 11.25$ km.

(d) Perimeter of rectangle = 34.96 cm

Breadth of rectangle = 3.8 cm

Perimeter = 2 (length + breadth)

$$\text{Length} = \frac{\text{Perimeter}}{2} - \text{Breadth}$$
$$= \frac{34.96}{2}\text{ cm} - 3.8\text{cm}$$
$= 17.48$ cm $- 3.8$ cm $= 13.68$ cm.

(e) Length of rectangle = 25 m

Breadth of rectangle = 8 km

Perimeter = 2 (length + breadth)
$= 2$(25m + 8m)
$= 2 \times 33$m $= 66$ m.

8. Length of garden = 8.4 m

Breadth of garden = 6 m

Perimeter of garden = 2 (length + breadth)
$= 2$ (8.4 m + 6 m)
$= 2 \times 14.4$ m $= 28.8$ m

The cost of fencing 1 m = ₹6.50

The cost of fencing 28.8 m = ₹6.50 × 28.8
= ₹187.20

9. Length of square park = 60 m

Perimeter of park $= 4 \times 60$ m $= 240$ m

Lila walks 4 rounds.

So, the distance covered by Lila $= 4 \times 240$ m
$= 960$ m

10. Dimension of a playground = 75 m × 40 m

So, length of playground = 75 m,

breadth of playground = 40 m

Perimeter of playground = 2 (75 + 40)
$= 2 \times 115 = 230$ m

Anuj takes 3 rounds.

So, the distance covered by Anuj $= 3 \times 230$ m
$= 690$ m

11. Length of box = 18 cm

Breadth of box = 12 cm

Perimeter = 2(18 + 12) = 2 × 30 = 60 cm.

Thus, the length of lace required = 60 cm

12. Length of park = 110 m

Breadth of park = 90 m

Perimeter = 2(110 m + 90 m)
= 2 × 200 m = 400 m

The cost of fencing = 400 m × ₹24 = ₹9600.

13. Perimeter of triangle = 28 cm

Two sides of it are of length 5.2 cm and 7.6 cm

So, let third side of triangle be x.

Then, 5.2 cm + 7.6 cm + x = 28 cm

or 12.8 cm + x = 28 cm

or x = 28 cm – 12.8 cm = 15.2 cm.

14. Perimeter of square park = 488 m

4 × side = 488 m

side = 488 m ÷ 4 = 122 m.

Exercise 11.2

1.

S.No.	Object	Suitable unit to measure area
(a)	A park	Sq. m
(b)	A playground	Sq. m
(c)	A postcard	Sq. cm
(d)	A town	Sq. km
(e)	An eraser	Sq. mm

2. (a) The given figure is rectangle.
Area = $l \times b$ = 8 cm × 5 cm = 40 sq. cm

(b) The given figure is a square.
Area = side × side
= 4 cm × 4 cm = 16 sq. cm

(c) The given figure is a rectangle.
Area = $l \times b$ = 6 cm × 9 cm = 54 sq. cm

(d) The given figure is a square.
Area = 6.5 cm × 6.5 cm = 42.25 sq. cm

(e) The given figure is a rectangle.
Area = 5.2 cm × 8.4 cm = 43.68 sq. cm

(f) The given figure is a square.
Area = 5.8 cm × 5.8 cm = 33.64 sq. cm

3. (a) l = 12 m,and b = 7 m
Area = $l \times b$ = 12 × 7 = 84 sq. cm.

(b) l = 8.4 cm, b = 6 cm
Area = $l \times b$ = 8.4 × 6 = 50.4 sq. cm.

(c) l = 6 m 15 cm = 6.15 m, b = 4.9 cm
Area = $l \times b$
= 6.15 m × 4.9 m
= 30.135 = 30.14 sq. cm.

(d) l = 9 m, b = 8 m 5 cm = 81.05 m
Area = $l \times b$ = 9 m × 8.05 m = 76.589 m.

4. (a) Side = 18 cm
Area = side × side
= 18 cm × 18 cm
= 324 sq. cm

(b) Side = 8.5 cm
Area = side × side
= 8.5 cm × 8.5 cm
= 72.25 sq. cm

(c) Side = $3\frac{1}{2}$ cm = $\frac{7}{2}$ cm
Area = side × side
$= \frac{7}{2} \times \frac{7}{2} = \frac{49}{4} = 12\frac{1}{4}$ sq. cm

(d) Side = 4 m 20 cm = 4.20 m
Area = side × side
= 4.20 m × 4.20 m
= 17.64 sq. cm.

5. Length = 5 cm, breadth = 4.5 cm
Area = length × breadth
= 5 cm × 4.5 cm = 22.5 sq. cm.

6. Side of square = 3.5 cm
Area = side × side
= 3.5 cm × 3.5 cm
= 12.25 sq. cm

7. Perimeter of square park = 80 cm
or 4 × side = 80 m
or side = $\frac{80}{4}$ m = 20 m
Area of square = side × side
= 20 m × 20 m = 400 sq cm.

8. (a) Area of the given figure
= Area of A + Area of B
= 2 m × 6 m + 6 m × 2 m
= 12 sq. m + 12 sq. m = 24 sq. m.

(b) Area of the given figure
= Area of A + Area of B + Area of C

$= [(3 \times 10) + (6 \times 4) + (3 \times 10)]$ sq cm
$= [30 + 24 + 30]$ sq cm
$= 84$ sq cm.

(c) Area of the given figure
$=$ Area of A + Area of B + Area of C
$= 2$ cm $\times 6$ cm $+ 6$ cm $\times 2$ cm $+ 2$ cm $\times 5$ cm
$= 12$ sq cm $+ 12$ sq cm $+ 10$ sq cm
$= 34$ sq cm

(d) Area of the given figure
$=$ Area of A + Area of B + Area of C
$= 4$ cm $\times 4$ cm $+ 4$ cm $\times 12$ cm $+ 4$ cm $\times 4$ cm
$= 16$ sq cm $+ 48$ sq cm $+ 16$ sq cm
$= 80$ sq cm

(e) Area of the given figure
$=$ Area of A + Area of B + Area of C
$= 10$cm $\times 4$cm $+ 14$cm $\times 4$cm $+ 4$cm $\times 3$cm
$= 40$ sq cm $+ 56$ sq cm $+ 12$ sq cm
$= 108$ sq cm

(f) Area of the given figure
$=$ Area of A + Area of B
$= 12$ cm $\times 4$ cm $+ 10$ cm $\times 3$ cm
$= 48$ sq cm $+ 30$ sq cm
$= 78$ sq cm

9. Length $= 50$ m, breadth $= 45$ m
Area of rectangular garden
$= 50$ m $\times 45$ m $= 2250$ sq. m
The cost of manuring 1 sq. m of garden $= ₹10.50$
The cost of manuring 2250 sq. m of garden
$= ₹10.50 \times 2250 = ₹23625.$

10. Length of one side of a square room $= 12$ m
Area of the square $=$ side $\times$ side
$= 12$ m $\times 12$ m $= 144$ sq. m.
Area of a square tile $= 4$ m $\times 4$ m $= 16$ sq. m
Number of square tiles needed $= \dfrac{\text{Area of room}}{\text{Area of a tile}}$
$= \dfrac{144}{16} = 9$

11. Length of bedsheet $= 2.8$ m
Breadth of bedsheet $= 2.4$ m
Area of bedsheet $=$ length $\times$ breadth
$= 2.8$ m $\times 2.4$ m $= 6.72$ sq. m.

12. Total cost of flooring complete room $= ₹3030$
The cost of flooring per sq. m of room $= ₹50.50$
So, the area of the square room $= ₹\dfrac{3030}{50.50}$
$= 60$ sq. m
Length $\times$ Breadth $= 60$
or 8 m $\times$ Breadth $= 60$
or Breadth $= \dfrac{60}{8} = 7.5$ m.

Exercise 11.3

1. (a) Total number of unit cubes in the given solid $= 36$
So, the volume of given solid $= 36$ cm^3

(b) Total number of unit cubes in the given solid $= 12$
So, the volume of given solid $= 12$ cm^3

(c) Total number of unit cubes in the given solid $= 12$
So, the volume of given solid $= 12$ cm^3

(d) Total number of solid cubes in the given solid $= 8$
So, the volume of given solid $= 8$ cm^3

(e) Total number of unit cubes in the given solid $= 9$
So, the volume of given solid $= 9$ cm^3

(f) Total number of unit cubes in the given solid $= 16$
So, the volume of given solid $= 16$ cm^3

(g) Total number of unit cubes in the given solid $= 24$
So, the volume of given solid $= 24$ cm^3

(h) Total number of unit cubes in the given solid $= 120$
So, the volume of given solid $= 120$ cm^3

2. (a) $l = 14$ cm, $b = 10$ cm and $h = 4$ cm
Volume of cuboid $= l \times b \times h$
$= (14 \times 10 \times 4)$ cu cm
$= 560$ cu cm.

(b) $l = 130$ mm $= 13$ cm, $b = 8$ cm and $h = 7$ cm
Volume of cuboid $= l \times b \times h$
$= (13 \times 8 \times 7)$ cu cm
$= 728$ cu m.

(c) l $= 2$ m, b $= 120$ cm $= 1.2$ m
and h $= 80$ cm $= 0.8$ m

Volume of cuboid = $l \times b \times h$
= (2 × 1.2 × 0.8) cu m
= 1.92 cu m.

(d) l = 15 cm, b = 8 cm and h = 4 cm
Volume of cuboid = $l \times b \times h$
= (15 × 8 × 4) cu cm
= 480 cu cm

3. (a) Side of cube = 8 cm
Volume = side × side × side
= 8 cm × 8 cm × 8 cm
= 512 cu cm

(b) Side of cube = 12 mm = 1.2 cm
Volume = side × side × side
= 1.2 cm × 1.2 cm × 1.2 cm
= 1.728 cu cm.

(c) Side of cube = 4 cm 5 m = 4.5 cm
Volume = side × side × side
= 4.5 cm × 4.5 cm × 4.5 cm
= 91.125 cu cm.

(d) Side of cube = 2 m 4 cm = 2.04 m
Volume = side × side × side
= 2.04 m × 2.04 m
= 2.04 m
= 8.489664 cu cm

4. Length = 420 cm = 4.2 m,
breadth = 260 cm = 2.6 m,
height = 190 cm = 1.9 m
Volume of box = 4.2 m × 2.6 m × 1.9 m
= 20.748 cu m.

5. Side of dice = 1.2 cm
Volume of dice = 1.2 cm × 1.2 cm × 1.2 cm
= 1.728 cu m

6. Volume of a shoe-box = 12 cm × 8 cm × 4 cm
= 0.12 m × 0.08 m × 0.04 m
= 0.000384 cu m
Volume of carton = 12.48 cu m
Number of required shoe-boxes
$= \frac{\text{Volume of carton}}{\text{Volume of a shoe box}}$
$= \frac{12.48}{0.000384} = 32500$

7. Volume of a matchbox
= 4.5 cm × 3 cm × 1.5 cm
= 20.25 cu cm.
Volume of 1260 matchboxes
= (20.25 × 1280) cu cm
= 25515 cu cm.

8. Length of concrete block = 2.5 m
Breadth of concrete block = 82 cm = 0.82 m
Height of concrete block = 110 cm = 1.10 m
Volume of concrete block = $l \times b \times h$
= 2.5 × 0.82 × 1.10
= 2.255 cu m

9. Length of block = 20 cm
Breadth of block = 8 cm
Height of block = 5 cm
Volume of block = $l \times b \times h$
= 20 × 8 × 5
= 800 cu cm

10. Length of cuboid = 7 cm
Height of cuboid = 10 cm
Breadth of cuboid = 7 cm
Volume of cuboid = $l \times b \times h$
490 cm^3 = $l \times b \times h$
$h = \frac{\text{Volume}}{l \times h} = \frac{490}{7 \times 10} = 7$ cm.

11. Volume of cube = 343 cm^3
We know that,
Volume of cube = side × side × side
Let the side of cube be S.
Then volume = S × S × S = S^3
343 = S^3
Taking the under rule cube of volume, we get

7	343
7	49
7	7
	1

So, 7 × 7 × 7 = 7^3
Thus, the length will be 7 cm

Revision Exercise

1. (a) Perimeter = (8 + 6 + 5 + 7 + 9) m = 35 m
(b) Perimeter

= (50 + 25 + 30 + 50 + 40 + 25) cm
= 220 cm

2. (a) Perimeter of triangle
= (12 + 10 + 10) cm = 32 cm.

(b) Perimeter of triangle
= (8.6 + 6.4 + 5) cm = 20 cm.

(c) Perimeter of triangle
= (9.3 + 8.4 + 6.3) cm = 24 cm

(d) Perimeter of triangle

$$= 5\frac{1}{2}\text{cm} + 8\frac{3}{4}\text{cm} + 10\frac{1}{4}\text{cm}$$

$$= \frac{11}{2}\text{cm} + \frac{35}{4}\text{cm} + \frac{41}{4}\text{cm}$$

$$= \frac{22\text{ cm} + 35\text{ cm} + 41\text{ cm}}{4}$$

$$= \frac{\cancel{98}^{49}\text{ cm}}{\cancel{4}_{2}} = 24\frac{1}{2}\text{cm}$$

3. (a) Length, l = 22 cm and breadth, b = 20 cm
Perimeter = 2 (l + b)
= 2(22 + 20) = 2(42)= 84 cm.
Area = $l \times b$ = 22 cm × 20 cm = 440 sq cm

(b) Length, l = 9 cm and breadth, b = 8 cm
Perimeter = 2 (l + b)
= 2 (9 + 8) = 34 cm
Area = $l \times b$ = 9 × 8 = 72 sq cm.

(c) Length = 8 m 42 cm = 8.42 m,
Breadth = 4 m 80 cm = 4.80 m
Perimeter = 2 (l + b)
= 2 (8.42 + 4.80) = 2(13.22) = 26.44 m.
Area = $l \times b$ = 8.42 × 4.80 = 40.418 sq m.

(d) Length = 14.5 m and breadth = 5.8 m
Perimeter = 2(l + b)
= 2 (14.5 + 5.8)
= 2 × 20.3
= 40.6 m
Area = $l \times b$ = 14.5 m × 5.8 m = 84.1 sq m.

