Majestic Mathematics

A Textbook of Mathematics

4

Teacher's Resource Book

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Contents

Exercise 1.1

1. The periods are marked by commas according to the Indian system of numeration.
   (a) 96,432 (b) 5,00,436 (c) 6,48,364 (d) 6,43,643
   (e) 10,00,496 (f) 37,64,361

2. The given numbers are written in the following place value chart.

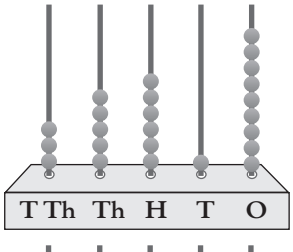
Periods →	Ten Lakhs	Lakhs	Ten Thousands	Thousands	Hundreds	Tens	Ones
(*a*)			5	6	4	9	8
(*b*)		7	0	3	6	4	8
(*c*)	8	3	6	4	3	8	1
(*d*)	1	0	0	3	6	4	9
(*e*)	5	1	2	1	3	6	4
(*f*)	9	7	3	6	4	3	1

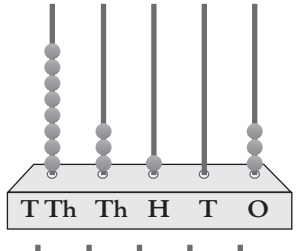
3. In words:
   (a) 77364 — seventy-seven thousand three hundred sixty-four
   (b) 936436 — nine lakh thirty-six thousand four hundred thirty-six
   (c) 5213643 — fifty-two lakh thirteen thousand six hundred forty-three
   (d) 303643 — three lakh three thousand six hundred forty-three
   (e) 5132641 — fifty-one lakh thirty-two thousand six hundred forty-one
   (f)2436433 — twenty-four lakh thirty-six thousand four hundred thirty-three

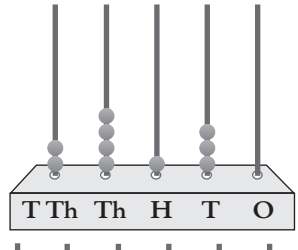
4. In figures:
   (a) 36,04 005 (b) 51,00,009 (c) 2,87,323 (d) 25,19,013
   (e) 2,00,029 (f) 18,70,302 (g) 11,304

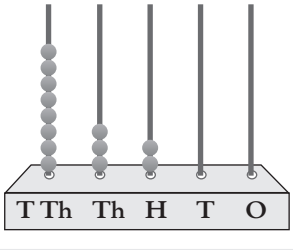
5. The numbers shown on abacus are:
   (a) 1243906 (b) 826049 (c) 19625 (d)

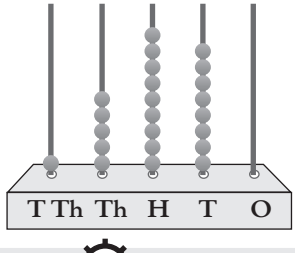
6. Represent the following numbers on abacus.

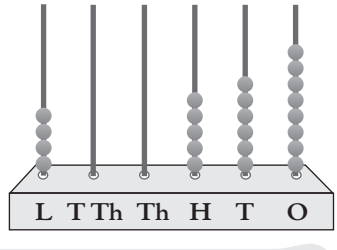
(a) 

(b) 

(c) 

(d) 

(e) 

(f) 

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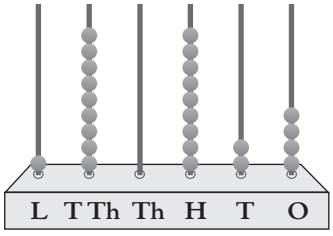
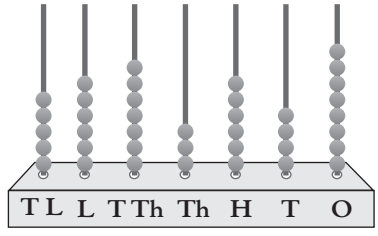


(h)



7. To complete the pattern, the missing numbers are written in bold font.
   (a) 82,486; 82,586; 82,686; **82,786**; **82,886**
   (b) 56,927; 55,927; 54,927; **53,927; 52,927**
   (c) 3,048; 3,049; 3,050; **3,051**; **3,052**
   (d) 1000; 2000; 3000; **4,000**; **5,000**
   (e) 406090; 506090; 606090; **7,06,090**; **8,06,090**
   (f) 938320; 838320; 738320; **8,38,320**; **7,38,320**
8. Fill in the blanks.
   (a) Thousands and ten thousands are places of **Thousands** period.
   (b) Period **Ones** comes before thousands period.
   (c) The greatest 5-digit number is **99,999**.
   (d) The smallest 7-digit number is **10,00,000**.
   (e) A 5-digit number begins with the **ten thousands** place.

Exercise 1.2

1. The place value and face value of coloured digit:
   (a) 4 in 67**4**58 are 400 and 4 respectively.
   (b) 4 in 9**4**273 are 4000 and 4 respectively.
   (c) 1 in 901**1**47 are 100 and 1 respectively.
   (d) 7 in 73647**7**9 are 70 and 7 respectively.
   (e) 1 in 8230**1** are 1 and 1 respectively.
   (f) 8 in 4530**8** are 8 and 8 respectively.
   (g) 3 in 81**3**5290 are 30000 and 3 respectively.
   (h) 0 in 813960**0**8 are 0 and 0 respectively.
2. For the number 935204:
   (a) The place value of 3 is 30000.
   (b) The place value of 2 is 200.
   (c) The face value of 9 is 9.
   (d) The digit, whose place value and face value both are 0, is 0.
3. The expanded form of:
   (a) 843680 = 800000 + 40000 + 3000 + 600 + 80
   (b) 9874321 = 9000000 + 800000 + 70000 + 4000 + 300 + 20 + 1
   (c) 12402 = 10000 + 2000 + 400 + 2
   (d) 900248 = 900000 + 200 + 40 + 8
4. The standard or short form of:
   (a) 5 × 100000 + 3 × 10000 + 4 × 1000 + 8 × 100 + 9 × 10 + 7 × 1
   = **500000 + 30000 + 4000 + 800 + 90 + 7** = **534897**.
   (b) 9 × 100000 + 6 × 10000 + 4 × 100 + 3 × 10 + 9 × 1

= **900000 + 60000 + 400 + 30 + 9 = 960439**.

(c) $8 \times 100000 + 5 \times 10000 + 6 \times 1000 + 3 \times 100 + 2 \times 10 + 3 \times 1$

= **800000 + 50000 + 6000 + 300 + 20 + 3 = 856323**.

(d) $4 \times 100000 + 7 \times 10000 + 6 \times 100 + 8 \times 10$

= **400000 + 70000 + 600 + 80 = 4070680**.

(e) $1 \times 100000 + 3 \times 10000 + 4 \times 1000 + 7 \times 100 + 6 \times 10 + 8 \times 1$

= **100000 + 30000 + 4000 + 700 + 60 + 8 = 134768**.

Exercise 1.3

1. Fill in the boxes using >, < or =.

(a) 34424 [<] 34426 (b) 7803 [<] 7872 (c) 4923 [<] 6843

(d) 45968 [<] 68354 (e) 31809 [<] 31980 (f) 92765 [>] 92756

(g) 245317 [<] 254317 (h) 698671 [>] 698670

2. The given numbers in ascending order are:

(a) 947; 5760; 9754; 83201; 636481 (b) 69,801; 6,25,751; 6,36,501; 6,38,802

(c) 47,207; 6,71,975; 47,19,710; 47,19,720 (d) 5,879; 32,104; 1,39,840; 2,39,522

3. The given numbers in descending order are:

(a) 73,702; 62,975; 48,342; 45,716; 35,266 (b) 5,09,974; 2,08,974; 2,04,842; 30,581; 20,489

(c) 90,084; 60,073; 40,084; 40,054; 30,029 (d) 8,99,999; ; 7,77,777; 6,11,111; 44,444; 999

Exercise 1.4

1. We know that to form the greatest number, arrange the given digits in descending order; to form the smallest number, we arrange the digits in ascending order, except zero (0). We write 0 in the tens place. Following these rules, the greatest and smallest numbers formed with the given digits are:

(a) Greatest number: 765430 Smallest number: 304567

(b) Greatest number: 98763 Smallest number: 36789

(c) Greatest number: 97430 Smallest number: 30479

(d) Greatest number: 64310 Smallest number: 10346

(e) Greatest number: 9874321 Smallest number: 1234789

(f) Greatest number: 9832 Smallest number: 3269

2. We know that to form the greatest number, arrange the given digits in descending order. If the digits are less in number, we repeat the greatest digit to the leftmost places. Following it, the greatest numbers are:

(a) Greatest 5-digit number: 66,654
Greatest 6-digit number: 6,66,654
Greatest 7-digit number: 66,66,654

(b) Greatest 5-digit number: 99,864
Greatest 6-digit number: 9,99,864
Greatest 7-digit number: 99,99,864

(c) Greatest 5-digit number: 88,832
Greatest 6-digit number: 8,88,832
Greatest 7-digit number: 88,88,832

(d) Greatest 5-digit number: 77,653
Greatest 6-digit number: 7,77,653
Greatest 7-digit number: 77,77,653

(e) Greatest 5-digit number: 88,421
Greatest 6-digit number: 8,88,421
Greatest 7-digit number: 88,88,421

(f) Greatest 5-digit number: 99,973
Greatest 6-digit number: 9,99,973
Greatest 7-digit number: 99,99,973

3. To form the smallest number, we arrange the digits in ascending order, except zero (0), which is written in the tens place.
   (a) Smallest 5-digit number: 34,567
   (b) Smallest 5-digit number: 34,569
   (c) Smallest 5-digit number: 10,234
   (d) Smallest 5-digit number: 10,348
4. To form the smallest number, we arrange the digits in ascending order, except zero (0), which is written in the tens place.
   (a) Smallest 6-digit number: 1,34,568
   (b) Smallest 6-digit number: 1,04,689
   (c) Smallest 6-digit number: 2,35,679
   (d) Smallest 6-digit number: 1,03,568
5. To form the smallest number, we arrange the digits in ascending order, except zero (0), which is written in the tens place.
   (a) Smallest 7-digit number: 10,23,456
   (b) Smallest 7-digit number: 10,23,678
   (c) Smallest 7-digit number: 10,23,467
   (d) Smallest 6-digit number: 12,34,789

Exercise 1.5

1. To round off a number to the nearest 10, we observe the digit at ones place.
   (a) The ones place digit in 65 is 5, so it is rounded of to 70.
   (b) The ones place digit in 237 is greater than 5, so it is rounded off to 240.
   (c) The ones place digit in 5364 is smaller than 5, so it is rounded off to 5360.
   (d) The ones place digit in 96368 is greater than 5, so it is rounded off to 96370.
   (e) The ones place digit in 736455 is 5, so it is rounded off to 736460.
2. To round off a number to the nearest 100, we observe the digit at tens place.
   (a) The tens place digit in 135 is smaller than 5, so it is rounded off to 100.
   (b) The tens place digit in 2346 is smaller than 5, so it is rounded off to 2300.
   (c) The tens place digit in 53241 is smaller than 5, so it is rounded off to 53200.
   (d) The tens place digit in 836559 is 5, so it is rounded off to 836500.
   (e) The tens place digit in 7303605 is smaller than 5, so it is rounded off to 7303600.
3. To round off a number to the nearest 1000, we observe the digit at hundreds place.
   (a) The hundreds place digit 3 in 54368 is smaller than 5, so it is rounded off to 54000.
   (b) The hundreds place digit 6 in 54368 is greater than 5, so it is rounded off to 94000
   (c) The hundreds place digit 5 in 184536 is 5, so it is rounded off to 185000.
   (d) The hundreds place digit 4 in 4444445 is smaller than 5, so it is rounded off to 4444000.
   (e) The hundreds place digit 9 in 7846914 is greater than 5, so it is rounded off to 7847000.
4. To round off a number to the nearest 100, we observe the digit at tens place. If it is 5 or more than 5, we write the ones and tens place digits as 0 and increase the hundreds place digit by 1. So, a number rounding off to 500, should have tens place digit 5 or more than 5 and the hundreds place digit 4. On the other hand, it should have tens place digit less than 5 and the hundreds place digit 5.

   Hence, the four 3-digit numbers which when rounded off to the nearest 100 give 500 are: 470, 514 and 540.

   Note: *Your answer may be different as there are many such numbers.*
5. To round off a number to the nearest 1000, we observe the digit at hundreds place. If it is 5 or more than

5, we write the ones, tens and hundreds place digits as 0 and increase the thousands place digit by 1. So, a number rounding off to 2000, should have hundreds place digit 5 or more than 5 and the thousands place digit 1. On the other hand, it should have hundreds place digit less than 5 and the thousands place digit 2.

Hence, the four 4-digit numbers which when rounded off to the nearest 1000 give 2000 are: 2250, 2164 and 1540.

Note: *Your answer may be different as there are many such numbers.*

Exercise 1.6

1. We know that every period has three digits. Hence, the given numbers in the International System are:
   (a) 743,645 (b) 8,009,643 (c) 64,364 (d) 243,640
   (e) 8,730,364 (f) 9,736,401 (g) 3,032,641 (h) 59,643
2. According to the International System:
   (a) 736,438 — seven hundred thirty-six thousand four hundred thirty-eight
   (b) 53,973 — fifty-three thousand nine hundred seventy-three
   (c) 4,846,921 — four million eight hundred forty-six thousand nine hundred twenty-one
   (d) 5,640,307 — five million six hundred forty thousand three hundred seven
   (e) 24,367 — twenty-four thousand three hundred sixty-seven
   (f) 101,204 — one hundred one thousand two hundred four
   (g) 5,309,999 — five million three hundred nine thousand nine hundred ninety-nine
   (h) 999,999 — nine hundred ninety-nine thousand nine hundred ninety-nine
3. The given numbers are written in the International place value chart.

	Millions	Thousands			Ones		
	M	H Th	T Th	Th	H	T	O
(a)		5	4	3	6	9	6
(b)	1	2	4	6	3	4	0
(c)		8	6	0	9	4	0
(d)		9	9	0	9	9	0
(e)		5	2	0	3	6	0
(f)		2	0	1	3	0	4
(g)	9	7	7	8	6	6	8
(h)	8	5	0	4	3	4	0

4. The numeral for:
   (a) eight million six hundred fifty-six thousand two hundred thirty-six — 8,656,236
   (b) seven hundred four thousand five hundred nine — 704,509
   (c) seven million one hundred twenty-six thousand five hundred ninety-seven — 7,126,597
   (d) nine million three hundred two — 9,000,302

Exercise 1.7

1. The Roman numerals for"
   (a) 75 (b) 60 (c) 104 (d) 344
   (e) 560 (f) 1240 (g) 3579 (h) 2698

2. The given Roman numerals are written in Hindu-Arabic numerals as:
   (a) XXVIII = 10 + 10 + 5 + 1 + 1 + 1 = 28. (b) XXIX = 10 + 10 – 1 + 10 = 29.
   (c) LXXX = 50 + 10 + 10 + 10 = 80. (d) XC = 100 – 10 = 90.
   (e) CXXV = 100 + 10 + 10 + 5 = 125. (f) CMXVI = 1000 – 100 + 10 + 5 + 1 = 426.
   (g) XXVII = 10 + 10 + 5 + 1 + 1 = 27.
   (h) MCDXVIII = 1000 + 500 – 100 + 10 + 5 + 1+ 1 + 1 = 1418.
3. Comparing the Roman numerals, we get:
   (a) XXXII < LX (b) XXXV < XXXIX (c) XVII > XIII
   (d) CDI > CXXXIX (e) MMCC > LXIII (f) CMII < MCL

Revision Exercise

1. According to the Indian system of numeration, the place value and face value of the underlined digit:
   (a) in 7696878 are 800 and 8 respectively. (b) in 4600364 are 800 and 8 respectively.
   (c) in 2936730 are 2000000 and 2 respectively. (d) in 50009 are 50000 and 5 respectively.
   (e) in 483649 are 9 and 9 respectively. (f) in 693246 are 3000 and 3 respectively.
   (g) in 812439 are 2000 and 2 respectively. (h) in 736496 are 90 and 9 respectively.
2. In the expanded form:
   (a) 796426 — 700000 + 9000 = 6000 + 400 = 20 + 6
   (b) 584691 — 5 00000 + 80000 + 4000 + 600 + 90 + 1
   (c) 364864 — 300000 + 60000 + 4000 + 800 + 60 + 4
   (d) 9700964 — 9000000 + 700000 + 900 + 60 +4
   (e) 840364 — 800000 + 40000 + 300 + 60 + 4
   (f) 64398 — 60000 + 4000 + 300 + 90 + 8
   (g) 9999999 — 9000000 + 900000 + 90000 + 9000 + 900 + 90 + 9
   (h) 843649 — 800000 + 40000 + 3000 + 600 + 40 + 9
3. (a) In Indian system — 85,216 In International system — 85,216
   (b) In Indian system — 6,69,271 In International system — 669,271
   (c) In Indian system — 4,45,648 In International system — 445,648
   (d) In Indian system — 33,44,551 In International system — 3,344,551
   (e) In Indian system — 83,49,643 In International system — 8,349,643
   (f) In Indian system — 80,00,014 In International system — 8,000,014
   (g) In Indian system — 643,649 In International system — 643,649
   (h) In Indian system — 5,899,631 In International system — 5,899,631
4. Write the successor and predecessor of each of the following numbers.
   (a) The successor of 34964 = 34964 + 1 = 34965; Its predecessor = 34964 – 1 = 34963
   (b) The successor of 564963 = 564963 + 1 = 564964; Its predecessor = 564963 – 1 = 564962
   (c) The successor of 26496 = 26496 + 1 = 26497; Its predecessor = 26496 – 1 = 26495
   (d) The successor of 99999 = 99999 + 1 = 100000; Its predecessor = 99999 – 1 = 99998
   (e) The successor of 348967 = 348967 + 1 = 348968; Its predecessor = 348967 – 1 = 348966
   (f) The successor of 9364751 = 9364751 + 1 = 9364752; Its predecessor = 9364751 – 1 = 9364750
   (g) The successor of 4324968 = 4324968 + 1 = 4324969; Its predecessor = 4324968 – 1 = 4324967
   (h) The successor of 888881 = 888881 + 1 = 888882; Its predecessor = 888881 – 1 = 888880