(e) Length = 15 m 15 cm = 15.15 m,
Breadth = 12.6 m
Perimeter = 2 (l + b)
= 2 (15.15 m + 12.6 m)
= 2 × 27.75
= 55.5 m

4. (a) Side = 6 m
Perimeter = 4 × side = 4 × 6 m = 24 m
Area = side × side = 6 m × 6 m = 36 sq m

(b) Side = 8.4 cm
Perimeter = 4 × side = 4 × 8.4 m = 33.6 m.
Area = side × side
= 8.4 m × 8.4 m
= 70.56 sq m

(c) Side = 32 cm
Perimeter = 4 × side = 4 × 32 m = 128 cm
Area = side × side
= 32 cm × 32 cm
= 1024 sq m

(d) Side = 12 m 25 cm = 12.25 m
Perimeter = 4 × side = 4 × 12.25 m = 49 m
Area = side × side
= 12.25 m × 12.25 m
= 150.0625 sq m
= 150.06 sq m

5. (a) Side of an equilateral triangle = 5.5 cm
Perimeter of an equilateral triangle = 3 × side
= 3 × 5.5 cm
= 16.5 cm

(b) Perimeter of rectangle = 192 cm,
and breadth = 12 cm.
= 2(l + b) = 192 cm
or 2(l + 12 cm) = 192 cm
or l + 12 cm = 96 cm
or l = 96 cm – 12 cm = 84 cm

(c) Perimeter of square = 121 cm
= side × side
= 121 cm
= 11 cm × 11 cm
= side = 11 cm.

(d) Perimeter of equilateral triangle = 42 cm
= 3 × side
= 42 cm
or side = 14 cm.

6. (a) Area of a rectangle = 96 sq cm
2 (l + b) = 96
or 2 (12 + b) = 96
or 12 + b = 48
or b = 36 cm

(b) Perimeter of square = 84 cm

= 4 × side

= 84 cm

side = $\frac{84}{4}$cm = 21 cm.

(c) Length = 35 cm,

Breadth = 125 mm = 12.5 cm

Area of rectangle = length × breadth
= 35 cm × 12.5 cm
= 437.5 sq cm

(d) Length = 42 cm, breadth = 36 cm

Area of rectangle = 42 cm × 36 cm
= 1512 sq cm

Side of square = 40 cm

Area of square = 40 cm × 40 cm
= 1600 sq cm

Difference = 1600 – 1512
= 88 sq cm

Thus, square has 88 sq. cm more area.

7. (a) Length = 28 cm, Breadth = 22 cm,

Height = 15 cm

Volume of cuboid = $l \times b \times h$
= 28 cm × 22 cm × 15 cm
= 9240 cu cm

(b) Volume of a brick = 20 cm × 16 cm × 8 cm

Volume of a wall = 40 m × 24 m × 10.5 m
= 4000 cm × 2400 cm × 1050 cm

Number of bricks = $\frac{\text{Volume of wall}}{\text{Volume of a brick}}$

$= \frac{4000 \times 2400 \times 1050}{20 \times 16 \times 8}$

= 3937500

(c) Side of cube = 12 cm

Volume of cube = l × l × l
= 12 cm × 12 cm × 12 cm
= 1728 cu cm

(d) The resultant shape will be a cuboid with l
= 3 + 3 + 3 + 3 = 12 cm

b = 3 cm

h = 3 cm

Volume of the shape = $l \times b \times h$
= l2 cm × 3 cm × 3 cm
= 108 cu cm

(e) Dimension of water tank
= 12 m × 10 m × 8.5 m

Volume of water tank
= l2 m × 10 m × 8.5 m
= 1020 cu m

HOTS

1. Length of wall = 10.5 m, Breadth of wall = 8.5 m

Area of wall = length × breadth
= 10.5 m × 8.5 m
= 89.25 sq m

Side of square poster = 2.5 m

Area of square poster = side × side
= 2.5 m × 2.5 m
= 6.25 sq. m.

Difference = 89.25 – 6.25 = 83 sq. m

Thus, the area of wall which is to be painted = 83%

The cost of painting the wall = 83 × 65 = ₹5395

2. Side of the square park = 36 m

Area of the square park = 36 m × 36 m
= 1296 sq. m

Dimension of pond = 5 m × 3.5 m

Area of pond = 5 m × 3.5 m = 17.5 sq. m

Area of the park excluding the pond
= 1296 – 17.5 = 1278.5 sq. m

3. Dimensions of cuboid = 18 cm × 12 cm × 9 cm

Volume of cuboid = 18 cm × 12 cm × 9 cm
= 1944 sq. m

Number of cubes formed with cuboid = 9

So, the volume of 1 cube = $\frac{1944}{9}$ = 216

or Side × Side × Side = 6 × 6 × 6

or Side = 6 cm

Case-based Questions

1. Boundary of the park = perimeter of the park
= (200 + 300 + 80 + 300 + 200 + 260) m
= 1340 m.

2. Cost of fencing the park
= 1340 m × ₹ 50 = ₹ 67,000.

3. Area of the flowerbed = length × breadth
= 100 m × 80 m = 8,000 sq m.

4. Volume of the pound = length × breadth × height
   = 6 m × 6 m × 6 m = 216 cu m.
5. Cost of manuring the flowerbed
   = 8,000 m × ₹ 100 = ₹ 8,00,000.

Mental Maths

A. 1. Side of a square = $\frac{1}{4}$ × Perimeter

2. Sum of the length and breadth of rectangle
   = $\frac{1}{2}$ × Perimeter

3. To find the volume of a cuboid, we multiply its length, breadth and height.

4. Volume of a cuboid
   = (Area of the base) × Height

B. 1. Area of stamp = 2.5 cm × 2.5 cm = 6.25 cm^2
   Thus, (c) is the correct answer.

2. Area of rectangle = 180 cm^2
   Length × Breadth = 180 cm^2
   l × 12 = 180
   or l = $\frac{180}{12}$ = 15 cm
   Perimeter = 2(l + b)
   = 2(15 + 12)
   = 2 × 27 = 54 cm^2

3. Area of 1 postcard = 12 cm × 6 cm = 72 cm^2
   Number of post card used to cover the table top = 25
   Area of table top = 25 × 72 = 1800 cm^2
   Thus, (d) is the correct answer.

4. Area of a square = 81 sq cm
   or side × side = 81 = 9 × 9
   or side = 9 cm
   Thus, (b) is the correct answer.

5. The perimeter of a rectangle is twice the sum of length and breadth of the rectangle.
   Thus, (b) is the correct answer.

Test Your Knowledge – 3 (Chapters 9 – 11)

1. (a) 30°, Acute (b) 90°, Right
   (c) 120°, Obtuse (d) 270°, Reflex
   (e) 180°, Straight (f) 360°, Complete

2. (a) Infinite number of rays can be drawn through a point.
   (b) The line joining the 90° mark with center of the box line called centre of the protractor.
   (c) A line segment who end points lie on a circle is called a chord of the circle.
   (d) A triangle whose three sides are equal is called an equilateral triangle
   (e) A polygon of six sides is called a hexagon.

3. (a) Radius = 11 cm
   Diameter = 2 × 11 cm = 22 cm
   (b) Radius = 8.5 cm
   Diameter = 2 × 8.5 cm = 17 cm
   (c) Radius = 2.4 cm
   Diameter = 2 × 2.4 cm = 4.8 cm
   (d) Radius = 9 cm
   Diameter = 2 × 9 cm = 18 cm

4. The given figure has 1 line of symmetry.

5. (a) Perimeter of stamp A = 16 cm
   Area of stamp A = 15 cm^2
   Perimeter of stamp B = 10 cm
   Area of stamp B = 6 cm^2
   Perimeter of stamp C = 12 cm
   Area of stamp C = 9 cm^2
   Perimeter of stamp D = 8 cm
   Area of stamp D = 4 cm^2
   Perimeter of stamp E = 14 cm
   Area of stamp E = 12 cm^2
   Perimeter of stamp F = 10 cm
   Area of stamp F = 6 cm^2
   (b) Stamp A has the largest perimeter.
   (c) Stamp D has the smallest perimeter.
   (d) Stamp A has the largest area.
   (e) Stamp D has the smallest area.
   (f) Stamp B and F have equal perimeter.

6. Length of wall = 15 m,
   Breadth of wall = 10 m
   Area of the wall = length × breadth
   = 15 m × 10 m = 150 m^2
   The cost of painting 1 m^2 area of wall = ₹25
   So, the cost of painting 150 m^2 area of wall
   = ₹150 × 25 = ₹3750

7. Three sides of triangular park are 1200 cm or 12 m,
1225 cm = 12.25 m
and 3000 cm = 30 m

Perimeter of triangular park
= 12 m + 12.25 m + 30 m
= 54.25 m

Fencing of 1 m = ₹50

Fencing of 54.25m = ₹50 × 54.25
= ₹2712.50

8. Length = 12 cm,
Breadth = 8 cm,
Height = 10 cm
Volume of cuboid = lbh
= 12 cm × 8 cm × 10 cm
= 960 cu cm

9. Length of one side of cube = 8.5 cm

Volume of cube = Side × Side × Side
= 8.5 cm × 8.5 cm × 8.5 cm
= 614.125 = 614.13 cu cm

Chapter 12. Measurement of Length, Mass and Capacity

Recap

1. AB = 7.4 cm, PQ = 10.3 cm
2. (a) 3 km = 3 × 1000 m = 3000 m

(b) 4 km = 4 × 1000 m = 4000 m

(c) 5 km 430 m
= 5 km + 430 m
= 5 × 1000 m + 430 m
= 5000 m + 430 m = 5430 m.

(d) 15 km 35 m
= 15 km + 35 m
= 15 × 1000 m + 35 m
= 15000m + 35m
= 15035 m.

3. (a) 1024 m
= 1000 m + 24 m
= (1000 ÷ 1000) km + 24 m
= 1 km + 24 m
= 1 km 24 m

(b) 5004 m
= 5000 m + 4 m
= (5000 ÷ 1000) km + 4 m
= 5 km + 4 m
= 5 km 4 m

(c) 8046 m = 8000 m + 46 m
= (8000 ÷ 1000) km + 46 m
= 8 km + 46 m
= 8 km 46 m

(d) 1426 m = 1000 m + 426 m
= (1000 ÷ 1000) km + 426 m
= 1 km + 426 m = 1 km 426 m

4. (a) 5 kg = 5 × 1000 g = 5000 g

(b) 12 kg = 12 × 1000 g = 12000 g

(c) 25 kg = 25 × 1000 g = 25000 g

(d) 19 kg 150 g = 19 kg + 150 g
= 19 × 1000 g + 150 g
= 19000 g + 150 g
= 19150 g.

5. (a) 18 *l* = 18 × 1000 ml = 18000 ml

(b) 14 *l* = 14 × 1000 ml = 14000 ml

(c) 5 *l* 190 ml = 5 *l* + 190 ml
= 5 × 1000 ml + 190 ml
= 5000 ml + 190 ml
= 50190 ml.

6. (a) metre (m) is the standard unit of length.

(b) gram (g) is the standard unit of gram.

(c) litre (*l*) is the standard unit of capacity.

Exercise 12.1

1. (a) 28 m = 28 × 100 cm = 2800 cm

(b) 782 cm = 782 × 10 mm = 7820 mm

(c) 122 km = 122 × 1000 m = 122000 m

(d) 9 m = 9 × 1000 mm = 9000 m

(e) 7 kg = 7 × 1000 g = 7000 g

(f) 27 dg = 27 × 100 mg = 2700 mg

(g) 22 dag = 22 × 1000 cg = 22000 cg

(h) 19 g = 19 × 1000 mg = 19000 mg

(i) 5 *l* = 5 × 1000 ml = 5000 ml

(j) 22 dal = 22 × 1000 cl = 22000 cl

(k) 13 dal = 13 × 100 dl = 1300 dl

(l) 19 kl = 19 × 1000 l = 19000 l

2. (a) 4 km 8 m
= 4 km + 8 m
= 4 × 1000 m + 8 m
= 4000 m + 8 m
= 4008 m

(b) 24 dam 9 cm
= 24 dam + 9 cm
= 24 × 1000 cm + 9 m
= 24000 cm + 9 cm
= 24009 cm

(c) 9 kg 134 g
= 9 kg + 134 g
= 9 × 1000 g + 134 g
= 9000 g + 134 g
= 9134 g

(d) 7 hg 9 dag
= 7 hg + 9 dag
= 7 × 10000 cg + 9 × 1000 cg
= 70000 cg + 9000 cg
= 79000 cg

(e) 13 kl 242 *l* = 13 kl + 242 *l*
= 13 × 1000 *l* + 242 *l*
= 13000 *l* + 242 *l*
= 13242 *l*

(f) 26 *l* 34 ml = 26 *l* + 34 ml
= 26 × 1000 ml + 34 ml
= 26000 ml + 34 ml
= 26034 ml.

(g) 21 hm 7 dm = 21 hm + 7 dm
= 21 × 10000 cm + 7 × 10 cm
= 210000 cm + 70 cm
= 210070 cm.

(h) 24 kg 412 g
= 24 kg + 412 g
= 24 × 1000 g + 412 g
= 24000 g + 412 g
= 24412 g.

(i) 17 dal 8 cl
= 17 dal + 8 cl
= 17 × 10000 ml + 8 × 10 ml
= 170000 ml + 80 ml
= 170080 ml.

3. (a) 2.4 m = 2.4 m × 100 cm = 240 cm

(b) 8.48 m = 8.48 × 100 cm = 848 cm

(c) 1.24 km = 1.24 × 100 dam = 124 dam

(d) 19.4 cm = 19.4 × 10 mm = 194 mm

(e) 4.34 kg = 4.34 × 100 dag = 434 dag

(f) 3.2 dag = 3.2 × 100 dg = 320 dg

(g) 4.8 kl = 4.8 × 1000 l = 4800 l

(h) 6.05 *l* = 6.05 × 1000 ml = 6050 ml

4. (a) 4.26 kl = 4 kl + 0.26 kl
= 4 kl + 0.26 × 1000 *l*
= 4 kl + 260 *l*
= 4 kl 260 *l*

(b) 9.245 *l* = 9 *l* + 0.245 *l*
= 9 *l* + 0.245 × 1000 ml
= 9 *l* + 245 ml
= 9 *l* 245 ml.

(c) 9.24 dag = 9 day + 0.24 dag
= 9 dag + 0.24 × 100 dg
= 9 dag + 24 dg
= 9 dag 24 dg.

(d) 24.2 g = 24 g + 0.2 g
= 24 g + 0.2 × 100 cg
= 24 g + 20 cg = 24 g 20 cg.

(e) 3.02 km = 3 km + 0.02 km
= 3 km + 0.02 × 100000 cm
= 3 km + 2000 cm
= 3 km 2000 cm

(f) 2.8 hm = 2 hm + 0.8 hm
= 2 hm + 0.8 × 10 dam
= 2 hm + 8 dam
= 2 hm 8 dam

(g) 19.2 m = 19 m + 0.2 m
= 19 m + 0.2 × 100 cm
= 19 m + 20 cm
= 19 m 20 cm

(h) 3.25 kg = 3 kg + 0.25 kg
= 3 kg + 0.25 × 1000 g
= 3 kg + 250 g
= 3 kg 250 g.

(i) 24.5 km = 24 km + 0.5 km
= 24 km + 0.5 × 1000 m
= 24 km + 500 m
= 24 km 500 m.

5. (a) 4 mm = $\frac{4}{10}$ cm = 0.4 cm

(b) 1725 m = $\frac{1725}{1000}$ km = 0.725 km

(c) 72 ml = $\frac{72}{1000}$ l = 0.072 l

(d) 1540 cl = $\frac{1540}{1000}$ dal = 1.540 dal

(e) 126 mg = $\frac{126}{1000}$ g = 0.126 g

(f) $1825\text{ g} = \frac{1825}{1000}\text{kg} = 1.825\text{ kg}$

(g) $242\text{ cm} = \frac{242}{100}\text{ m} = 2.42\text{ m}$

(h) $1530\text{ mg} = \frac{1530}{100}\text{g} = 15.30\text{ g}$

(i) $9\text{ dam} = \frac{9}{100}\text{km} = 0.09\text{ km}$

6. (a) $24\text{ m }21\text{ cm} = 24\text{ m} + 21\text{ cm}$
$= 24\text{ m} + \frac{21}{100}\text{m}$
$= 24\text{ m} + 0.21\text{ m} = 24.21\text{ m}.$

(b) $3\text{ km }175\text{ m} = 3\text{ km} + 175\text{ m}$
$= 3\text{ km} + \frac{175}{1000}\text{km}$
$= 3\text{ km} + 0.175\text{ km}$
$= 3.175\text{ km}$

(c) $5\text{ kg }35\text{ g} = 5\text{ kg} + 35\text{ g}$
$= 5\text{ kg} + \frac{35}{1000}\text{kg}$
$= 5\text{ kg} + 0.035\text{ kg}$
$= 5.035\text{ kg}.$

(d) $8\text{ g }235\text{ mg} = 8\text{ g} + 235\text{ mg}$
$= 8\text{ g} + \frac{235}{1000}\text{g}$
$= 8\text{ g} + 0.235\text{ g}$
$= 8.235\text{ g}.$

(e) $6\text{ kl }225\ l = 6\text{ kl} + 225\ l$
$= 6\text{ kl} + \frac{225}{1000}\text{kl}$
$= 6\text{ kl} + 0.225\text{ kl}$
$= 6.225\text{ kl}.$

(f) $12\ l\ 35\text{ ml} = 12\ l + 35\text{ ml}$
$= 12\ l + \frac{35}{1000}\text{l}$
$= 12\ l + 0.035\ l$
$= 12.035\ l.$

(g) $8\text{ kg }16\text{ dag }20\text{ cg}$
$= 8\text{ kg} + 16\text{ dag} + 20\text{ cg}$
$= 8\text{ kg} + \frac{16}{100}\text{kg} + \frac{20}{100000}\text{kg}$
$= 8\text{ kg} + 0.16\text{ kg} + 0.00020\text{ kg}$
$= 8.16020\text{ kg}$

(h) $15\text{ hm }9\text{ m }15\text{ cm}$
$= 15\text{ hm} + 9\text{ m} + 15\text{ cm}$
$= 15\text{ hm} + \frac{9}{100}\text{hm} + \frac{15}{10000}\text{hm}$
$= 15\text{ hm} + 0.09\text{ hm} + 0.0015\text{ hm}$
$= 15.0915\text{ hm}$

(i) $21\text{ hm }16\text{ m }24\text{ cm}$
$= 21\text{ hm} + 16\text{ m} + 24\text{ cm}$
$= 21\text{ hm} + \frac{16}{100}\text{hm} + \frac{24}{10000}\text{hm}$
$= 21\text{ hm} + 0.16\text{ hm} + 0.0024\text{ hm}$
$= 21.1624\text{ hm}$

7. (a) $521.64\text{ kg} = 521.64 \times 1000 = 521640\text{ g}$
Thus, there are 521640 g juice in a container.

(b) $1.75\ l = 1.75 \times 1000\text{ ml} = 1750\text{ ml}.$
Thus, there are 1750 ml juice in bottle.

(c) $979\text{ m} = \frac{979}{1000}\text{km} = 0.979\text{ km}.$
Thus, the height of Angel falls is 0.979 km.

Exercise 12.2

1. (a)
$$\begin{array}{rcr} 32\text{ m }34\text{ cm} & = & 32.34\text{ m} \\ 16\text{ m }9\text{ cm} & = & 16.09\text{ m} \\ 10\text{ m }21\text{ cm} & = + & \underline{10.21\text{ m}} \\ & & \underline{58.64\text{ m}} \end{array}$$

Thus, 32 m 34 cm + 16 m 9 cm + 10 m 21 cm
= 58.64 m = 58 m 64 cm

(b)
$$\begin{array}{rcr} 12\text{ kg }275\text{ g} & = & 12.275\text{ kg} \\ 8\text{ kg }105\text{ g} & = & 8.105\text{ kg} \\ 4\text{ kg }55\text{ g} & = + & \underline{4.055\text{ kg}} \\ & & \underline{24.435\text{ kg}} \end{array}$$

Thus, 12 kg 275 g + 8 kg 105 g + 4 kg 55 g
= 24.435 kg
= 24 kg 435 g

(c)
$$\begin{array}{rcr} 13\text{ l }205\text{ ml} & = & 13.205\text{ l} \\ 19\text{ l }300\text{ ml} & = & 19.300\text{ l} \\ 4\text{ l }26\text{ ml} & = + & \underline{4.026\text{ l}} \\ & & \underline{36.531\text{ l}} \end{array}$$

Thus, 13 l 205 ml + 19 l 300 ml + 4 l 26 ml
= 36.531 l = 36 l 531 ml

(d)
$$\begin{array}{rcr} 6\text{ km }260\text{ m} & = & 6.260\text{ km} \\ 16\text{ km }35\text{ m} & = & 16.035\text{ km} \\ 4\text{ km }6\text{ m} & = + & \underline{4.006\text{ km}} \\ & & \underline{26.301\text{ km}} \end{array}$$

Thus, 6 km 260 m + 16 km 35 m + 4 km 6 m
= 26.301 km = 26 km 301 m

(e) 8 m 6 mm = 8.006 m
16 m 9 mm = 16.009 m
4 m 8 mm = + 4.008 m
28.023 m

Thus, 8 m 6 mm + 16 m 9 mm + 4 m 8 mm
= 28.023 m = 28 m 23 mm

(f) 50 *l* 620 ml = 50.620 l
150 *l* 17 ml = 150.017 l
176 *l* 26 ml = + 176.026 l
376.6631

Thus, 50 *l* 620 ml + 150 *l* 17 ml + 176 *l* 26 ml
= 376.663 *l*
= 376 *l* 663 ml.

2. (a) 75 m 104 mm = 75.104 m
37 m 242 mm = – 37.242 m
37.862 m

Thus, 75 m 104 mm – 37 m 242 mm
= 37.862 m = 37 m 862 mm

(b) 96 *l* 705 ml = 96.705 *l*
28 *l* 42 ml = – 28.042 *l*
68.663 *l*

Thus, 96 *l* 705 ml – 28 *l* 42 ml
= 68.663 *l*
= 68 *l* 663 ml

(c) 8 kg 360 g = 8.360 kg
4 kg 505 g = – 4.505 kg
3.855 kg

Thus, 8 kg 360 – 4 kg 505 g
= 3 kg 855 g

(d) 904 km 200 m = 904.200 km
75 km 245 m = – 75.245 km
828.955 km

Thus, 904 km 200 m – 75 km 245 m
= 828.955 km
= 828 km 955 m

(e) 34 g 275 mg = 34.275 g
24 g 302 mg = – 24.302 g
9.973 g

Thus, 34 g 275 mg – 24 g 302 mg
= 9.973 g = 9 g 973 mg

(f) 180 *l* 20 ml = 180.020 *l*
60 *l* 500 ml = – 60.500 *l*
19.520 *l*

Thus, 180 l 20 ml – 60 l 500 ml
= 19.520 l= 19 l 520 ml

3. (a) 68 cm = 0.68 m and 0.75 m
Difference = 0.75 m – 0.68 m = 0.07 m

Thus, the goal is higher than goalkeeper by 0.07 m.

(b) Quantity of adhesive bought by carpenter
= 12.000 *l*

Quantity of adhesive used by carpenter
= 8.500 *l*

12.000 *l*
– 8.500 *l*
3.500 *l*

Thus, 3.500 *l* = 3500 ml adhesive is left with carpenter.

(c) (i) Quantity of sugar = 9.500 kg
Quantity of icing sugar = – 8.250 kg
Difference = 1.250 kg

Thus, Sunita, smother bought 1.250 kg more sugar than icing sugar.

(ii) 3.4 kg = 3.4 × 1000 g = 3400 g.

Thus, 3400 g of baking powder is bought by Sunita.

(iii) 12.00 kg
9.50 kg
3.40 kg
+ 8.25 kg
33.15 kg

Thus, the total weight of all the ingredient is 33.15 kg.

Exercise 12.3

1. (a) 18 m 26 cm = 18.26 m

18.26
× 24
7304
+ 36520
438.24

So, 18.26 m × 24 = 438.24 m = 438 m 24 cm.

(b) 27 *l* 172 ml = 27.172 *l*

$$\begin{array}{r} 27.172 \\ \times\ 31 \\ \hline 27172 \\ +\ 815160 \\ \hline 8423.32 \end{array}$$

So, 27.172 × 31 = 8423.32 *l*

= 8423 *l* 320 ml.

(c) 18 kg 25 g = 18.025 kg

$$\begin{array}{r} 18.025 \\ \times\ 20 \\ \hline 00000 \\ +\ 360500 \\ \hline 360.500 \end{array}$$

So, 18.025 kg × 20 = 360.5 kg

(d) 55 km 104 m = 55.104 km

$$\begin{array}{r} 55.104 \\ \times\ 18 \\ \hline 440832 \\ +\ 551040 \\ \hline 991.872 \end{array}$$

So, 55.104 × 18 = 991.872 km

(e) 35 *l* 18 ml = 35.018 *l*

$$\begin{array}{r} 35.018 \\ \times\ 17 \\ \hline 245126 \\ +\ 350180 \\ \hline 595.306 \end{array}$$

So, 35.018 × 17 = 595.306 *l*.

(f) 21 g 120 mg = 21.120 g

$$\begin{array}{r} 21.120 \\ \times\ 104 \\ \hline 84480 \\ 000000 \\ +\ 2112000 \\ \hline 2196.480 \end{array}$$

Thus, 21.120 g × 104 = 2196.480 g

2. (a) 25 cm 8 mm = 25.8 cm

$$\begin{array}{r} 6.45 \\ 4\overline{)25.8} \\ -\ 24 \\ \hline 18 \\ -\ 16 \\ \hline 20 \\ -\ 20 \\ \hline 0 \end{array}$$

Thus, 25.8 cm ÷ 4 = 6.45 cm

(b) 222 *l* 570 ml = 222.570 *l*

$$\begin{array}{r} 12.365 \\ 18\overline{)222.570} \\ -\ 18 \\ \hline 42 \\ -\ 36 \\ \hline 65 \\ -\ 54 \\ \hline 117 \\ -\ 108 \\ \hline 90 \\ -\ 90 \\ \hline 0 \end{array}$$

Thus, 222.570 *l* ÷ 18 = 12.365 *l*.

(c) 404 dag 25 dg = 404.25 day

$$\begin{array}{r} 19.25 \\ 21\overline{)404.25} \\ -\ 21 \\ \hline 194 \\ -\ 189 \\ \hline 52 \\ -\ 42 \\ \hline 105 \\ -\ 105 \\ \hline 0 \end{array}$$

Thus, 405.25 dag ÷ 21 = 19.25 dag

(d) 312 hm 1476 cm = 312.1476 hm

$$\begin{array}{r} 26.0123 \\ 21\overline{)3\,1\,2.1\,4\,7\,6} \\ -\,2\,4 \\ \hline 7\,2 \\ -\,7\,2 \\ \hline 0\,1\,4 \\ -\,1\,2 \\ \hline 2\,7 \\ -\,2\,4 \\ \hline 3\,6 \\ -\,3\,6 \\ \hline 0 \end{array}$$

Thus, 312.1476 ÷ 12 = 26.0123 hm

(e) 4603 dl 4 ml = 4603.04 dl

$$\begin{array}{r} 88.52 \\ 52\overline{)4\,6\,0\,3.0\,4} \\ -\,4\,1\,6 \\ \hline 4\,4\,3 \\ -\,4\,1\,6 \\ \hline 2\,7\,0 \\ -\,2\,6\,0 \\ \hline 1\,0\,4 \\ -\,1\,0\,4 \\ \hline 0 \end{array}$$

Thus, 4603.04 dl ÷ 52 = 88.52 dl

(f) 1956 kg 96 g = 1956.096 kg

$$\begin{array}{r} 122.256 \\ 16\overline{)1\,9\,5\,6.0\,9\,6} \\ -\,1\,6 \\ \hline 3\,5 \\ -\,3\,2 \\ \hline 3\,6 \\ -\,3\,2 \\ \hline 4\,0 \\ -\,3\,2 \\ \hline 8\,9 \\ -\,8\,0 \\ \hline 9\,6 \\ -\,9\,6 \\ \hline 0 \end{array}$$

Thus, 1956.096 ÷ 16 = 122.256 kg

3. (a) The weight of sugar in 1 bag
= 25 kg 250 g = 25.250 kg
The weight of sugar in 12 bags
= 25.250 kg × 12 = 303 kg

(b) The length of a piece of rope = 12.25 m
Total length of 125 pieces of rope
= 12.25 × 125 m = 1531.25 m

(c) Total quantity of juice available = 9.6 l
Quantity of juice given to each person
= 9.6 *l* ÷ 24 = 9600 ml ÷ 24 = 400 ml

(d) Total quantity of rice to be distributed
= 125.550 kg
Quantity of rice got by each family
= 125.550 kg ÷ 15 = 8.370 kg.