5. We know that to form the greatest number, arrange the given digits in descending order; to form the smallest number, we arrange the digits in ascending order, except zero (0). We write 0 in the tens place. Following these rules, the greatest and smallest numbers formed with the given digits are:
   (a) Greatest number: 64321 Smallest number: 1346
   (b) Greatest number: 98764 Smallest number: 46789
   (c) Greatest number: 98542 Smallest number: 24589
   (d) Greatest number: 987320 Smallest number: 203789
6. Using the digits 7, 9, 6 and 8:
   Greatest 6-digit number = 999876 Smallest 6-digit number = 666789
7. (a) 10,005; 43,261; 7,36,489; 8,43,648; 9,63,264
   (b) 6,03,048; 6,03,058; 7,32,436; 7,36,436; 9,87,645
   (c) 88,964; 9,97,216; 9,97,326; 9,97,343; 53,64,961
8. The given numbers in descending order are:
   (a) 7364369, 348436, 50364, 643648
   (b) 8312643, 832936, 936436, 931243
   (c) 63943, 8364891, 564369, 324001
9. To round off a number to the nearest 10, we observe the ones place digit. To round off a number to the nearest 100, we observe the tens place digit. To round off a number to the nearest 1000, we observe the hundreds place digit.

	Numeral	Rounding of to the nearest 10	Rounding of to the nearest 100	Rounding of to the nearest 1000
(a)	564	560	600	1000
(b)	3486	3490	3500	3000
(c)	8364	8360	8400	8000
(d)	7326	7330	7300	7000
(e)	95365	95370	95400	95000
(f)	24564	24560	24600	25000
(g)	3364	3360	3400	3000
(h)	95554	95550	95600	96000

10. The corresponding Roman numerals for:
   (a) 679 is DCLXXIX (b) 248 is CCXLVIII (c) 189 is CLXXXIX
   (d) 1324 is MCCCXXIV

HOTS (Critical Thinking & Reasoning

1. The smallest 5-digit number is 10,000, which has two different digits 0 and 1.
   But the required number has three different digits.
   Hence, the smallest 5-digit number having three different digits is 10,002.
2. We follow the given conditions in the place value chart for 6-digit numbers as:

L	T Th	Th	H	T	O
2	8	2	2	4	2

Hence, the number is 2,82,242.

3. The smallest 4-digit number is 1,000 and the largest 4-digit number is 9999. It means the 4-digit numbers begin with 1,000 and end with 9,999.

   Total number of 4-digit numbers = 9,999 – 1,000 + 1 = 9,000.

   Hence, there are 9000 4-digit numbers in all.

Case-based Questions

S. No.	State	Area (in sq km)
1.	Tamil Nadu	1,30,058
2.	Bihar	94,163
3.	Gujarat	1,96,024
4.	Rajasthan	3,42,239
5.	Maharashtra	3,07,713

1. From the table:

   Area of Bihar = 94,163; place value of 9 in it = 90,000

   Area of Gujarat = 1,96,024; place value of 9 in it = 90,000

   Area of Rajasthan = 3,42,239; place value of 9 in it = 9

   The sum of these place values of the digit 9 = 90,000 + 90,000 + 9 = 1,80,009.

2. The place value of 0 in any number is always 0.
3. Area of Gujarat in expanded form:

   1,00,000 + 90000 + 6000 + 20 + 4.

4. Comparing the areas of the given states, we found that the area of Maharashtra is the closest in area to Rajasthan.
5. Area of Tamil Nadu = 1,30,058; one lakh thirty thousand fifty-eight

   Area of Bihar = 94,163; ninety-four thousand one hundred sixty-three

   Area of Gujarat = 1,96,024; one lakh ninety-six thousand twenty-four

   Area of Rajasthan = 3,42,239; three lakh forty-two thousand two hundred thirty-nine

   Area of Maharashtra = 3,07,713; three lakh seven thousand seven hundred thirteen

Mental Maths

1. The smallest 5-digit number that has same digit is 11111. Hence, the correct option is (b).
2. Twenty-three lakh five thousand six in figure is23,05,006. Hence, the correct option is (a).
3. In 87,64,935, the place value of 4 is 4,000. Hence, the correct option is (a).
4. The sum of the place values of 5 in 459650 is 50000 + 50 = 50050. Hence, the correct option is (c).
5. 1 lakh = 1,00,000 ÷ 1,000 = 100 thousands. Hence, the correct option is (a).
6. Numeral for 'three million five hundred sixty-seven thousand two hundred four' is.3,567,204. Hence, the correct option is (d).
7. The Roman numeral LXX = 50 + 10 + 10 = 70. Hence, the correct option is (b).
8. To the nearest 100, the numeral 35,963 is rounded off to 36,000. Hence, the correct option is (a).
9. The smallest 6-digit number formed with the digits 6, 3 and 4 is 3,33,346. Hence, the correct option is (b).
10. In the International system of numeration, second comma comes between the periods ones and millions. Hence, the correct option is (c).

Exercise 2.1

1. (a)

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

(b)

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

(c)

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

(d)

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

(e)

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

(f)

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

(g)

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

(h)

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

(i)

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

2. First write the given numbers in columns of lakhs (L), ten thousands (TTh), thousands(Th), hundreds (H), tens (T) and ones (O). Then add column wise starting from the ones column.

(a)

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

(b)

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

(c)

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

(d)

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

(e)

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

(f)

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

Exercise 2.2

Missing numbers are written in bold font.

(a) 9643 + 0 = **9643**
(b) 73646 + **0** = 73646
(c) 82438 + 1 = **82439**
(d) **1** + 543690 = 543691
(e) 7364 + 10 = **7374**
(f) 2736 + **10** = 2746
(g) **93238** + 10 = 93248
(h) 56498 + 100 = **56598**
(i) 80049 + **100** = 80149
(j) 14364 + 1000 = **15364**
(k) 173659 + **1000** = 174659
(l) 23364 + **1** = 23365
(m) 8364 + 2736 = 2736 + **8364**
(n) **143643** + 236443 = 236443 + 143643
(o) 8736 + 96431 + 273 = 8736 + **273** + 96431
(p) 5468 + **496** + 1736 = 1736 + 496 + 5468

Exercise 2.3

1. Solve the following word problems.

(a) Population of one town = 78,964
Population of another town = 5,43,695
Population of both the towns = 78,964 +5,43,695
Ans. 6,22,659 people

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

(b) Number of books in library A = 10,242
Number of books in library B = 12,696
Population of both the towns = 10,242 + 12,693
Ans. 22,938 books

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

(c) Mr. Jha bought a plot for = ₹ 1,72,945
More cost of car than plot = ₹ 35,965
Amount Mr. Jha paid for buying the car
= ₹ 1,72,945 + ₹ 35,965
Ans. ₹ 2,08,910

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

(d) Number of adults in the stadium = 36,942
Number of adults in the stadium = 18,271
Amount Mr. Jha paid for buying the car
= 36,942 + 18,271
Ans. 53,213 people

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

(e) Amount of money in Radheshyam's account = ₹ 9,84,700
More amount of money he put in his account = ₹ 1,40,000
Amount Mr. Jha paid for buying the car
= ₹ 9,84,700 + ₹ 1,40,000
Ans. ₹ 11,24,700

	L	T Th	Th	H	T	O
	1 9	8	4	7	0	0
+	1	4	0	0	0	0
	11	2	4	7	0	0

2. (a) There are 24,684 adults and 9,360 children in a village. Find the population of the village.
   (b) Krishna has ₹ 83,641 in his savings account. He deposited ₹ 4,084 more in the account. How much money does he have now in his account?
   (c) During Delhi Book Fair, 37,364 people visited first and 93,247 people the next day. How many people visited the Book Fair these two days?
   (d) In an election, a candidate got 87,643 votes and another candidate got 5,491 votes. How many votes did they get in all?
   (e) There are 64,360 people in apartment A and 4,364 people in apartment B. How many people are there in both the apartments?
   (f) On a Sunday, 37,360 people Corona positive and 2,110 people on Monday. How many people were found corona positive in these two days?

Exercise 2.4

1.

(a)

Estimated sum

Rounding off to the nearest 10:
$845 \rightarrow 850$
$272 \rightarrow 270$
Sum = 850 + 270 = 1,110.

Actual sum

$$\begin{array}{r} 845 \\ +272 \\ \hline 1110 \end{array}$$

(b)

Estimated sum

Rounding off to the nearest 10:
$4692 \rightarrow 4690$
$372 \rightarrow 370$
Sum = 4690 + 370 = 5060.

Actual sum

$$\begin{array}{r} 4692 \\ +372 \\ \hline 5064 \end{array}$$

(c)

Estimated sum

Rounding off to the nearest 10:
$8404 \rightarrow 8400$
$9279 \rightarrow 9280$
Sum = 8400 + 9280 = 17680.

Actual sum

$$\begin{array}{r} 8404 \\ +9279 \\ \hline 17673 \end{array}$$

(d)

Estimated sum

Rounding off to the nearest 10:
$1455 \rightarrow 1460$
$4927 \rightarrow 4930$
Sum = 1460 + 4930 = 5390.

Actual sum

$$\begin{array}{r} 1455 \\ +4927 \\ \hline 5382 \end{array}$$

(e)

Estimated sum

Rounding off to the nearest 10:
$6321 \rightarrow 6320$
$4326 \rightarrow 4330$
Sum = 6320 + 4330 = 10650.

Actual sum

$$\begin{array}{r} 6321 \\ +4326 \\ \hline 10647 \end{array}$$

(f)

Estimated sum

Rounding off to the nearest 10:
$8263 \rightarrow 8260$
$5275 \rightarrow 5280$
Sum = 8260 + 5280 = 13540.

Actual sum

$$\begin{array}{r} 8263 \\ +5275 \\ \hline 13538 \end{array}$$

2.

(a) **Estimated sum**

Rounding off to the nearest 100:
$1496 \rightarrow 1500$
$2735 \rightarrow 2700$
Sum = 1500 + 2700 = 4200.

Actual sum

$$\begin{array}{r} 1496 \\ +\,2735 \\ \hline 4221 \end{array}$$

(b) **Estimated sum**

Rounding off to the nearest 100:
$7014 \rightarrow 7000$
$8254 \rightarrow 8300$
Sum = 7000 + 8300 = 15300.

Actual sum

$$\begin{array}{r} 7014 \\ +\,8254 \\ \hline 15268 \end{array}$$

(c) **Estimated sum**

Rounding off to the nearest 100:
$2736 \rightarrow 2700$
$1493 \rightarrow 1500$
Sum = 2700 + 1500 = 4200.

Actual sum

$$\begin{array}{r} 2736 \\ +\,1493 \\ \hline 4229 \end{array}$$

(d) **Estimated sum**

Rounding off to the nearest 100:
$2400 \rightarrow 2400$
$3535 \rightarrow 3500$
Sum = 2400 + 3500 = 5900.

Actual sum

$$\begin{array}{r} 2400 \\ +\,3535 \\ \hline 5935 \end{array}$$

(e) **Estimated sum**

Rounding off to the nearest 100:
$5327 \rightarrow 5300$
$3491 \rightarrow 3500$
Sum = 5300 + 3500 = 8800.

Actual sum

$$\begin{array}{r} 5327 \\ +\,3491 \\ \hline 8818 \end{array}$$

(f) **Estimated sum**

Rounding off to the nearest 100:
$6427 \rightarrow 6400$
$4090 \rightarrow 4100$
Sum = 6400 + 4100 = 10500.

Actual sum

$$\begin{array}{r} 6427 \\ +\,4090 \\ \hline 10517 \end{array}$$

3.

(a) **Estimated sum**

Rounding off to the nearest 1000:
$14963 \rightarrow 15000$
$70265 \rightarrow 70000$
Sum = 15000 + 70000 = 85000.

Actual sum

$$\begin{array}{r} 14963 \\ +\,70265 \\ \hline 85128 \end{array}$$

(b) **Estimated sum**

Rounding off to the nearest 1000:
$84264 \rightarrow 84000$
$93264 \rightarrow 93000$
Sum = 84000 + 93000 = 177000.

Actual sum

$$\begin{array}{r} 84264 \\ +\,93264 \\ \hline 177528 \end{array}$$

(c) **Estimated sum**

Rounding off to the nearest 1000:
64364 → 64000
4962 → 5000
Sum = 64000 + 5000 = 69000.

Actual sum

64364
+ 4962
69326

(d) **Estimated sum**

Rounding off to the nearest 1000:
56314 → 56000
31364 → 31000
Sum = 56000 + 31000 = 87000.

Actual sum

56314
+ 31364
87698

(e) **Estimated sum**

Rounding off to the nearest 1000:
37692 → 38000
54318 → 54000
Sum = 38000 + 54000 = 92000.

Actual sum

37692
+ 54318
92010

(f) **Estimated sum**

Rounding off to the nearest 1000:
2431 → 2000
8364 → 8000
Sum = 2000 + 8000 = 10000.

Actual sum

2431
+ 8364
10795

Exercise 2.5

1. (a)

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

(b)

	T Th	Th	H	T	O
	8	7	6	5	4
–	3	0	4	2	3
	5	7	2	3	1

(c)

	L	T Th	Th	H	T	O
	7	6	4	3	6	4
–	4	1	2	3	2	1
	3	5	2	0	4	3

(d)

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

(e)

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

(f)

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

2. (a)

	T Th	Th	H	T	O
	8 ~~9~~	12 ~~2~~	3 ~~4~~	12 ~~3~~	15 ~~5~~
–	2	7	1	6	8
	6	5	2	6	7

(b)

	T Th	Th	H	T	O
	5 ~~6~~	14 ~~5~~	12 ~~3~~	6 ~~7~~	12 ~~2~~
–	1	7	8	4	9
	4	7	4	2	3

(c)

	L	T Th	Th	H	T	O
	7 ~~8~~	10 ~~0~~	8 ~~9~~	13 ~~3~~	6 ~~7~~	6
–	1	9	3	8	1	2
	6	1	5	5	5	4

(d)

	L	T Th	Th	H	T	O
	8 9	14 5	11 2	13 4	15 5	9
–	2	9	6	8	7	3
	6	5	5	5	8	6

(e)

	L	T Th	Th	H	T	O
	6 7	14 4	6	8 9	13 4	13 3
–	1	7	4	2	6	8
	5	7	2	6	7	5

(f)

	L	T Th	Th	H	T	O
	7 8	16 6	9	4 5	13 4	13 3
–	2	7	3	2	4	8
	5	9	6	2	9	5

3.(a)

	L	T Th	Th	H	T	O
	8 9	9 0	9 0	17 7	7 8	13 3
–	2	6	7	8	6	9
	6	3	2	9	1	4

(b)

	L	T Th	Th	H	T	O
	5 6	9 0	9 0	9 0	13 4	10 0
–	2	6	5	8	4	9
	3	3	4	1	9	1

(c)

	L	T Th	Th	H	T	O
	6 7	10 0	4 5	9 0	5 6	10 0
–	1	9	2	7	4	8
	5	1	2	2	1	2

(d)

	L	T Th	Th	H	T	O
		8 9	9 0	9 0	9 0	10 0
–			9	9	9	9
		8	0	0	0	1

(e)

	L	T Th	Th	H	T	O
	0 1	9 0	9 0	9 0	9 0	10 0
–		9	8	9	6	4
		0	1	0	3	6

(f)

	L	T Th	Th	H	T	O
		6 7	14 5	9 0	9 0	10 0
–		2	9	4	8	5
		4	0	5	1	5

4. (a)

	L	T Th	Th	H	T	O
	7 8	16 7	9 0	13 3	6	4
–	2	9	6	4	5	1
	5	7	3	9	1	3

(b)

	L	T Th	Th	H	T	O
	6	4	2 3	15 6	13 4	15 5
–	4	3	2	6	7	6
	2	1	0	9	6	9

(c)

	L	T Th	Th	H	T	O
	5	5 6	13 4	12 3	12 2	3
–	1	4	8	9	6	2
	4	1	5	3	6	1

(d)

	L	T Th	Th	H	T	O
	8	3 4	15 6	13 4	12 2	4
–		1	9	7	6	4
	8	2	6	6	6	0

(e)

	L	T Th	Th	H	T	O
			5	16	12	11
	4	9	~~6~~	~~7~~	~~3~~	~~1~~
–	2	4	3	9	6	7
	2	5	2	7		4

(f)

	L	T Th	Th	H	T	O
			2	15	13	12
	5	7	~~3~~	~~6~~	~~4~~	~~2~~
–	4	3	2	6	4	6
	1	4	0	9	9	6

Exercise 2.6

Missing numbers are written in bold font.