Revision Exercise

1. (a) 9 m 92 cm = 9 m + 92 cm
= 9 × 100 cm + 92 cm
= 900 cm + 92 cm
= 992 cm

(b) 6 cm 8 mm = 6 cm + 8 mm
= 6 × 10 mm + 8 mm
= 60 mm + 8 mm
= 68 mm

(c) 4.2 *l* = 4.2 × 1000 ml
= 4200 ml

(d) 6 *l* 250 ml = 6 *l* + 250 ml
= 6 × 1000 ml + 250 ml
= 6000 ml + 250 ml
= 6250 ml

2. (a)
$$\begin{array}{r} 8.2\,4\,\text{m} \\ 2.4\,0\,\text{m} \\ +\,8.9\,6\,\text{m} \\ \hline 1\,9.6\,0\,\text{m} \end{array}$$

(b) 71 km = 71.000 km
30 km 500 m = 30.500 km
So,
$$\begin{array}{r} 7\,1.0\,0\,0\,\text{km} \\ -\,3\,0.5\,0\,0\,\text{km} \\ \hline 4\,0.5\,0\,0\,\text{km} \end{array}$$ = 40 km 500 m

(c) 9 m 25 cm = 9.25 m
So,
$$\begin{array}{r} 9.2\,5\,\text{m} \\ \times\,1\,8 \\ \hline 7\,4\,0\,0 \\ +\,9\,2\,5\,0 \\ \hline 1\,6\,6.5\,0\,\text{m} \end{array}$$ = 166 m 50 cm

(d) 4 kl 48 l = 4.480 kl

So,

$$\begin{array}{r} 0.560 \\ 8\overline{)4.480} \\ -40 \\ \hline 48 \\ -48 \\ \hline 0 \end{array}$$

Thus, 4 kl 48 l ÷ 8 = 0.560 kl = 560 l.

(e) $\begin{array}{r} 42.845\ l \\ \times\ 7 \\ \hline 299.915\ l \end{array}$

(f) $\begin{array}{r} 80.69 \\ 9\overline{)726.21} \\ -72 \\ \hline 062 \\ -54 \\ \hline 81 \\ -81 \\ \hline 0 \end{array}$

3. (a) Length of Mahatma Gandhi Setu = 5575m
Length of Rajendra Setu = +2000m
Total length of above two Setu = 7575m

Since, 7575 m = 7.575 km

So, the sum of length of Mahatma Gandhi Setu and Rajendra setu is 7.575 km.

(b) Length of Vikramshila Setu = 4700m
Length of Howrah Bridge = + 705m
Total length of above two Setus = 5405m

Since, 5405 m = 5.405 km

So, the sum of length of Vikramshila Setu and Howrah Bridge = 5.405 km.

(c)
Length of Bandra-Worli sea Link = 5600m
Length of Godavari Bridge = –2754m
Difference = 2846m

Since, 2846 m = 2.846 km

So, the difference in lengths of Bandra-worli sea link and Godavari Bridge is 2.846 km.

(d) Bandra-Worli sea Link is the longest bridge and Howrah Bridge is the smallest bridge.

Length of Bandra-Worli sea Link = 5600m
Length of Howrah Bridge = – 705m
Difference = 4895m

Since, 2895 m = 4.895 km

So, the difference in the longest bridge and smallest bridge is 4.895 km.

4. The weight of 1 bag of sugar = 1 kg 550 g
= 1.550 kg

The weight of 12 bags of sugar
= (1.550 × 12) kg = 18.600 kg

The weight of carton filled with 12 bags of sugar
= 20 kg 150 g = 20.150 kg

The weight of 12 bags of sugar = 18.600 kg

The weight of empty carton = 1.550 kg

Thus, the weight of empty carton is 1.55 kg.

5. Distance covered by Raju in 14 rounds
= 28 km 840 m = 28.840 km.

Distance covered by Raju in 1 round
= 28.840 km ÷ 14 = 2.060 km.

Distance covered by Raju in 42 rounds
= 2.060 km × 42 = 86.520 km.

Thus, Raju covers the distance of 2.060 km in 1 round and 86.520 km in 42 rounds.

6. The weight of 1 ball = 0.375 kg

The weight of 36 balls = (0.375 × 36) kg
= 13.500 kg.

The total weight of all balls and a carton
= 14.750 kg

The weight of all balls = 13.500 kg

Difference = 1.250 kg

Thus, the weight of empty box = 1.250 kg

HOTS

1. The length of pole available = 3.00 m
The length of pole required = – 2.50 m
Difference = 0.50 m

Since, 0.50 m = 50 cm.

So, 50 cm of pole will be needed to cut-off from a 3-meter pole in order to use it for the birdfeeder.

2. 3.25 kg = 3.250 kg = (3.250 × 1000) g = 3250 g.

Thus, the answer is correct.

Case-based Questions

1. Length of Mahatma Gandhi Setu = 5,575 m
   Length of Rajendra Setu = 2,000 m
   Sum of their lengths = 5,575 m + 2000 m
   = 7,575 m = 7.575 km.
2. Length of Vikramshila Setu = 7,700 m
   Length of Howrah Bridge = 705 m
   Sum of their lengths = 4,700 m + 705 m
   = 5,405 m = 5.405 km.
3. Length of Bandra-Worli Sea Link = 5,600 m
   Length of Godavari Bridge = 2,754 m
   Difference of their lengths = 5,600 m + 2,754 m
   = 2,846 m = 2.846 km
4. Longest bridge = Bandra-Worli Sea Link
   Shortest bridge = Howrah Bridge
5. Length of Bandra-Worli Sea Link = 5.600 km
   Length of Mahatma Gandhi Setu = 5.575 km
   Length of Vikramshila Setu = 7.700 km
   Length of Godavari Bridge = 2.754 km
   Length of Rajendra Setu = 2 km
   Length of Howrah Bridge = 0. 705 km
   Sum of their lengths = 24.334 km.

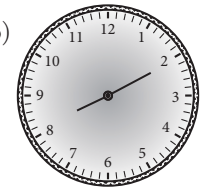
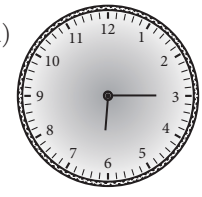
Mental Maths

A. 1. 10 mm = 1 cm 2. 10 m = 1 decametre
   3. 1 m = 100 cm 4. 2000 ml = 2 *l*
   5. 63 *l* 3 ml = 63003 ml
   6. 9 m = 900 cm
   7. 5 m 6 cm = 506 cm 8. 24 m = 24000 mm
   9. 5 kl 45 *l* = 5 kl + 45 *l* = 5000 *l* + 45 *l* = 5045 *l*.

B. 1. 'deca' (da) is used for 10 times the standard unit.
   Thus, (a) is the correct answer.
   2. 'heeto' (h) is used for 100 times the standard unit.
   Thus, (b) is the correct answer.
   3. 'milli' is used for one thousandth of standard unit.
   Thus, (c) is the correct answer.
   4. 'centi' is used for one hundredth of standard unit.
   Thus, (b) is the correct answer.
   5. 1 kg = 1000 mg
   Thus, (a) is the correct answer.

Chapter 13. Time and Temperature

Recap

1. (a) 5:30 (b) 8:15
   (c) 11:45 (d) 7:35
2. (a) 
   (b) 
   (c) 
   (d) 
3. (a) There are 60 minutes in an hour.
   (b) Since 2 minutes = 2 × 60 = 120 seconds.
   So, there are 120 seconds in 2 minutes.
   (c) There are 366 days in a leap year.
   (d) There are 10 years in a decade.
   (e) Since, 4 weeks = 4 × 7 = 28 days.
   So, there are 28 days in 4 weeks.
   (f) Starting time of class = 10:00 am
   = 1000 hours.
   Ending time of class = 10:40 am
   = 1040 hour.
   Difference = 1040 – 1000
   = 0040 hours
   = 40 minutes
   Thus, the duration of the class is 40 minutes.
4. (a)

	Hours	Minutes
	35	25
+	14	45
	50	10

(b)

	Minutes	Second
	42	35
+	38	45
	81	20

(c)

	Days	Hours
	12	18
+	15	20
	28	14

(d)

	Years	Months
	4	9
+	1	8
	6	5

5. (a) Starting time of baking cake = 8:30 am
   = 0830 hours

Finishing time of baking cake = 8:48 am
= 0848 hours

Difference = 0848 – 0830
= 0018 = 18 minutes.

The cake taken 18 minutes for baking.

(b) Running time = 25 minutes

Walking time = +35 minutes

Total = 60 minutes = 1 hour

Thus, the boy taken 1 hour to run and walk.

(c) Starting time of reading = 2:45 pm
= 1445 hours

Finishing time of reading = 4:30 pm
= 1630 hours

Duration of reading = 1630 – 1445
= 1 hr 45 minutes

Thus, Sandhya took 1 hour 45 minutes to read the chapter.

Exercise 13.1

1. (a) 3:13 am = 0313 hours

   (b) 11:14 am = 1114 hours

   (c) 12:00 midnight = 0000 hours

   (d) 12:44 pm = 1244 hours

   (e) 5:42 pm = 1742 hours

   (f) 12:00 noon = 1200 hours

   (g) 8:29 pm = 2029 hours

   (h) 11:59 pm = 2359 hours

2. (a) 0400 hours = 4:00 a.m.

   (b) 0640 hours = 6:40 a.m.

   (c) 1800 hours = 6:00 p.m.

   (d) 1200 hours = 12:00 noon

   (e) 0618 hours = 6:18 a.m.

   (f) 1545 hours = 3:45 p.m.

   (g) 2019 hours = 8:19 p.m.

   (h) 2349 hours = 11:49 p.m.

3. (a) The given clock shows 9:30 in morning.

   So, this time is 9:30 a.m. which in 24-hour clock is 0930 hours.

   (b) The given clock shows 12:42 in afternoon.

   So, this time is 12:42 p.m. which in 24-hour clock is 1242 hours.

   (c) The given clock shows 7:18 in evening.

   So, this time is 7:18 p.m. and 7:18 p.m.
   = 1918 hours.

   (d) The given clock shows 4:55 in morning.

   So, this time is 4:55 a.m. and 4:55 a.m.
   = 0455 hours.

4. (a) 12 : 40 hours → 12 : 40 p.m.
   12 : 45 hours → 12 : 45 p.m.
   12 : 50 hours → 12 : 50 p.m.
   12 : 55 hours → 12 : 55 p.m.
   13 : 05 hours → 01 : 05 p.m.
   13 : 10 hours → 01 : 10 p.m.
   13 : 20 hours → 01 : 20 p.m.

   (b) Arrival time of flight coming from Pune
   = 13:20 hours = 1:20 p.m.

   (c)

	Flight No.	Arrival Time	Delay by	Expected Arrival
(i)	GB 337	12:45		14:15
(ii)	SB 233	12:55	* 1 hour	14:25
(iii)	SB 226	12:50	30 minutes	14:20
(iv)	GE 102	13:20		14:50

Exercise : 13.2

1. (a) 12 minutes = 12 × 60 = 720 seconds.

   (b) 19 minutes 17 seconds
   = 19 minutes + 17 seconds
   = 19 × 60 seconds + 17 seconds
   = 1140 seconds + 17 seconds
   = 1157 seconds.

   (c) 1 hour 10 minutes 18 seconds
   = 1 hour + 10 minutes + 18 seconds
   = 1 × 60 minutes + 10 minutes + 18 seconds
   = 60 minutes + 10 minutes + 18 seconds
   = 70 minutes + 18 seconds
   = 70 × 60 seconds + 18 seconds
   = 4200 seconds + 18 seconds
   = 4218 seconds.

   (d) 3 hours 25 minutes 18 seconds
   = 3 hours + 25 minutes + 18 seconds
   = 3 × 60 minutes + 25 minutes + 18 seconds
   = 180 minutes + 25 minutes + 18 seconds
   = 205 minutes + 18 seconds
   = 205 × 60 seconds + 18 seconds
   = 12300 seconds + 18 seconds
   = 12318 seconds.

2. (a) 8 hours 34 minutes
   = 8 hours + 34 minutes

= 8 × 60 minutes + 34 minutes
= 480 minutes + 34 minutes
= 514 minutes.

(b) 2 days 9 hours 4 minutes
= 2 days + 9 hours + 4 minutes
= 2 × 24 hours + 9 × 60 minutes + 4 minutes
= 48 hours + 540 minutes + 4 minutes
= 48 × 60 minutes + 540 minutes + 4 minutes
= 2880 minutes + 540 minutes + 4 minutes
= 3424 minutes

(c) 18 hours 55 minutes
= 18 hours + 55 minutes
= 18 × 60 minutes + 55 minutes
= 1080 minutes + 55 minutes
= 1135 minutes

(d) 1020 seconds = 1020 ÷ 60 minutes

```
   17
60)1020
 - 60
   420
 - 420
     0
```

= 17 minutes

3. (a) 5 days = 5 × 24 = 120 hours

(b) 24 days = 24 × 24 = 576 hours

(c) 8 days 18 hours = 8 days + 18 hours
= 8 × 24 hours + 18 hours
= 192 hours + 18 hours
= 210 hours

(d) 16 days 24 hours
= 16 days + 24 hours
= (16 × 24) hours + 24 hours
= 384 hours + 24 hours
= 408 hours

(e) 1500 minutes = 1500 ÷ 60 hours

```
   25
60)1500
 - 120
   300
 - 300
     0
```

= 25 hours

(f) 1440 minutes = 1440 ÷ 60 hours

```
   24
60)1440
 - 120
   240
 - 240
     0
```

= 24 minutes

4. (a) 8 weeks = 8 × 7 = 56 days

(b) 6 weeks 6 days
= 6 weeks + 6 days
= (6 × 7) days + 6 days
= 42 days + 6 days
= 48 days

(c) 12 years = (12 × 365) days = 4380 days.

(d) 5 leap years = (5 × 366) days = 1830 days.

(e) 360 hours = (360 ÷ 24) days = 15 days

```
   15
24)360
 - 24
   120
 - 120
     0
```

(f) 2040 hours = (2040 ÷ 24) days = 85 days

```
   85
24)2040
 - 192
   120
 - 120
     0
```

(g) 16 weeks 4 days
= 16 weeks + 4 days
= (16 × 7) days + 4 days
= 112 days + 4 days = 116 days

(h) 15 years 90 days
= 15 years + 90 days
= (15 × 360) days + 90 days
= 5400 days + 90 days = 5490 days.

(i) 172800 seconds = (172800 ÷ 60) minutes
= 2880 minutes
= (2880 ÷ 60) hours
= 48 hours
= (48 ÷ 24) days = 2 days

Thus, 172800 seconds = 2 days

5. (a) 1 fortnight = 2 weeks
So, 4 fortnights = (4 × 2) weeks = 8 weeks

(b) 147 days = (147 ÷ 7) weeks = 21 weeks

(c) 3 fort nights 1 week = 3 fort nights + 1 week
= (3 × 2) weeks + 1 week
= 6 weeks + 1 week = 7 weeks.