(a) 84368 – 0 = **84368**
(b) 576924 – **0** = 576924
(c) **498261** – 0 = 498261
(d) 43464 – 1 = **43463**
(e) 842676 – **1** = 842675
(f) **96437** – 1 = 96436
(g) 47365 – 47365 = **0**
(h) 817269 – 817269 = **0**
(i) **78421** – 78421 = 0
(j) 24736 – 10 = **24726**
(k) 54931 – 10 = **54921**
(l) **81090** – 10 = 81080
(m) 62437 – 100 = **62337**
(n) 14368 – **100** = 14268

Exercise 2.7

1. Adding and checking answer, we get:

(a)
$$\begin{array}{r} 78364 \\ +\ 42342 \\ \hline 120706 \end{array} \qquad \text{Check} \quad \begin{array}{r} 120706 \\ -\ 78364 \\ \hline 42342 \end{array}$$

(b)
$$\begin{array}{r} 9736488 \\ +\ 5436431 \\ \hline 14173919 \end{array} \qquad \text{Check} \quad \begin{array}{r} 14173919 \\ -\ 9736488 \\ \hline 5436431 \end{array}$$

(c)
$$\begin{array}{r} 734093 \\ +\ 145378 \\ \hline 879471 \end{array} \qquad \text{Check} \quad \begin{array}{r} 879471 \\ -\ 734093 \\ \hline 145378 \end{array}$$

(d)
$$\begin{array}{r} 624896 \\ +\ 245317 \\ \hline 870213 \end{array} \qquad \text{Check} \quad \begin{array}{r} 870213 \\ -\ 624896 \\ \hline 245317 \end{array}$$

2. Subtracting and checking answer, we get:

(a)
$$\begin{array}{r} 143892 \\ -\ 18469 \\ \hline \mathbf{125423} \end{array} \qquad \text{Check} \quad \begin{array}{r} \mathbf{125423} \\ +\ 18469 \\ \hline \mathbf{143892} \end{array}$$

(b)
$$\begin{array}{r} 579683 \\ -\ 142847 \\ \hline \mathbf{436836} \end{array} \qquad \text{Check} \quad \begin{array}{r} \mathbf{436836} \\ +\ 142847 \\ \hline \mathbf{579683} \end{array}$$

(c)
$$\begin{array}{r} 702400 \\ -\ 157869 \\ \hline \mathbf{544531} \end{array} \qquad \text{Check} \quad \begin{array}{r} \mathbf{544531} \\ +\ 157869 \\ \hline \mathbf{702400} \end{array}$$

(d)
$$\begin{array}{r} 564809 \\ -\ 124687 \\ \hline \mathbf{440122} \end{array} \qquad \text{Check} \quad \begin{array}{r} \mathbf{440122} \\ +\ 124687 \\ \hline \mathbf{564809} \end{array}$$

Exercise 2.8

1. Simplifying

(a) Adding 96248 and 3264

$$\begin{array}{r} 96248 \\ +\ 3264 \\ \hline 99512 \end{array} \xrightarrow{\text{Subtracting 2456 from the sum}} \begin{array}{r} 99512 \\ -\ 2456 \\ \hline 99512 \end{array}$$

(b) Subtracting 8643 from 87364

$$\begin{array}{r} 87364 \\ -\ 8643 \\ \hline 78721 \end{array} \xrightarrow{\text{Adding 5648 to the result}} \begin{array}{r} 78721 \\ +\ 5648 \\ \hline 84369 \end{array}$$

(c) Adding 624568 and 532642

$$\begin{array}{r} 624568 \\ +\,532642 \\ \hline 1157210 \end{array}$$

Subtracting 17364 from the sum

$$\begin{array}{r} 1157210 \\ -\,17364 \\ \hline 1139846 \end{array}$$

(d) Subtracting 64264 from 74264

$$\begin{array}{r} 74264 \\ -\,64264 \\ \hline 10000 \end{array}$$

Adding 5641 to the result

$$\begin{array}{r} 10000 \\ +\,5641 \\ \hline 15641 \end{array}$$

(e) Adding 888888 and 24364

$$\begin{array}{r} 888888 \\ +\,24364 \\ \hline 913252 \end{array}$$

Subtracting 64836 from the sum

$$\begin{array}{r} 913252 \\ -\,64834 \\ \hline 848418 \end{array}$$

(f) Subtracting 59364 from 64264

$$\begin{array}{r} 64264 \\ -\,59364 \\ \hline 04900 \end{array}$$

Adding 84691 to the result

$$\begin{array}{r} 4900 \\ +\,84691 \\ \hline 89591 \end{array}$$

2. The complete addition and subtraction chains are given below.
   (a) 73643 + 1000 = 74643 – 500 = 74143 + 540 = 73643
   (b) 10000 +7264 = 17264 – 4321= 12943 – 1400 = 2943
   (c) 55194 –640 = 54554 + 4364 = 58918 – 2431=56487
   (d) 78014 – 1750 = 76264 + 84681 = 238959 – 4924 = 234035

Exercise 2.9

1. Solve the following word problems.

(a) Money donated by Mr Ambani = ₹ 15,00,000
Less money donated by Mr Bajaj = ₹ 1,50,000
Money donated by Mr Bajaj = ₹ 15,00,000 – ₹ 1,50,000
Ans. ₹ 13,50,000

	T L	L	T Th	Th	H	T	O
		4	10				
	1	~~5~~	~~0~~	0	0	0	0
–		1	5	0	0	0	0
	1	3	5	0	0	0	0

(b) Total cost of a bike and a car = ₹ 7,50,242
Cost of the bike alone = ₹ 75,400
Cost of the car = ₹ 7,50,242 – ₹ 75,400
Hence, the cost of car alone is ₹ 6,74,842.

	L	T Th	Th	H	T	O
	6	14	9	12		
	~~7~~	~~5~~	~~0~~	~~2~~	4	2
–		7	5	4	0	0
	6	7	4	8	4	2

(c) Mr. Aditya bought a laptop and a LCD TV for = ₹ 1,20,840
Money he gave to the shopkeeper = ₹ 1,30,000
Money he got from the shopkeeper = ₹ 1,30,000 + ₹ 1,20,840
Hence, Aditya got ₹ 1,20,840 from the shopkeeper.

	L	T Th	Th	H	T	O
		2	9	9	10	
	1	~~3~~	~~0~~	~~0~~	~~0~~	0
+	1	2	0	8	4	0
	0	0	9	1	6	0

(d) Kapil spent money to buy a car = ₹ 3,20,000
Money he spent to buy a computer = ₹ 72,000
Total money he spent = ₹ 3,20,000 + ₹ 72,000 = ₹ 3,92,000.
Money in Kapil's bank account = ₹ 8,25,000
Total money he spent = ₹ 3,92,000
Money left in Kapil's bank account= ₹ 8,25,000 – ₹ 3,92,000
Hence, the money left in Kapil's bank account is ₹ 4,33,000.

	L	T Th	Th	H	T	O
	7	12				
	~~8~~	~~2~~	5	0	0	0
–	3	9	2	0	0	0
	4	3	3	0	0	0

(e) Amount of money Sushma has = ₹ 8,50,400
Given that Rashmi has ₹ 12,850 less than Shushma.
So, the amount of money Rashmi has = ₹ 8,50,400 – ₹ 12,850 = ₹ 8,37,550.
Also, Kanti has ₹ 17,200 more than Rashmi.

So, the amount Kanti has = ₹ 8,37,550 + ₹ 17,200 = ₹ 8,54,750.

Hence, Rashmi has ₹ 8,37,550 and Kanti has ₹ 8,54,750.

2. (a) How much is 24,584 greater than 3,040?

(b) Krishna has ₹ 97,648 in his bank account. He withdraw ₹ 26,486 from his account. How much money is left in his account?

(c) In an election, a candidate got 5,46,241 votes and won by a margin of 72,641 votes. How many votes did the rival candidate get?