(d) 315 days = (315 ÷ 7) weeks = 45 weeks

(e) 168 hours = (168 ÷ 24) days
= 7 days = (7 ÷ 7) week = 1 week

(f) 3 months = (3 × 30) days
= 90 days
= (90 ÷ 7) weeks
= 12 weeks 6 days

6. (a) 18 years = (18 × 12) months = 216 months

(b) 14 years 6 months = 14 years + 6 months
= (14 × 12) months + 6 months
= 168 months + 6 months
= 174 months

(c) 6 years 11 months
= (6 × 12) months + 11 months
= 72 months + 11 months
= 83 months

(d) 24 years 10 months
= 24 years + 10 months
= (24 × 12) months + 10 months
= 288 months + 10 months
= 298 months

(e) 6 fortnights = (6 ÷ 2) months = 3 months

(f) 5040 hours = (5040 ÷ 24) days
= 210 day
= (210 ÷ 30) month
= 7 months

7. (a) 216 months = (216 ÷ 12) years = 18 years

(b) 24 days 18 hours
= 24 days + 18 hours
= (24 × 24) hours
= 18 hours
= 576 hours = 18 hours
= 594 hours

(c) 18 hours 15 minutes
= 18 hours + 15 minutes
= (18 × 60) minutes + 15 minutes
= 1080 minutes + 15 minutes
= 1095 minutes

(d) 6 days 4 hours 55 minutes
= 6 days + 4 hours + 55 minutes
= (6 × 24) hours + 4 hours + 55 minutes
= 144 hours + 4 hours + 55 minutes
= 148 hours + 55 minutes
= (148 × 60) minutes + 55 minutes
= 8880 minutes + 55 minutes
= 8935 minutes

(e) 48 minutes 27 seconds
= 48 minutes + 27 seconds
= (48 × 60) seconds + 27 seconds
= 2880 seconds + 27 seconds
= 2907 seconds

(f) 4 hours 16 minutes 24 seconds
= 4 hours + 16 minutes + 24 seconds
= (4 × 60) minutes + 16 minutes + 24 seconds
= 240 minutes + 16 minutes + 24 seconds
= 256 minutes + 24 seconds
= (256 × 60) seconds + 24 seconds
= 15360 seconds + 24 seconds
= 15384 seconds

(g) 19 weeks 6 days
= 19 weeks + 6 days
= (19 × 7) days + 6 days
= 133 days + 6 days
= 139 days

(h) 10 years 8 months
= 10 years + 8 months
= (10 × 12) months + 8 months
= 120 months + 8 months
= 128 months

(i) 15 years 25 days
= 15 years + 25 days
= (15 × 365) days + 25 days
= 5475 days + 25 days
= 5500 days

(j) 2 fort nights 4 days
= 2 fort nights + 4 days
= (2 × 14) days + 4 days
= 28 days + 4 days
= 32 days

8. (a) 3200 seconds
= 3200 ÷ 60
= 53 minutes 20 seconds

$$\begin{array}{r} 53 \\ 60\overline{)3200} \\ -300 \\ \hline 200 \\ -180 \\ \hline 20 \end{array}$$

(b) 3910 minutes
= 3910 ÷ 60
= 65 hours 10 minutes

$$\begin{array}{r} 65 \\ 60\overline{)3910} \\ -360 \\ \hline 310 \\ -300 \\ \hline 10 \end{array}$$

(c) 350 hours
= 350 ÷ 24
= 14 days 14 hours

$$\begin{array}{r} 14 \\ 24\overline{)350} \\ -24 \\ \hline 110 \\ -96 \\ \hline 14 \end{array}$$

(d) 600 days = 600 ÷ 7 = 7 weeks 5 days

$$\begin{array}{r} 85 \\ 7\overline{)600} \\ -56 \\ \hline 40 \\ -35 \\ \hline 5 \end{array}$$

(e) 705 months = 705 ÷ 12
= 58 years 9 months

$$\begin{array}{r} 58 \\ 12\overline{)705} \\ -60 \\ \hline 105 \\ -96 \\ \hline 9 \end{array}$$

(f) 700 hours = 700 ÷ 24 = 29 days 9 hours

$$\begin{array}{r} 29 \\ 24\overline{)705} \\ -48 \\ \hline 225 \\ -216 \\ \hline 9 \end{array}$$

Exercise 13.3

1. (a)

	Hours	Minutes
	12	25
+	32	48
	45	13

(b)

	Hours	Minutes	Seconds
	29	33	55
+	24	28	35
	54	02	30

(c)

	Days	Hours
	72	16
+	33	13
	66	05

(d)

	Days	Hours	Minutes
	15	19	36
+	22	09	24
	38	05	00

(e)

	Years	Months
	7	6
+	4	8
	12	2

(f)

	Weeks	Days
	12	4
+	30	6
	43	3

2. (a)

	Hours	Minutes
	32	13
–	15	25
	16	48

(b)

	Hours	Minutes	Seconds
	25	00	55
–	11	18	30
	13	42	25

(c)

	Days	Hours
	72	09
–	28	15
	43	18

(d)

	Days	Hours	Minutes
	26	12	00
–	13	16	15
	12	19	45

(e)

	Years	Months
	13	04
–	9	08
	3	08

(f)

	Weeks	Days
	34	4
–	10	6
	23	5

3. (a) 3:00 a.m. = 0300 hours
and 0300 hours + 4 hours
= 0700 hours = 7:00 a.m.

(b) 8:00 p.m. = 0800 hours
and 0800 hours + 5 hours
= 1300 hours = 01:00 p.m.

(c) 2 hours 55 min = 0255 hours
2 p.m. = 2:00 p.m. = 1400 hours
So, 1400 hours – 0255 hours
= 1105 hours = 11:05 a.m.

(d) 2 a.m. – 3 hours 16 minutes = 10:44 p.m.

4. (a) 3:24 a.m. → 11:24 a.m. = 8 hours
11:24 a.m. → 11:43 a.m. = 19 minutes
So, the required time difference
= 8 hours 19 minutes.

(b) 8:36 p.m. → 10:36 p.m. = 2 hours
10:36 p.m. → 10:55 p.m. = 19 minutes
So, the required time duration
= 2 hours 19 minutes.

(c) 8:29 a.m. → 12:29 p.m. = 4 hours
12:29 p.m. → 3:29 p.m. = 3 hours
3:29 p.m. → 3:46 p.m. = 17 minutes
So, the required time duration
= 7 hours 17 minutes.

(d) 4:29 p.m. → 12:29 a.m. = 8 hours
12:29 a.m. → 2:06 a.m. = 1 hour 37 minutes
So, the required time duration
= 9 hours 37 minutes.

5. (a) 10:10 a.m. → 10:34 a.m. = 24 minutes
So, the typist took 24 minutes to type the documents.

(b) 9:35 a.m. → 12:35 p.m. = 3 hours
12:35 p.m. → 3:30 p.m. = 2 hours 55 minutes.
Total duration = 5 hours 55 minutes
So, Shalini takes 5 hours 55 minutes to read the storybook.

(3) 3:30 p.m. → 12:30 a.m. = 9 hours
12:30 a.m. → 8:30 a.m. = 8
8:30 a.m. → 8:40 a.m. = 10 minutes.
Total duration = 17 hours 10 minutes.
The time duration of the journey of the train from New Delhi to Kanpur is 17 hours 10 minutes.

(d) 8:40 a.m. → 12:40 p.m. = 4 hours
12:40 p.m. → 2:20 p.m. = 1 hour 40 minutes.
Total duration = 5 hours 40 minutes.
Thus, the duration of school is 5 hours 40 minutes.

Exercise 13.4

1. (a) Number of days in August = 31 – 9 = 22 days
Number of days in September = 25
Total duration = 22 + 25 = 47 days

(b) Number of days in January = 31 – 11
= 20 days
Number of days in February = 28 days
Number of days in March = 23 days
Total duration = 20 + 28 + 23 = 71 days

(c) Number of days in June = 30 – 27 = 3 days
Number of days in July = 31 days
Number of days in September = 3 days
Total duration = 3 + 31 + 3 = 37 days

(d) Number of days in December = 31 – 25
= 6 days
Number of days in January = 31 days
Number of days in February = 29 days
Number of days in March = 8 days
Total duration = 6 + 31 + 29 + 8 = 74 days

2. (a) 1 decade = 10 years
10 decades = 10 × 10 = 100 years
So, there are 100 years in 10 decades.

(b) 1 century = 100 years
9 centuries = 9 × 100 = 900 years
So, there are 900 years in 9 centuries.

(c) 1 century = 100 years
4 centuries = 4 × 100 = 400 years
So, there are 400 years in 4 centuries.

(d) 1 century = 100 years
3 centuries = 3 × 100 = 300 years
So, there are 300 years in 3 centuries.

3. Duration of dance class = Number of days in (April + May + June + July + August + September + October + November + December + January + February)
=26+31+30+31+31+30+31+30+31+31+12
= 314 days.

4. Number of days in February = 28 – 11 = 17 days
Number of days in March = 31 days
Total number of days = 17 + 31 = 48 days
Thus, there are 48 days until Raghav's birthday.

5. Number of days in August = 31 – 17 = 14 days
Remaining number of days = 17 – 14 = 3 days
So, number of vacation days in March = 3 days
Thus, Sunanda Came home on 4th March.

6. Number of working days in March = 31 – 14
= 17 days
Number of working days in April = 30 days
Number of working days in May = 31 days
Number of working days in June = 30 days
Number of working days in July = 31 days
Number of working days in August = 9 days
Total number of working days = 148 days
Thus, the carpenter worked for 148 days.

7. Date of birth of Rajiya = 09–05–2003t
Date of birth of Abdul = 25–08–2005
Since, Rajiya was born earlier than Abdul, so Rajiya is eider.
Let us find difference in ages of both.

	2005	08	25
–	2003	05	09
	2	03	16

Thus, Rajiya is 2 years 3 months 16 days older than her brother Abdul.

8. Number of days of vacations in December 2013 = 31 – 22 = 9 days
Number of days of vacations in January 2014 = 15 days
Total number of days of vacations = 9 + 15
= 24 days
Thus, the school was closed for 24 days.

Exercise 13.5

1. (a) 25°C (b) 40°C
(c) 15°C (d) 30°C

2. (a) 40°F (b) 10°F
(c) 100°F (d) 70°F

3. (a) Given temperature = 50°C

$$°F = \left(°C \times \frac{9}{5}\right) + 32° = \left(50° \times \frac{9}{5}\right) + 32°$$
$$= 90° + 32° = 122°$$

Thus, 50°C = 122°F

(b) Given temperature = 35°C

$$°F = \left(°C \times \frac{9}{5}\right) + 32° = \left(35° \times \frac{9}{5}\right) + 32°$$
$$= 63° + 32° = 95°$$

Thus, 35°C = 95°F

(c) Given temperature = 45°C

$$°F = \left(°C \times \frac{9}{5}\right) + 32° = \left(45° \times \frac{9}{5}\right) + 32°$$
$$= 81° + 32° = 113°$$

Thus, 45°C = 113°F

(d) Given temperature = 80°C

$$°F = \left(°C \times \frac{9}{5}\right) + 32° = \left(80° \times \frac{9}{5}\right) + 32°$$
$$= 144° + 32° = 176°$$

Thus, 80°C = 176°F

(e) Given temperature = 20°C

$$°F = \left(°C \times \frac{9}{5}\right) + 32° = \left(20° \times \frac{9}{5}\right) + 32°$$
$$= 36° + 32° = 68°$$

Thus, 20°C = 68°F

(f) Given temperature = 40°C

$$°F = \left(°C \times \frac{9}{5}\right) + 32° = \left(40° \times \frac{9}{5}\right) + 32°$$
$$= 72° + 32° = 104°$$

Thus, 40°C = 104°F

(g) Given temperature = 100°C

$$°F = \left(°C \times \frac{9}{5}\right) + 32° = \left(100° \times \frac{9}{5}\right) + 32°$$
$$= 180° + 32° = 212°$$

Thus, 100°C = 212°F

(h) Given temperature = 30°C

$°F = \left(°C \times \frac{9}{5}\right) + 32° = \left(30° \times \frac{9}{5}\right) + 32°$

$= 54° + 32° = 86°$

Thus, 30°C = 86°F

4. (a) Given temperature = 32°F

$°C = (°F - 32°) \times \frac{5}{9}$

$= (32° - 32°) \times \frac{5}{9}$

$= 0 \times \frac{5}{9} = 0$

Thus, 32°F = 0°C

(b) Given temperature = 50°F

$°C = (°F - 32°) \times \frac{5}{9}$

$= (50° - 32°) \times \frac{5}{9}$

$= 18° \times \frac{5}{9} = 10°$

Thus, 50°F = 10°C

(c) Given temperature = 86°F

$°C = (°F - 32°) \times \frac{5}{9}$

$= (86° - 32°) \times \frac{5}{9} = 54° \times \frac{5}{9} = 30°$

Thus, 86°F = 30°C

(d) Given temperature = 45°F

$°C = (°F - 32°) \times \frac{5}{9}$

$= (95° - 32°) \times \frac{5}{9}$

$= 63° \times \frac{5}{9} = 35°$

Thus, 95°F = 35°C

(e) Given temperature = 113°F

$°C = (°F - 32°) \times \frac{5}{9}$

$= (113° - 32°) \times \frac{5}{9}$

$= 81° \times \frac{5}{9} = 45°$

Thus, 113°F = 45°C

(f) Given temperature = 149°F

$°C = (°F - 32°) \times \frac{5}{9}$

$= (149° - 32°) \times \frac{5}{9}$

$= 117° \times \frac{5}{9} = 13° \times 5 = 65°$

Thus, 149°F = 65°C

(g) Given temperature = 176°F

$°C = (°F - 32°) \times \frac{5}{9}$

$= (176° - 32°) \times \frac{5}{9}$

$= 144° \times \frac{5}{9} = 16° \times 5 = 80°$

Thus, 176°F = 80°C

(h) Given temperature = 76.1°F

$°C = (°F - 32°) \times \frac{5}{9}$

$= (76.1° - 32°) \times \frac{5}{9}$

$= 44.1° \times \frac{5}{9} = 40.9°$

Thus, 76.1°F = 40.9°C

5. (a) 3.7°C < 4.5°C < 12.3°C < 17°C < 30°C

(b)

Temperature in Mumbai	=	30.0 °C
Temperature in Anantnag	=	− 3.7 °C
Difference	=	26.3 °C

Thus, Anantnag is 26.3°C colder than Mumbai.