(d) The population of a town M is 8,56,732 and that of another town N is 1,62,432. Population of which town is more and by how much?

(e) Nikhil had ₹ 49,368 in his bank account. He deposited ₹ 12,736 more in the account and withdrew 8,469 after some time. How much money does he have now in his account?

(f) There are 96,248 books in a school library. If 1,243 of them are of Sanskrit and 5,426 of English, how many books are of other subjects in the library?

Exercise 2.10

1.

(a)

Estimated sum

Rounding off to the nearest 10:
873 → 870
421 → 420
Sum = 870 – 420 = 450.

Actual sum

873
−421
453

(b)

Estimated sum

Rounding off to the nearest 10:
5648 → 5650
2436 → 2440
Sum = 5650 – 2440 = 3210.

Actual sum

5648
−2436
3212

(c)

Estimated sum

Rounding off to the nearest 10:
78964 → 78960
31264 → 31260
Sum = 78960 – 31260 = 47700.

Actual sum

78964
−31264
47700

Similar work to be done for (d) to (f).

2.

(a)

Estimated sum

Rounding off to the nearest 100:
4364 → 4400
273 → 300
Sum = 4400 – 300 = 4100.

Actual sum

4364
−273
4091

(b)

Estimated sum

Rounding off to the nearest 100:
56436 → 56400
2436 → 2400
Sum = 56400 – 2400 = 54000.

Actual sum

56436
−2436
54000

(c) **Estimated sum**

Rounding off to the nearest 100:
8436 → 8400
1436 → 1400
Sum = 8400 – 1400 = 7000.

Actual sum

8436
–1436
7000

Similar work to be done for (d) to (f).

3.

(a) **Estimated sum**

Rounding off to the nearest 1000:
7624 → 8000
1484 → 1000
Sum = 8000 – 1000 = 7000.

Actual sum

7624
–1484
6140

(b) **Estimated sum**

Rounding off to the nearest 1000:
7848 → 8000
3245 → 3000
Sum = 8000 – 3000 = 5000.

Actual sum

7848
–3245
4603

(c) **Estimated sum**

Rounding off to the nearest 1000:
93643 → 94000
73261 → 73000
Sum = 94000 – 73000 = 21000.

Actual sum

93643
–73261
20382

(d) **Estimated sum**

Rounding off to the nearest 1000:
840026 → 840000
532414 → 532000
Sum = 840000 – 532000 = 308000.

Actual sum

840026
–532414
307612

Similar work to be done for (e) and (f).

Revision Exercise

1.

(a)

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

(b)

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

(c)

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

(d)

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

(e)

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

(f)

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

(g)

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

(h)

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

(i)

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

2. (a)

	L	T Th	Th	H	T	O
			6	12	11	13
	6	9	~~7~~	~~3~~	~~2~~	~~5~~
–	2	1	5	4	6	8
	4	8	1	8	5	5

(b)

	L	T Th	Th	H	T	O
		6	9	13	12	12
		~~7~~	~~0~~	~~4~~	~~5~~	~~2~~
–		2	8	7	9	6
		4	1	6	3	6

(c)

	L	T Th	Th	H	T	O
				5	12	14
		7	9	~~6~~	~~3~~	~~4~~
–		2	4	3	8	9
		5	5	2	4	5

(d)

	L	T Th	Th	H	T	O
		8	14	15	13	13
		~~9~~	~~5~~	~~6~~	~~4~~	~~3~~
–		4	5	7	6	8
		4	9	8	7	5

(e)

	L	T Th	Th	H	T	O
	6	9	9	14	7	12
	7	0	0	~~4~~	~~8~~	~~2~~
–	1	6	9	8	3	9
	5	3	0	6	4	3

(f)

	L	T Th	Th	H	T	O
		3	11	13	12	14
		~~4~~	~~2~~	~~4~~	~~3~~	~~4~~
–		2	4	6	9	8
		1	7	7	3	6

(g)

	L	T Th	Th	H	T	O
		5	9	9	9	10
	~~4~~	~~6~~	~~0~~	~~0~~	~~0~~	~~0~~
–		3	9	9	9	9
	4	2	0	0	0	1

(h)

	L	T Th	Th	H	T	O
	6	12			1	14
	~~7~~	~~2~~	4	8	~~2~~	~~4~~
–	2	8	4	1	1	8
	4	4	0	7	0	6

(i)

	L	T Th	Th	H	T	O
	8 ~~9~~	9 ~~0~~	9 ~~0~~	9 ~~0~~	9 ~~0~~	10 ~~0~~
–		4	6	9	8	7
	8	5	3	0	1	3

2. (a) Number of pair of shoes manufactured in the month of May = 55,940
Number of pair of shoes manufactured in the month of June = 48,620
Total number of shoes produced in these two months = 55,940 + 48,620
Hence, the factory produced 1,04,560 pairs of shoes in these two months.

55940
+48620
104560

(b) Number of men in the district = 73,642
Number of women in the district = 66,940
Number of children in the district = 32,720
Total number of people in the district = 73,642 + 66,940 + 32,720
= 1,73,302
Hence, the population of the district is 1,73,302.

73642
66940
+32720
173302

(c) The cost of a laptop = ₹ 96,240
The cost of a LCD more than by laptop = ₹ 35,120
The cost of the LCD = ₹ 96,240 + ₹ 35,120 = ₹ 1,31,360.
Hence, the cost of the LCD is ₹ 1,31,360.

₹ 96,240
– ₹ 35,120
₹ 131360

(d) Here, 6364382 is the sum of two numbers.
The required number = sum of numbers – given number
= 66,64,382 – 12,436 = 66,51,946.
Hence, the required number that should be added is 66,51,946.

6664382
– 12436
6651946

(e) Here, 84369 is the sum of two numbers.
The required number = sum of numbers – given number
= 84,369 – 72,426 = 11,943.
Hence, the required number that should be subtracted is 11,943.

84369
– 72426
11943

(f) The monthly income of Mr. Pathak = ₹ 3,70,000
His monthly expenditure = ₹ 2,60,000
Money that Mr Pathak saved = ₹ 3,70,000 – ₹ 2,60,000 = ₹ 1,10,000
Hence, Mr Pathak saves ₹ 1,10,000 every month.

370000
– 260000
11943

(g) Here, 7,86,435 is the sum of two numbers.
The other number = sum of numbers – given number
= 7,86,435 – 4,75,264 = 11,943.
Hence, the other number is 3,11,171.

786435
– 475264
311171

(h) Number of cement bags in the godown = 75,695
Number of cement bags used = 26,740
Number of cement bags left in the godown = 75,695 – 26,740 = 48,955.
Hence, 48,955 cement bags are left in the godown.

75695
– 26740
48955

HOTS (Critical Thinking & Reasoning

The missing digits are written in bold.

(a) In the ones place, 2 + 6 = **8**.

In the tens place, 5 in answer shows that the sum is 15. So the missing digit is 15 – 8 = **7**.

In the hundreds place, 4 in answer shows that the sum is 14. So the missing digit is **4**.

In the thousands place: 2 in the answer shows that the sum is 12. So the missing digit is **6**.

In the ten thousands place, the missing digit is 1 + 3 + 3 = **7**.

In the lakhs place, the missing digit is 4 + 2 = **6**.

Similarly, we find the missing digit in (b) and (c).

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

(b)

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

(c)

	L	T Th	Th	H	T	O
	1	1	1	1	1	
		2	4	3	**4**	8
+	1	8	9	**6**	7	9
	2	**1**	**4**	0	2	**7**

Case-based Questions

Using the given information, answers of the asked questions are:

1. Time taken by Neptune to go around the Sun = 60,195 earth days

   Time taken by Uranus to go around the Sun = 30,685 earth days

   Difference between these two time durations = 60,195 earth days – 30,685 earth days
   = 29,510 earth days

   Hence, Uranus takes 29,510 earth days less than Neptune to go around the Sun.

2. Time taken by Saturn to go around the Sun = 10,761 earth days

   Time taken by Jupiter to go around the Sun = 4,332 earth days

   Difference between these two time durations = (10,761 – 4,332) earth days = 6,429 earth days.

   Hence, Saturn takes 6,429 days more than Jupiter to go around the Sun.

3. Time taken by Venus to go around the Sun = 225 earth days

   Time taken by Mercury to go around the Sun = 88 earth days

   Difference between these two time durations = (225 – 88) earth days = 137 earth days.

   Hence, Mercury takes 137 earth days less than Venus to orbit the Sun.

4. Time spent by the astronaut on Jupiter = 4,332 earth days

   Time spent by the astronaut on Uranus = 30,685 earth days

   Time spent by the astronaut on Mars = 687 earth days.