(c)

Temperature in New York	=	12.3 °C
Temperature in Ottowa	=	− 4.5 °C
Difference	=	7.8 °C

Thus, New York is 7.8°C warmer than Ottowa.

(d) Mumbai is the warmest place and Anantnag is the coldest place.

Temperature in Mumbai	=	30.0 °C
Temperature in Anantnag	=	− 3.7 °C
Difference	=	26.3 °C

Thus, the difference in temperature between the warmest and the coldest place is 26.3°C.

Case-based Questions

1. We know that a leap year is divided completely by. Years 1983, 2007 and 2011 are not completely divided by 4, so they are not leap years.

2. Number of years from 1983 to 2007
= 2007 – 1982 = 25 years
Number of years from 2007 to 2011
= 2011 – 2006 = 5 years

3. Number of months from June 1983 to December 1983 = 7 months
Number of years from 1984 to 2006 = 23 years
Number of months in 23 years = 23 × 12
= 276 months
Number of months in 2007 = 4 months
Total number of months from June 1983 to September 2007 = 7 + 276 + 4 = 287 months.

4. Number of months from September 2007 to December 2007 = 4 months
Number of months from 2008 to 2010 = 3 years
Number of months in 3 years = 3 × 12
= 36 months
Number of months in 2011 = 9 months
Total number of months from September 2007 to April 2007 = 4 + 36 + 9 = 49 months.

5. Number of days in January 2011 = 31 days
Number of days in February 2011 = 28 days
Number of days in March 2011 = 30 days
Number of days in April 2011 = 2 days
Total number of days from 1st January, 2011 to 2nd April 2011 = 31 + 28 + 30 + 2 = 91 days.

6. Number of days from 25th June to 31st December 1983 = 6 + 31 + 31 + 30 + 31 + 30 + 31 = 190 days.

Year	No. of days
1983	190
1984	366
1985	365
1986	365
1987	365
1988	366
1989	365
1990	365
1991	365
1992	366
1993	365
1994	365
1995	365
1996	366
1997	365

Year	No. of days
1998	365
1999	365
2000	366
2001	365
2002	365
2003	365
2004	366
2005	365
2006	365
2007	365
2008	366
2009	365
2010	365
2011	91

Total number of days
= [190 + (366 × 7) + (365 × 20) + 91
= 190 + 2562 + 7300 + 91 = 10,143 days

Revision Exercise

1. (a) There are 29 days in February in a leap year.
(b) In a year, 4 months have 30 days.
(c) In a year, 7 months have 31 days.
(d) Second is the shortest unit of time.

2. (a) 7 hours = 7 × 60 = 420 minutes
(b) 8 h 40 min = 8 h + 40 min
= (8 × 60) min + 40 min
= 480 min + 40 min
= 520 min
(c) 5 h 12 min = 5 h + 12 min
= (5 × 60) min + 12 min
= 300 min + 12 min
= 312 minutes
(d) 3 days = (3 × 24) hours
= 72 hours
= (72 × 60) minutes
= 4320 minutes

3. (a) 320 min = 320 ÷ 60
= 5 hours 20 minutes

```
    5
60 ) 3 2 0
   – 3 0 0
     2 0
```

(b) 245 min = 245 ÷ 60 = 4 hours 5 minutes

```
    4
60 ) 2 4 5
   – 2 4 0
       5
```

(c) 160 min = 160 ÷ 60 = 2 hours 40 minutes

```
    2
60 ) 1 6 0
   – 1 2 0
     4 0
```

(d) 401 min = 401 ÷ 60 = 6 hours 41 minutes

```
    6
60 ) 4 0 1
   – 3 6 0
     4 1
```

4. (a) 420 sec = 420 ÷ 60 = 7 minutes

$$\begin{array}{r} 7 \\ 60\overline{)420} \\ -\,420 \\ \hline 20 \end{array}$$

(b) 290 sec = 290 ÷ 60 = 4 min 50 sec

$$\begin{array}{r} 4 \\ 60\overline{)290} \\ -\,240 \\ \hline 50 \end{array}$$

(c) 360 sec = 360 ÷ 60 = 6 minutes

$$\begin{array}{r} 6 \\ 60\overline{)360} \\ -\,360 \\ \hline 0 \end{array}$$

(d) 840 sec = 840 ÷ 60 = 14 minutes

$$\begin{array}{r} 14 \\ 60\overline{)840} \\ -\,60 \\ \hline 240 \\ -\,240 \\ \hline 0 \end{array}$$

5. (a) 4 weeks = (4 × 7) days = 28 days

(b) 2 weeks 4 days = 2 weeks + 4 days
= (2 × 7) days + 4 days
= 14 days + 4 days
= 18 days.

(c) 7 years = 7 × 12
= 84 months
= (84 × 30) days
= 2520 days.

(d) 8 years = (8× 12) months
= 96 months
= (96 × 30) days
= 2880 days.

6. (a)

	Minutes	Seconds
	8	32
+	7	44
	16	16

(b)

	Hours	Minutes
	6	44
+	12	38
	19	22

(c)

	Years	Months
	7	09
+	6	11
	14	08

(d)

	Weeks	Days
	12	6
+	5	5
	18	4

(e)

	Hours	Minutes	Seconds
	75	32	28
+	34	48	32
	110	21	00

7. (a)

	Minutes	Seconds
	30	10
–	19	28
	10	42

(b)

	Hours	Minutes
	72	22
–	28	58
	43	24

(c)

	Years	Months
	44	00
–	11	07
	32	05

(d)

	Weeks	Days
	20	00
–	17	05
	2	02

(e)

	Hours	Minutes	Seconds
	123	06	15
–	99	13	14
	23	05	01

8. (a) Given temperature = 42°C

$$°F = \left(°C \times \frac{9}{5}\right) + 32° = \left(42° \times \frac{9}{5}\right) + 32°$$
$$= (8.4° \times 9°) + 32°$$
$$= 75.6° + 32° = 107.6°$$

Thus, 42°C = 107.6°F

(b) Given temperature = 34°C

$$°F = \left(°C \times \frac{9}{5}\right) + 32°$$
$$= \left(34° \times \frac{9}{5}\right) + 32°$$
$$= 61.2° + 32° = 93.2°$$

Thus, 34°C = 93.2°F

(c) Given temperature = 68°C

$$°F = \left(°C \times \frac{9}{5}\right) + 32°$$
$$= \left(68° \times \frac{9}{5}\right) + 32°$$
$$= 112.4° + 32° = 154.4°$$

Thus, 68°C = 154.4°F

(d) Given temperature = 19°C

$$°F = \left(°C \times \frac{9}{5}\right) + 32°$$

$= \left(19° \times \frac{9}{5}\right) + 32°$

$= 34.2° + 32° = 66.2°$

Thus, 19°C = 66.2°F

(e) Given temperature = 21°C

$°F = \left(°C \times \frac{9}{5}\right) + 32°$

$= \left(21° \times \frac{9}{5}\right) + 32°$

$= 37.8° + 32° = 69.8°$

Thus, 21°C = 69.8°F

9. (a) Given temperature = 48.2°F

$°C = (°F - 32°) \times \frac{5}{9}$

$= (48.2° - 32°) \times \frac{5}{9}$

$= 16.2° \times \frac{5}{9} = 9°$

Thus, 48.2°F = 9°C

(b) Given temperature = 86.9°F

$°C = (°F - 32°) \times \frac{5}{9}$

$= (86.9° - 32°) \times \frac{5}{9}$

$= 54.9° \times \frac{5}{9} = 30.5°$

Thus, 86.9°F = 30.5°C

(c) Given temperature = 59°F

$°C = (°F - 32°) \times \frac{5}{9}$

$= (59° - 32°) \times \frac{5}{9} = 15°$

Thus, 59°F = 15°C

(d) Given temperature = 104°F

$°C = (°F - 32°) \times \frac{5}{9}$

$= (104° - 32°) \times \frac{5}{9} = 40°$

Thus, 104°F = 40°C

(e) Given temperature = 37.4°F

$°C = (°F - 32°) \times \frac{5}{9}$

$= (37.4° - 32°) \times \frac{5}{9} = 3°$

Thus, 37.4°F = 3°C

Chapter 14. Money

Recap

1. (a) ₹5 = (5 × 100)P = 500 P

(b) ₹15.00 = (15.00 × 100)P = 1500 P

(c) ₹164.60 = (164.60 × 100)P = 16460 P

(d) ₹0.04 = (0.04 × 100)P = 4 P

2. (a) 14000 p = ₹(14000 ÷ 100) = ₹140.00

(b) 9000p = ₹(9000 ÷ 100) = ₹90.00

(c) 7025 p = ₹(7025 ÷ 100) = ₹70.25

(d) 9 p = ₹(9 ÷ 100) = ₹0.09

3. ₹1000 × 5 = ₹5000, ₹500 × 3 = ₹1500

₹100 × 4 = 400, ₹10 × 8 = 80

Total = ₹5000 + ₹1500 + ₹400 + ₹80 = ₹6980

Thus, Ananya has ₹6980 in all.

4.

Cost of potatoes	=	₹192.50
Cost of onions	=	₹ 60.00
Cost of cucumber	=	₹ 25.50
Cost of cabbage	=	₹ 37.50
Cost of peas	=	+₹ 16.00
Total	=	₹331.50

Amount given to the green-grocer =	₹500.00
The cost of vegetables	= –₹331.50
Difference	= ₹168.50

Thus, Mr. Arpita spent ₹331.50 in all and got back ₹168.50.

5. (a)

₹425.50	
+₹275.25	
₹700.75	

(b)

₹500.00	
–₹312.90	
₹187.10	

(c) The cost of 1 pen = ₹22.50

The cost of 15 pens = ₹22.50 × 15 = ₹337.50

(d) The cost of 8 kg of mangoes = ₹260

The cost of 1 kg of mangoes = ₹260 ÷ 8 = ₹32.50

Exercise 14.1

1. (a) ₹49 = (49 × 100)p = 4900 p

(b) ₹83 = (83 × 100)p = 8300 p

(c) ₹15.50 = (15.50 × 100)p = 1550 p

(d) ₹24.30 = (24.30 × 100)p = 2430 p

(e) ₹248.60 = (248.60 × 100)p = 24860 p

(f) ₹0.90 = (0.90 × 100)p = 90 p

(g) ₹0.70 = (0.70 × 100)p = 70 p

(h) ₹6043.25 = (6043.25 × 100)p = 604325 p

2. (a) 400 paise = ₹(400 ÷ 100) = ₹4.00

(b) 1800 paise = ₹(1800 ÷ 100) = ₹18.00

(c) 5425 paise = ₹(5425 ÷ 100) = ₹54.25

(d) 1040 paise = ₹(1040 ÷ 100) = ₹10.40

(e) 9005 paise = ₹(9005 ÷ 100) = ₹90.05

(f) 84328 paise = ₹(84328 ÷ 100) = ₹843.28

(g) 15900 paise = ₹(15900 ÷ 100) = ₹159.00

(h) 27245 paise = ₹(27245 ÷ 100) = ₹272.45

3. (a)
₹ 55.45
₹ 26.34
+₹170.05
₹251.79

(b)
₹ 260.40
₹ 254.93
+₹ 540.70
₹1056.03

(c)
₹8401.04
₹ 8.95
+₹ 40.26
₹8450.25

(d)
₹ 724.28
₹ 441.34
₹ 964.85
+₹ 705.81
₹2836.28

4. (a)
₹600.24
−₹343.75
₹256.49

(b)
₹800.00
−₹299.27
₹500.73

(c)
₹8464.38
−₹6491.32
₹1973.06

(d)
₹9824.56
−₹4321.00
₹5503.56

5. (a)
₹ 34.64
× 8
₹277.12

(b)
₹ 504.24
× 8
₹4033.92

(c)
₹ 840.85
× 9
₹7567.65

(d)
₹ 1436.31
× 7
₹10054.17

(e)
₹ 24.08
× 124
8632
48160
+ 240800
₹2975.92

(f)
₹ 9.64
× 84
3856
+ 77120
₹809.76

6. (a)
$$\begin{array}{r} 8.36 \\ 9\overline{)75.24} \\ -72 \\ \hline 32 \\ -27 \\ \hline 54 \\ -54 \\ \hline 0 \end{array}$$
So, = ₹75.24 ÷ 9 = ₹8.36

(b)
$$\begin{array}{r} 123.32 \\ 6\overline{)739.92} \\ -6 \\ \hline 13 \\ -12 \\ \hline 19 \\ -18 \\ \hline 12 \\ -12 \\ \hline 0 \end{array}$$
So, = ₹739.92 ÷ 6 = ₹123.32

(c)
$$\begin{array}{r} 104.21 \\ 8\overline{)833.68} \\ -8 \\ \hline 033 \\ -32 \\ \hline 16 \\ -16 \\ \hline 08 \\ -8 \\ \hline 0 \end{array}$$
So, = ₹833.68 ÷ 8 = ₹104.21

d)
$$\begin{array}{r} 84.25 \\ 12\overline{)1011} \\ -96 \\ \hline 051 \\ -48 \\ \hline 30 \\ -24 \\ \hline 60 \\ -60 \\ \hline 0 \end{array}$$
So, = 1011 ÷ 12 = 84.25

(e)
$$\begin{array}{r} 36.506 \\ 23\overline{)8\,3\,9.6\,6} \\ -\,6\,9 \\ \hline 1\,4\,9 \\ -\,1\,3\,8 \\ \hline 1\,1\,6 \\ -\,1\,1\,5 \\ \hline 1\,6\,0 \\ -\,1\,3\,8 \\ \hline 2\,2 \end{array}$$

So, = ₹839.66 ÷ 23 = ₹36.506

(f)
$$\begin{array}{r} 250.5 \\ 15\overline{)3\,7\,5\,7.5} \\ -\,3\,0 \\ \hline 7\,5 \\ -\,7\,5 \\ \hline 0\,7\,5 \\ -\,7\,5 \\ \hline 0 \end{array}$$

So, = ₹3757.5 ÷ 15 = ₹250.5

7. (a) The cost of the car = ₹350750
Expenditure on repairing = +₹ 10204
Total cost of car after repairing = ₹360954

(b) The cost of a dress = ₹1050.40
The cost of a pair of shoes = +₹ 504.80
Total cost of both items = ₹ 555.60

Amount in the bank account = ₹18204.50
Amount withdrew to buy items = –₹ 555.60
Amount left in the account = ₹17648.90

(c) Earning of labour = ₹8940.70
Expense in amount = +₹7250.00
Saving in a month = ₹1690.70