   Total time spent by the astronaut on these three planets = (4,332 + 30,685 + 687) earth days
   = 35,704 earth days.

   Hence, the astronaut spends 35,704 earth days on these three planets.

5. Time spent by the astronaut on Mars = 1 year = 687 earth days

   Time spent by the astronaut on Uranus 1 year = 30,685 earth days

Total time spent by the astronaut on both planets = (30,685 + 687) earth days = 31,372 earth days.
Hence, the astronaut spends 31,372 earth days on both these planets.

Mental Maths

A. 1. 2484 + **5159** = 7643
2. 5964 + **81685** = 87649
3. **73641** + 96426= 96426 + 73641
4. 423 + 1000 + 2334 = **2334** + 1423
5. 800 more than 24836 = **25,636**
6. 700 less than 96245 = **95545**
7. 96436 – **51163** = 45273
8. Difference of 97364 and 24375 = 97364 – 24375 = **72,989**.

B. 1. 53648 + 1000 = 54648. Hence, the correct option is (d).
2. 80000 – 29999 = 50001. Hence, the correct option is (a).
3. We have 49648 – ? = 32643. Therefore, ? = 49648 – 32643 = 17005. Hence, the correct option is (b).
4. 1 less than 8000 is 7999. Hence, the correct option is (c).

Chapter 3. Multiplication

Exercise 3.1

1. (a) $8 \times 0 = 0$ (b) $11 \times 1 = 11$ (c) $0 \times 15 = 0$ (d) $1 \times 24 = 24$
(e) $17 \times 0 = 0$ (f) $48 \times 1 = 48$ (g) $54 \times 1 = 54$ (h) $7 \times 4 = 4 \times 7$
(i) $12 \times 5 = 12 \times 5$ (j) $42 \times 3 = 3 \times 42$ (k) $7 \times 6 \times 3 = (6 \times 3) \times 7 = (3 \times 7) \times 6$

2. Using distributive property of multiplication over addition, we get
(a) $7 \times 32 = 7 \times (30 + 2) = 7 \times 30 + 7 \times 2 = 210 + 14 = 224$.
(b) $8 \times 49 = 8 \times (40 + 8) = 8 \times 40 + 8 \times 8 = 320 + 64 = 224$.
(c) $38 \times 4 = (30 + 8) \times 4 = 30 \times 4 + 8 \times 4 = 112 + 32 = 144$.
(d) $24 \times 5 = (20 + 4) \times 5 = 20 \times 5 + 4 \times 5 = 100 + 20 = 120$.
(e) $6 \times 54 = 6 \times (50 + 4) = 6 \times 50 + 6 \times 4 = 300 + 24 = 324$.
(f) $2 \times 26 = 2 \times (20 + 6) = 2 \times 20 + 2 \times 6 = 40 + 12 = 52$.
(g) $9 \times 43 = 9 \times (40 + 3) = 9 \times 40 + 9 \times 3 = 360 + 27 = 387$.
(h) $26 \times 7 = (20 + 2) \times 7 = 20 \times 7 + 2 \times 7 = 140 + 14 = 154$.

3. Using distributive property of multiplication over subtraction, we get
(a) $7 \times 78 = 7 \times (80 - 2) = 7 \times 80 - 7 \times 2 = 560 - 14 = 546$.
(b) $5 \times 49 = 5 \times (50 - 1) = 5 \times 50 - 5 \times 1 = 250 - 5 = 245$.
(c) $6 \times 44 = 6 \times (50 - 6) = 6 \times 50 - 6 \times 6 = 300 - 36 = 264$.
(d) $7 \times 23 = 7 \times (30 - 7) = 7 \times 30 - 7 \times 7 = 210 - 49 = 161$.
(e) $8 \times 92 = 8 \times (100 - 8) = 8 \times 100 - 8 \times 8 = 800 - 64 = 736$.
(f) $6 \times 36 = 6 \times (40 - 4) = 6 \times 40 - 6 \times 4 = 240 - 24 = 216$.
(g) $4 \times 73 = 4 \times (80 - 7) = 4 \times 80 - 4 \times 7 = 320 - 28 = 292$.
(h) $5 \times 27 = 5 \times (30 - 3) = 5 \times 30 - 5 \times 3 = 150 - 15 = 135$.

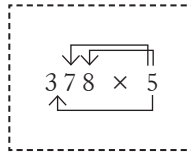
4. Find the following.
(a) First four even numbers are: 2, 4, 6 and 8. Their product = $2 \times 4 \times 6 \times 8 = 48 \times 8 = 384$.
(b) First three odd numbers are: 1, 3 and 5. Their product = $1 \times 3 \times 5 = 15$.

(c) The product of first two even numbers and two odd numbers = 2 × 4 × 1 × 3 = 24.
(d) The product obtained in question (a) is even.
(e) The product obtained in question (b) is odd.
(f) The product obtained in question (a) is even.

Exercise 3.2

1. Multiply the following numbers using horizontal method.

(a) We have 378 × 5.



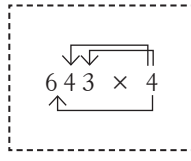
Multiply 8 ones by 5: 8 × 5 = 40. Write 0 in the ones place of the answer and carry 4 above to the tens place.

Multiply 7 tens by 5 and add carried 4: 7 × 5 + 4 = 39. Write 9 in the tens place of the answer and carry 3 above to the hundreds place.

Multiply 3 hundreds by 5 and add carried 3: 3 × 5 + 3 = 18. Write 18 in the answer.

Hence, 378 × 5 = 1890.

(b) We have 643 × 4.



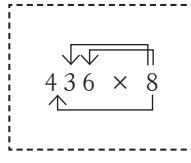
Multiply 3 ones by 4: 3 × 4 = 12. Write 2 in the ones place of the answer and carry 1 above to the tens place.

Multiply 4 tens by 4 and add carried 1: 4 × 4 + 1 = 17. Write 7 in the tens place of the answer and carry 1 above to the hundreds place.

Multiply 6 hundreds by 4 and add carried 1: 6 × 4 + 1 = 25. Write 25 in the answer.

Hence, 643 × 4 = 2572.

(c) We have 436 × 8.



Multiply 6 ones by 8: 6 × 8 = 48. Write 8 in the ones place of the answer and carry 4 above to the tens place.

Multiply 3 tens by 8 and add carried 3: 3 × 8 + 4 = 28. Write 8 in the tens place of the answer and carry 2 above to the hundreds place.

Multiply 4 hundreds by 8 and add carried 2: 4 × 8 + 2 = 34. Write 34 in the answer.

Hence, 436 × 8 = 3488.

Similar work to be done for (d) to (h).

2. The box method of multiplication is also called the expanded method of multiplication. In this method, first write the multiplicand in the expanded form. Then multiply the number individually. At the end, add the products, which will be the required product.

(a) 976 × 8 = (900 + 70 + 6) × 8
= (900 × 8) + (70 × 8) +(6 × 8)
= 7200 + 560 + 48 = 7808.

Hence, 976 × 8 = 7808.

8	900	70	6
	900 × 8 = 7200	70 × 8 = 560	6 × 8 = 48

(b) 603 × 5 = (600 + 00 +3) × 5
= (600 × 5) + (00 × 5) +(3 × 5)
= 3000 + 00 + 15 = 3015.

Hence, 603 × 5 = 3015.

5	600	00	3
	600 × 5 = 3000	00 × 5 = 0	3 × 5 = 15

(c) 827 × 6 = (800 + 20 + 7) × 6
= (800 × 6) + (20 × 6) +(7 × 6)
= 4800 + 120 + 42 = 4962.

Hence, 827 × 6 = 4962.

6	800	20	7
	800 × 6 = 4800	20 × 6 = 120	7 × 6 = 42

(d) $649 \times 7 = (600 + 40 + 9) \times 7$
$= (600 \times 7) + (40 \times 7) + (9 \times 7)$
$= 4200 + 280 + 63 = 4543.$
Hence, $649 \times 7 = 4543$.

7	600	40	9
	600×7 = 4200	40×7 = 280	9×7 = 63

(e) $273 \times 6 = (200 + 70 + 3) \times 6$
$= (200 \times 6) + (70 \times 6) + (3 \times 6)$
$= 1200 + 420 + 18 = 1638.$
Hence, $273 \times 6 = 1638$.

6	200	70	3
	200×6 = 1200	70×6 = 420	3×6 = 18

(f) $932 \times 4 = (900 + 30 + 2) \times 4$
$= (900 \times 4) + (30 \times 4) + (2 \times 4)$
$= 3600 + 120 + 8 = 3728.$
Hence, $932 \times 4 = 3728$.

4	900	30	2
	900×4 = 3600	30×4 = 120	2×8 = 8

Similar work to be done for (g) to (h).