(d) The cost of one pencil box = ₹35
The cost of 135 pencil boxes
= ₹35 × 135 = ₹4725

$$\begin{array}{r} 135 \\ \times\ 35 \\ \hline 675 \\ +\ 4050 \\ \hline 4725 \end{array}$$

(e) Saving in a day = ₹15.50
Saving in 24 days
= ₹15.50 × 24
= ₹372.00

$$\begin{array}{r} 15.50 \\ \times\ 24 \\ \hline 6200 \\ +\ 31000 \\ \hline 372.00 \end{array}$$

(f) The cost of 36 shirts = ₹28799.64
The cost of 1 shirt = ₹28799.64 ÷ 36
= ₹799.99

$$\begin{array}{r} 799.99 \\ 36\overline{)2\,8\,7\,9\,9.6\,4} \\ -\,2\,5\,2 \\ \hline 3\,5\,9 \\ -\,3\,2\,4 \\ \hline 3\,5\,9 \\ -\,3\,2\,4 \\ \hline 3\,5\,6 \\ -\,3\,2\,4 \\ \hline 3\,2\,4 \\ -\,3\,2\,4 \\ \hline 0 \end{array}$$

(g) Amount earned in 9 days = ₹3111.75
Amount earned in 1 day = ₹3111.75 ÷ 9
= ₹345.75.

$$\begin{array}{r} 345.75 \\ 9\overline{)3\,1\,1\,1.7\,5} \\ -\,2\,7 \\ \hline 4\,1 \\ -\,3\,6 \\ \hline 5\,1 \\ -\,4\,5 \\ \hline 6\,7 \\ -\,6\,3 \\ \hline 4\,5 \\ -\,4\,5 \\ \hline 0 \end{array}$$

Exercise 14.2

1. (a) CP = ₹934, SP = ₹1105
Since, CP < SP, so there is a profit.
Profit = SP – CP
= ₹1105 – ₹934 = ₹171

(b) SP = ₹3204, Loss = ₹105
So, CP = SP + Loss
= ₹3204 + ₹105
= ₹3309

(c) SP = ₹408, Profit = ₹60

CP = SP – Profit

= ₹408 – ₹60

= ₹348

(d) CP = ₹8405, Loss = ₹105

SP = CP – Loss

= ₹8405 – ₹105

= ₹8300

(e) CP = ₹32403, Profit = ₹500

SP = CP + Profit

= ₹32403 + ₹500

= ₹32903

(f) SP = ₹840360, Loss = ₹60200

CP = SP + Loss

= ₹840360 + ₹60200

= ₹900560

2. CP of ice cream = ₹401,
SP of ice cream = ₹448

Since CP < SP, there is a profit.

Profit = SP – CP = ₹448 – ₹401 = ₹47.

3. 1 dozen = 12

CP of 1 pen = ₹5.50

CP of 12 pens = ₹5.50 × 12 = ₹66

SP of 12 pens = ₹72

Since CP < SP, so there is a profit.

Profit = SP – CP = ₹72 – ₹66 = ₹6.

4. Buying cost of refrigerator = ₹8,575

Repairing cost = ₹750

CP of refrigerator = ₹8575 + ₹750 = ₹9325

SP of refrigerator = ₹10000

Since CP < SP, so there is a profit.

Profit = SP – CP

= ₹10000 – ₹9325 = ₹675

5. CP of TV = ₹11300, and profit = ₹390

SP = CP + profit = ₹11300 + ₹390 = ₹11690

6. CP of 50 kg of rice = ₹2255, Profit = ₹200

SP of 50 kg of rice = CP + profit

= ₹2255 + ₹200 = ₹2455

= ₹2455 ÷ 50 = ₹49.10

7. SP of 1 kg. fo rice = SP of table = ₹1180,
Profit = ₹110

CP of table = SP – Profit

= ₹1180 – ₹110 = ₹1070

8. SP of a cow = ₹32600, and loss = ₹1140

CP = SP + Loss

= ₹32600 + ₹1140 = ₹33740

Revision Exercise

1.

Items	Cost
Biscuits	₹40.50
Tea	₹95.00
Soap	₹38.50
Pulses	₹140.80
Sugar	₹240.20
Total cost	₹555.00

Amount given to shop	=	₹ 1000.00
Cost of items	=	–₹ 555.00
Difference	=	₹ 445.00

Thus, Kishore got back ₹445.

2. Amount received from father = ₹550

The cost of books = ₹195

The cost of two note books = ₹35 × 2 = ₹70

Total cost of both items = ₹195 + ₹70 = ₹265

Money left with Aryan = ₹550 – ₹265 = ₹285

3. Number of children = 36

Amount paid by each child = ₹150

Total collected amount = ₹150 × 36 = ₹5400

4. The cost of 18 kg of rice = ₹622.80

The cost of 1 kg of rice = ₹622.80 ÷ 18 = ₹34.60

5. (a) CP = ₹410, SP = ₹710

Since, CP < SP, there is a profit.

Profit = SP – CP = ₹710 – ₹410 = ₹300

(b) CP = ₹1040, SP = ₹940

Since, CP > SP, there is a loss.

Loss = CP – SP = ₹1040 – ₹940 = ₹100

(c) CP = ₹2140, SP = ₹2410

Since, CP < SP, there is a profit.

Profit = SP – CP = ₹2410 – ₹2140 = ₹270

(d) CP = ₹8075, SP = ₹8035

Since, CP > SP, there is a loss.

Loss = CP – SP = ₹8075 – ₹8035 = ₹40

(e) CP = ₹9700, SP = ₹8600

Since, CP > SP, there is a loss.

Loss = CP – SP = ₹9700 – ₹8600 = ₹1100

(f) CP = ₹35400, SP = ₹40300

Since, CP < SP, there is a profit.

Profit = SP – CP = ₹40300 – ₹35400 = ₹4900

6. (a) SP = ₹1460, Profit = ₹430

CP = SP – Profit = ₹1460 – ₹430 = ₹1030

(b) SP = ₹2430, Loss = ₹910

CP = SP + Loss = ₹2430 + ₹910 = ₹3340

(c) SP = ₹18436, Loss = ₹1050

CP = SP + Loss

= ₹18436 + ₹1050 = ₹19486

(d) SP = ₹14325, Profit = ₹1560

CP = SP – Profit = ₹14325 – ₹1560 = ₹12765

7. (a) CP = ₹3540, Profit = ₹1360

SP = CP + Profit = ₹3540 + ₹1360 = ₹4900

(b) CP = ₹4630, Loss = ₹405

SP = CP – Loss = ₹4630 – ₹405 = ₹4225

(c) CP = ₹8360, Profit = ₹845

SP = CP + Profit = ₹8360 + ₹845 = ₹9205

(d) CP = ₹4120, Loss = ₹448

SP = CP – Loss = ₹4120 – ₹448 = ₹3672

8. CP of a video player = ₹14320

SP of a video player = ₹15290

Since, CP < SP, so there is a profit.

Profit = SP – CP = ₹15290 – ₹14320 = ₹970

9. CP of a music system = ₹2885

Loss = ₹540

SP of a music system = CP – Loss

= ₹2885 – ₹540

= ₹2345

10. CP of I-pad = ₹28340

Profit of I-pad = ₹1320

SP of I-pad = CP + Profit

= ₹28340 + ₹1320 = ₹29660

11. Purchasing cost of bike = ₹32940

Repairing cost of bike = ₹1830

Total CP of bike = ₹32940 + ₹1830 = ₹34770

SP of bike = ₹40200

Since CP < SP, the bike is a profit.

So, profit = SP – CP = ₹40200 – ₹34770 = ₹5230

HOTS

CP of 45 balls = 45 × ₹350 = ₹15750

SP of 30 balls = 30 × ₹450 = ₹13500

SP of 15 balls = 15 × ₹300 = ₹4500

Total SP = ₹13500 + ₹4500 = ₹18000

Since, CP < SP, there is a profit.

So, profit = SP – CP = ₹18000 – ₹15750 = ₹2250

Case-based Questions

1. Entry fee visiting Taj Mahal for 1 person = ₹ 40

Entry fee visiting Red Fort for 1 person = ₹ 30

Total amount to visit both the monuments for 1 person = ₹ 40 + ₹ 30 = ₹ 70

Total amount to visit both the monuments for 6 persons = ₹ 70 × 6 = ₹ 420.

Thus, family will spend ₹ 420 on entry tickets.

2. Entry fee visiting Taj Mahal for 1 person = ₹ 1000

Entry fee visiting Red Fort for 1 person = ₹ 500

Entry fee visiting Amber Fort for 1 person = ₹ 500

Entry fee visiting Vivekananda Rock for 1 person = ₹ 200

Total amount to visit all these monuments for 1 person = ₹ 1000 + ₹ 500 + ₹ 500 + ₹ 500 = ₹ 2500.

Total amount to visit all these monuments for 6 persons = ₹ 2500 × 8 = ₹ 20,000.

Thus, the foreigner group of members will spend ₹ 20,000 on entry tickets.

3. CP of the handcraft = ₹4,995

SP of the handcraft = ₹5,595

As CP < SP, so there is a profit.

Profit = SP – CP = ₹5595 – = ₹4995 = ₹695.

4. CP of the replica of the Taj Mahal = ₹2,750

Loss = ₹350

SP of the replica of the Taj Mahal = CP – Loss

= ₹2,750 – ₹350 = ₹2,400.

5. CP of the set of items = ₹12,500

Profit = ₹1,199

SP of the set of items = CP + Profit

= ₹12,500 + ₹1,199 = ₹13,699.

Recap

1. (a) Number of symbol depicting the number of books sold on Tuesday is 6.

The value of 1 symbol = 10 books

So, the value of 6 symbols = 6 × 10 = 60 books

Then, 60 books were sold on Tuesday.

(b) There are 7 symbols depicting sales of books on Sunday.

The value of 1 symbol = 10 books

So, the value of 7 symbols = 7 × 10 = 70 books

(c) There are maximum symbols depicting sale of books on Friday, i.e., 11 symbols.

So, on Friday the shopkeeper sold the maximum number of books

The value of 11 symbols = 11 × 10 = 110 books

(d) There are 4 symbols showing sale of books on Thursday. Which is minimum sale.

The value of 4 symbols = 4 × 10 = 40 books

Thus, on Thursday, the shopkeeper sold the minimum number of books, i.e. 40 books.

(e) The number of books sold on Wednesday
= Value of 10 symbols = 10 × 10 = 100 books

The number of books sold on Saturday
= Value of 5 symbols
= 5 × 10 = 50 books

(f) Number of books sold on Monday
= The Value of 8 symbols
= (8 × 10) books = 80 books

Number of books sold on Tuesday
= The Value of 6 symbols
= (6 × 10) books = 60 books

Number of books sold on Wednesday
= The Value of 10 symbols
= (10 × 10) books
= 100 books

Number of books sold on Thursday
= The Value of 4 symbols
= (4 × 10) books
= 40 books

Number of books sold on Friday
= The Value of 11 symbols
= (11 × 10) books = 110 books

Number of books sold on Saturday
= The value of 5 symbols
= (5 × 10) books
= 50 books

Number of books sold on Sunday
= The value of 7 symbols
= (7 × 10) books
= 70 books

Total number of books sold during the week
= 80 + 60 + 100 + 40 + 110 + 50 + 70
= 510

2. By observing the bar graph, we find that:

(a) (i) 5 children wear shoes of sizes 3-4.
(ii) 9 children wear shoes of sizes 7-8.

(b) 7 children wear shoes of sizes 9-10.

(c) The maximum number of children wear shoes size of 7-8, i.e., 9 children.

(d) The minimum number of children wear shoes size of 13-14, i.e., 2 children.

(e) The number of children at the party
= 4 + 5 + 8 + 9 + 7 + 6 + 2 = 41

(f) 8 children wear size 5-6

Exercise 15.1

1. (a)

Colour	No. of students	Tally marks
Red	18	𝍸 𝍸 𝍸 |||
Pink	13	𝍸 𝍸 |||
Green	10	𝍸 𝍸
Blue	9	𝍸 ||||
Yellow	12	𝍸 𝍸 ||
Orange	8	𝍸 |||
Black	7	𝍸 ||

(b)

Animal	No. of animals	Tally marks
Elephant	4	||||
Lion	2	||
Deer	16	𝍸 𝍸 𝍸 |
Monkey	8	𝍸 |||
Crane	24	𝍸 𝍸 𝍸 𝍸||||
Crocodile	3	|||

2.

Shapes	No. of shapes	Tally marks
Square ☐	9	𝍸 ||||
Rectangle ▭	9	𝍸 ||||
Circle ○	10	𝍸 𝍸
Triangle △	10	𝍸 𝍸

3. (a) Karbon phones are the least and Samsung's phones are the highest in number
(b) 12 sets (c) Micromax
(d) Nokia (e) 128 phones

4. (a)

Observation	Frequency	Tally marks
8	3	|||
10	4	||||
14	2	||
16	3	|||
18	2	||

(b)

Observation	Frequency	Tally marks
20	3	|||
25	4	||||
30	1	|
35	2	||
40	3	|||

(c)

Observation	Frequency	Tally marks
Apple	5	𝍸
Mango	6	𝍸 |
Orange	3	|||

5.

Observation	Frequency	Tally marks
10	1	|
11	5	𝍸
15	6	𝍸 |
19	3	|||
20	7	𝍸 ||
26	1	|
29	1	|

(a) 24 students
(b) Highest marks = 29
Number of students who got the highest marks = 1
(c) Lowest marks = 10
Number of students who got the lowest marks = 1
(d) 9 students

Exercise 15.2

1. (a) 45 students (b) 51 students
(c) Class V (d) 9 students
(e) 210 students (f) 21 students
2. (a) 64 students (b) 4 students
(c) Dhoni (d) Umesh
(e) 8 students

3.

Day	No. of Absentees
Monday	☺ ☺ ☺ ☺ ☺ ☺
Tuesday	☺ ☺ ☺ ☺ ☺
Wednesday	☺ ☺ ☺ ☺
Thursday	☺ ☺
Friday	☺ ☺ ☺
Saturday	☺ ☺ ☺ ☺ ☺ ☺
Scale : ☺ = 2 students	

4.

Months	No of of laptops sold
January	💻 💻 💻
February	💻 💻 💻 💻
March	💻 💻 💻 💻
April	💻 💻 💻
May	💻 💻
June	💻 💻
Scale : 💻 = 10 laptops, 💻 = 5 laptops	

5.

Months	Rainfall
June	💧 💧 💧 💧 💧 💧 💧 💧 💧 💧 💧 💧
July	💧 💧 💧 💧 💧 💧 💧 💧 💧 💧 💧 💧 💧
August	💧 💧 💧 💧 💧 💧 💧 💧 💧 💧 💧 💧 💧 💧
September	💧 💧 💧 💧 💧 💧 💧 💧 💧 💧 💧 💧
October	💧 💧 💧 💧 💧 💧 💧 💧 💧 💧
Scale : 💧 = 10 cm, 💧 = 5 cm	

(a) July (b) October (c) 135 cm
(d) 630 cm (e) 30 cm

6.

Player	Runs scored
A	
B	
C	
D	
E	
Scale :  = 10 runs,  = 5 runs	

(a) Player B (b) Player C
(c) 55 runs (d) 5 runs
(e) 10 runs (f) 35 runs

Exercise 15.3

1. (a) The sale of different flavours of ice creams in an ice cream parlour in a day.
   (b) Orange flavour
   (c) Mango flavour
   (d) 1 unit = 5 ice creams
   (e) 180 ice creams
2. (a) Monday
   (b) Wednesday
   (c) Tuesday and Saturday
   (d) 1950 pairs of slippers
3. For bar graph, see answers given in the book.
4. For bar graph, see answers given in the book.
   (a) Mango (b) Orange (c) 60
   (d) 45 (e) Answer may vary
5. For bar graph, see answers given in the book.

Exercise 15.4

1. (a) MS Dhoni (b) others
   (c) Kohli (d) MS Dhoni & Kohli
2. (a) Horseback riding (b) One-fourth
   (c) Half (d) Camp fire
   (e) No
3. For pie chart, see answers given in the book.
4. For pie chart, see answers given in the book.
5. For pie chart, see answers given in the book.
   (a) Ben 10 (b) Doraemon (c) Ben 10
   (d) Doraemon, Chotta Bheem, Tom & Jerry, Ninaja Hattori, Ben 10

Exercise 15.5

1. (a) Friday (b) Saturday
   (c) 70 minutes (d) 30 minutes
   (e) Thursday
2. (a) 700 students (b) Year 2012
   (c) Year 2005 (d) 300 students
   (e) The number of enrollments of students decreases from 2006 to 2007.

Revision Exercise

1.

Fruits	No. of fruits
Mango	52
Apple	39
Orange	73
Coconut	52
Pomegranate	38
Banana	38

2. (a) Friday (b) Wednesday
   (c) 35 students
   (d) 0, as on Tuesday there was holiday
   (e) 12 students
3. (a) Sweety (b) 40 stamps
   (c) 8 stamps (d) ₹ 480
   (e) ₹ 960
4. (a) sports (b) 60 students
   (c) 20 students (d) 20 students
5. (a) 70 marks (b) 50 marks
   (c) 70.55 (d) February
   (e) 10 marks
6. **Pictograph**

Colour	No. of cars
Red	
White	
Yellow	
Blue	
Green	
Black	
Silver	
Scale :  = 4 cars,  = 2 cars	

For bar graph and pie chart, see answers given in the book.

7. For line graph, see answers given in the book.
8. For line graph, see answers given in the book.

HOTS

(a) Anu spends most on shopping and Atul spends most on music.

(b) Anu spends ₹ 125 more on shopping than Atul.

Case-based Questions

Observing the given graph, we find the answers of the asked questions.

1. The population of 4 countries lies between 50 to 170 million.
2. Indonesia has a population over 170 million and growth rate over 3%.
3. Indonesia has the highest population growth rate and the US has the most population.
4. Japan has the least growth rate and Belgium has the least population.
5. Canada and Germany have almost the same population growth rate.

Test your Knowledge – 4 (Chapters 12 – 15)

1. (a) 6 km = (6 × 1000)m = 6000 m.

(b) 8 km 5 cm 8 mm = 8 km + 5 cm + 8 mm

$= (8\times1000)\text{m} + \left(5\times\frac{1}{100}\right)\text{m} + \left(8\times\frac{1}{10}\right)\text{cm}$

= 8000 m + 0.05 m + 0.8 cm

$= 8000.05\text{ m} + \left(0.8\times\frac{1}{100}\right)\text{m}$

= 8000.05 m + 0.008 m = 8000.058 m

(c) $6850\text{ g} = \left(6850\times\frac{1}{1000}\right)\text{kg} = 6.850\text{ kg}$

(d) 5 kg 5 g = 5 kg + 5 g

= (5 × 1000)g + 5 g

= 5000 g + 5 g = 5005 g

(e) 4 l 260 ml = 4 l + 260 ml

= 4000 ml + 260 ml = 4260 ml

(f) $2480\text{ ml} = \left(2480\times\frac{1}{1000}\right)\text{l} = 2.480\text{ l}$

(g) $°\text{C} = (°\text{F} - 32°)\times\frac{5}{9}$

$= (86° - 32°)\times\frac{5}{9} = 54°\times\frac{5}{9} = 30°.$

Thus, 86°F = 30°C

(h) $°\text{F} = \left(°\text{C}\times\frac{9}{5}\right) + 32° = \left(30°\times\frac{9}{5}\right) + 32°$

= 54° + 32° = 86°

Thus, 30°C = 86°F

(i) 15 days = 15 × 24 = 360 hours

2. (a)
$$\begin{array}{r} 16.225\text{ kg} \\ +\,14.175\text{ kg} \\ \hline 30.400\text{ kg} \end{array}$$

(b)
$$\begin{array}{r} 15.1151 \\ +\,24.0251 \\ \hline 39.1401 \end{array}$$

(c)
$$\begin{array}{r} 11.250\text{ km} \\ 24.015\text{ km} \\ +\;\;9.007\text{ km} \\ \hline 44.272\text{ km} \end{array}$$

3. (a)
$$\begin{array}{r} 80.04\text{ cm} \\ -\,15.24\text{ cm} \\ \hline 64.80\text{ cm} \end{array}$$

(b)
$$\begin{array}{r} 28.020\text{ kg} \\ -\,11.026\text{ kg} \\ \hline 16.994\text{ kg} \end{array}$$

(c)
$$\begin{array}{r} 150.000\text{ kl} \\ -\;\;17.167\text{ kl} \\ \hline 132.833\text{ kl} \end{array}$$

4. (a) 6:20 a.m. + 40 minutes = 7:00 a.m.

(b) 3:15 p.m. – 3 hours 15 minutes = 12:00 noon

(c) $11{:}00\text{ a.m.} + 1\frac{1}{2}$ hours = 12:30 p.m.

(d) 360 minutes = 360 ÷ 60 = 6 hours

4:30 a.m. – 6 hours = 10:30 p.m.

5. CP = ₹1265, SP = ₹1800

CP < SP, so there is a profit.

Profit = SP – CP = ₹1800 – ₹1265 = ₹535

6. (a) CP = ₹1810, Profit = ₹240

SP = CP + Profit = ₹1810 + ₹240 = ₹2050

(b) SP = ₹5410, Loss = ₹145

CP = SP + Loss = ₹5410 + ₹145 = ₹5555

(c) CP = ₹9366, Loss = ₹400

SP = CP – Loss = ₹9366 – ₹400 = ₹8966

(d) CP = ₹15272, SP = ₹13998

Since, CP > SP, so there is a loss.

So, loss = CP – SP = ₹15272 – ₹13998 = ₹1274

7. (a) Channel B (b) Channel C
(c) 850 people (d) 250 people

8. (a) Banana (b) Orange
(c) 10 students (d) 15 students

Model Test Paper – 2 (Chapters 9 – 15)

1. 90° and 45°

Sum of angles = 45° + 45° + 90°

= 90° + 90° = 180°.

2. The given figure has 2 lines of symmetry

3. (a) Area of shaded part = (20 – 2 – 2) × (8 – 2 – 2)
= 16 × 4 = 64 cm^2

(b) Area of shaded part = 12 × 8 = 96 cm^2

(c) Area of shaded part
= (10 – 8) × (12 – 6) = 2 × 6 = 12 cm^2

4. Amount having Gaurav = ₹2500

Amount spent by Gaurav
= ₹1200 + ₹500 + ₹600 = ₹2300

Amount left with Gaurav
= ₹2500 – ₹2300 = ₹200

5. Volume of the given prism
= Length × Breadth × Height
= 6 cm × 4 cm × 2 cm = 48 cm^3

As per condition,
Length = 6 cm × 2 = 12 cm,
Breadth = 4 cm × 2 = 8 cm,
Height = 2 cm × 2 = 4 cm

Volume of new prism = l2 cm × 8 cm × 4 cm
= 384 cm^3

6. (a) 18 m = 18 × 100 = 1800 cm

(b) 820 cm = $\frac{820}{100}$centilitres = 8.2 centilitres

(c) 4 km 210 m = 4 km + 210 m
= 4000 m + 210 m = 4210 m

(d) 18 kg (18 × 1000) g = 18000 g

7. (a) Given temperature = 75°F

$$°C = (°F - 32°) \times \frac{5}{9} = (75° - 32°) \times \frac{5}{9}$$

$$= 43 \times \frac{5}{9} = 23.9°$$

So, 75°F = 23.9°C

(b) Given temperature = 120.5°F

$$°C = (°F - 32°) \times \frac{5}{9} = (120.5° - 32°) \times \frac{5}{9}$$

$$= 88.5° \times \frac{5}{9} = 49.17°$$

So, 120.5°F = 49.17°C

(c) Given temperature = 225°C

$$°F = \left(°C \times \frac{9}{5}\right) + 32° = \left(225° \times \frac{9}{5}\right) + 32°$$

= 405° + 32° = 437°

So, 225°C = 437°F

(d) Given temperature = 15°C

$$°F = \left(°C \times \frac{9}{5}\right) + 32° = \left(15° \times \frac{9}{5}\right) + 32°$$

= 27° + 32° = 59°

So, 15°C = 59°F

8. (a) Let the missing side be x cm.
Perimeter = 6 cm + 15 cm + 12 cm + 8 cm + x
50 cm = 41 cm + x
or x = 50 cm – 41 cm = 9 cm
Thus, the missing side of the figure is 9 cm.

(b) Let the missing side be x cm.
Perimeter = 7 cm + 9 cm + x
or 24 cm = 16 cm + x
or x = 8 cm
Thus, the missing side of the figure is 8 cm.

(c) Let the missing side be x cm.
Perimeter = 5 cm + 4 cm + 5 cm + x
or 23 cm = 14 cm + x
or x = 23 cm – 14 cm = 9 cm
Thus, the missing side of the figure is 9 cm.

9. The weight of Anu's sister's = 54.000 kg
The weight of Anu = –42.500 kg
Difference = 11.500 kg
Thus, Anu's weight is 11 kg 500 g less than her sister.

10. Starting time of film = 4:15 p.m.
Duration = 2 hours 30 minutes
Ending time of film
= 4:15 p.m. + 2 hours 30 minutes = 6:45 p.m.

11. (a) 3:50 p.m. = 1550 hours,
10:40 a.m. = 1040 hours
Duration = 1550 – 1040 = 0510 hours
= 5 hours 10 minutes

(b) 8:15 p.m. → 12:15 a.m. = 4 hours

12:15 a.m. → 2:10 a.m. = 1 hour 55 minutes

So, duration = 5 hours 55 minutes.

12. (a) 12:10 a.m. = 1210 hours
(b) 8:40 p.m. = 2040 hours
(c) 11:25 a.m. = 1125 hours
(d) 3:05 p.m. = 1505 hours

13. (a) 1432 hours = 2:32 p.m.
(b) 2010 hours = 8:10 p.m.
(c) 0020 hours = 12:20 a.m.
(d) 0827 hours = 8:27 a.m.

14. (a) For Neha

The cost of entry ticket	=	₹40.00
The cost of story book	=	₹140.50
The cost of Hindi Grammar book	=	₹210.75
The cost of English reader book	=	₹150.00
The cost of pen	= +	₹95.50
Total expenses done by Neha	=	₹636.75

Thus, amount of ₹1000 is enough money to pay.

Now, ₹1000 – ₹636.75 = ₹363.25

Thus, Neha got ₹363.25 back.

(b) For Prerna,

The cost of entry ticket	=	₹40.00
The cost of 5 note books = ₹45 × 5	=	₹225
The cost of bag	=	₹240.60
The cost of a water bottle	=	₹120.90
The cost of a geometry box	= +	₹80.50
Total expenses done by Prerna	=	₹707.00

Since ₹1000 > ₹707, so ₹1000 is enough money to pay.

Now, ₹1000 – ₹707 = ₹293

Thus, Prerna got ₹293 back

(c) For Puja

The cost of entry ticket	=	₹40.00
The cost of Science fiction book	=	₹430.25
The cost of Mathematics text book	=	₹195.50
The cost of Social Science text book	=	₹205.50
The cost of a packet of pencils	= +	₹50.00
Total expenses done by Puja	=	₹881.25

Since, ₹1000 > ₹881.25, so ₹1000 is enough money to buy.

Now, ₹1000.00 – ₹881.25 = ₹118.25.

Thus, Puja got ₹118.75 back.

15. CP = ₹3000 and SP = ₹3200

Since CP < SP, there is a profit.

Profit = SP – CP = ₹3200 – ₹3000 = ₹200.

16. Buying cost of 125 kg apples = ₹6250

Transportation expenses = ₹500

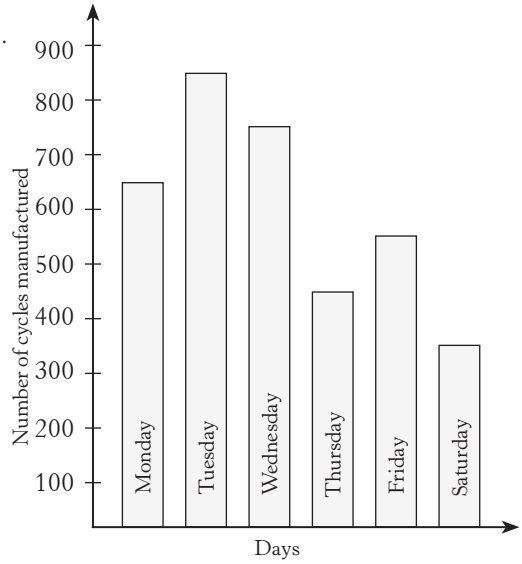
So, the CP of 125 kg. of apples
= ₹6250 + ₹500 = ₹6750

SP of 125 kg of apples = ₹(125 × 80) = ₹10000

Since CP < SP, there is a profit.

Profit = SP – CP = ₹10000 – ₹6750 = ₹3250.

17.



(a) Saturday (b) Tuesday (c) 3600

18. (a) Cricket (b) 30 students
(c) 35 students (d) Badminton
(e) 20 students