Exercise 3.3

1. (a)

	Th	H	T	O
	3	2	3	2
×				2
	6	4	6	4

(b)

	Th	H	T	O
	1	2	4	2
×				2
	2	4	8	4

(c)

	Th	H	T	O
	1	3	2	2
×				3
	3	9	6	6

(d)

	Th	H	T	O
	2	2	1	2
×				4
	8	8	4	80

(e) Similar work to be done.

2. (a)

	Th	H	T	O
	1	2	1	
	1	3	4	3
×				5
	6	7	1	5

(b)

	Th	H	T	O
		7	4	
	1	0	9	6
×				8
	8	7	6	8

(c)

	Th	H	T	O
	0	3	2	
	2	0	9	6
×				4
	8	3	8	4

(d)

	Th	H	T	O
	1	5	4	
	1	2	7	6
×				7
	8	9	3	2

(e) Similar work to be done.

Exercise 3.4

1. (a)

	TTh	Th	H	T	O
		2	4	3	2
×				2	2
		4	8	6	4
+	4	8	6	4	0
	5	3	5	0	4

(b)

	TTh	Th	H	T	O
		3	1	2	4
×				1	2
		6	2	4	8
+	3	1	2	4	0
	3	7	4	8	8

(c)

	TTh	Th	H	T	O
		4	3	2	1
×				2	1
		4	3	2	1
+	8	6	4	2	0
	9	0	7	4	1

(d)

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

(e)

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

2. (a)

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

(b)

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

(c)

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

(d)

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

(e)

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

3. (a)

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

(b)

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

(c)

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

(d)

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

(e)

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

(f)

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

Exercise 3.5

1. (a)

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

(b)

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

(c)

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

(d)

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

(e)

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

(f)

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

2. (a)

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

(b)

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

(c)

	L	TTh	Th	H	T	O
			9	7	2	4
×				1	0	5
		4	8	6	2	0
		0	0	0	0	0
+	9	7	2	4	0	0
	10	2	1	0	2	0

(d)

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

(e)

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

(f)

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

Exercise 3.6

1. (a) $73 \times 10 =$ **730**
   (b) $824 \times 10 =$ **8240**
   (c) $4326 \times 10 = 43260$
   (d) $44 \times$ **10** $= 440$
   (e) **967** $\times 10 = 9670$
   (f) $69 \times 100 =$ **6900**
   (g) $271 \times 100 =$ **27100**
   (h) $4273 \times 100 =$ **427300**
   (i) $56 \times$ **100** $= 5600$
   (j) **726** $\times 100 = 72600$
   (k) $48 \times 1000 =$ **49000**
   (l) $582 \times 1000 =$ **582000**
   (m) $96 \times$ **1000** $= 96000$
   (n) **29** $\times 1000 = 29000$

2. (a) $86 \times 30 = 86 \times 3 \times 10 = 258 \times 10 =$ **2580.**
   (b) $85 \times 70 = 85 \times 7 \times 10 = 595 \times 10 =$ **5950.**
   (c) $55 \times 80 = 55 \times 8 \times 10 = 440 \times 10 =$ **4400.**
   (d) $45 \times 600 = 45 \times 6 \times 100 = 270 \times 100 =$ **27000.**
   (e) $80 \times 900 = 80 \times 9 \times 100 = 720 \times 100 =$ **72000.**
   (f) $26 \times 700 = 26 \times 7 \times 100 = 182 \times 100 =$ **18200.**
   (g) $25 \times 4000 = 25 \times 4 \times 1000 = 100 \times 1000 =$ **100000.**
   (h) $26 \times 8000 = 26 \times 8 \times 1000 = 208 \times 1000 =$ **208000.**
   (i) $72 \times 6000 = 72 \times 6 \times 1000 = 432 \times 1000 =$ **432000.**

3. (a) $2 \times 26 \times 5 = 26 \times 5 \times 2 = 26 \times 10 = 260.$
   (b) $5 \times 24 \times 20 = 24 \times 20 \times 5 = 24 \times 100 = 2400.$

(c) $340 \times 4 \times 125 = 340 \times 125 \times 4 = 340 \times 500 = 170000$.

(d) $52 \times 50 \times 2 = 52 \times 50 \times 2 = 52 \times 100 = 5200$.

(e) $63 \times 20 \times 5 = 63 \times 20 \times 5 = 63 \times 100 = 6300$

(f) $93 \times 10 \times 10 = 93 \times 10 \times 10 = 93 \times 100 = 9300$.

(g) $141 \times 4 \times 25 = 141 \times 100 = 14100$.

(h) $8 \times 35 \times 125 = 35 \times 125 \times 8 = 35 \times 1000 = 35000$.

(i) $4 \times 144 \times 25 = 144 \times 25 \times 4 = 144 \times 100 = 14400$.

(j) $260 \times 160 \times 8 = 260 \times 8 \times 160 = 2080 \times 160 = 332800$.

(k) $5 \times 42 \times 200 = 42 \times 200 \times 5 = 42 \times 1000 = 42000$.

(l) $600 \times 30 \times 5 = 600 \times 5 \times 30 = 3000 \times 30 = 90000$.

Exercise 3.7

1. **Solve the following word problems.**

1. (a) Quantity of potatoes in 1 basket = 35 kg

Number of baskets = 270

Quantity of potatoes in 270 baskets = 270×35 kg

$= 9450$ kg

Hence, potatoes in 270 baskets would weight 9,450 kg.

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

(b) Number of pages in 1 book = 256

Number of books = 55

Number of pages in 55 books = 256×55

$= 14{,}080$ pages.

Hence, 55 books have 14,080 pages.

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

(c) Number of students in 1 group = 142

Amount of money each student donates = ₹ 150

Total amount of money collected = 142 × ₹ 150

= ₹ 21,300.

Hence, the total amount of money collected is ₹ 21,300 .

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

(d) Number of crayons in 1 carton = 540

Number of cartons = 260

Number of crayons in 260 cartons = $540 \times 260 = 1{,}40{,}400$ crayons.

Hence, there are 1,40,400 crayons in all.

(e) Cost of 1 colour TV = ₹ 9,400

Cost of 142 colour TVs = ₹ 9,400 × 142 = ₹ 13,34,800

Hence, the cost of 142 TVs is ₹ 13,34,800

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

(f) Greatest 3-digit number = 999

Smallest 3-digit number = 100

Their product = $999 \times 100 = 99{,}900$.

Hence, the product of the greatest and the smallest 3-digit numbers is= 99,900.

2. Frame a word problem for the following multiplication facts.

(a) Komal earns ₹ 4327 in a day. How much will she earn in 25 days?

(b) Find the product of 6231 and 18.

(c) There are 52 mangoes in a box. How many mangoes will there be in 4372boxes?

(d) The cost of a book of is ₹ 142. How much will 1244 such books cost?

(e) A packet has 150 balloons. How many balloons will 1962 packets have?

(f) A jar contains 142 candies. A shopkeeper bought 734 such jars of candies. How many candies did he buy?

Exercise 3.8

1. (a)

Actual product

	Th	H	T	O
			7	3
×			2	8
		1	4	4
+	3	3	6	0
	3	5	0	4

rounded off to
rounded off to

Estimated product

	Th	H	T	O
			7	0
×			3	0
			0	0
+	2	1	0	0
	2	1	0	4

(b)

Actual product

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

rounded off to
rounded off to

Estimated product

	Th	H	T	O
		1	4	0
×			1	0
		0	0	0
+	1	4	0	0
	1	4	0	0

(c)

Actual product

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

rounded off to
rounded off to

Estimated product

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

(d)

Actual product

	TTh	Th	H	T	O
		1	4	3	6
×				1	6
		8	6	1	6
+	1	4	3	6	0
	2	2	9	7	6

rounded off to
rounded off to

Estimated product

	TTh	Th	H	T	O
		1	4	4	0
×				6	0
			0	0	0
+	8	6	4	0	0
	8	6	4	0	0

(e)

Actual product

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

rounded off to
rounded off to

Estimated product

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

(f)

Actual product

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

rounded off to
rounded off to

Estimated product

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

2. (a)

Actual product

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

rounded off to
rounded off to

Estimated product

	TL	L	TTh	Th	H	T	O
				6	1	0	0
×					2	0	0
				0	0	0	0
				0	0	0	0
+	1	2	2	0	0	0	0
	1	2	2	0	0	0	0

(b)

Actual product

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

rounded off to
rounded off to

Estimated product

	TTh	Th	H	T	O
			3	0	0
×			1	0	0
			0	0	0
		0	0	0	0
+	3	0	0	0	0
	3	0	0	0	0

(c)

Actual product

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

rounded off to
rounded off to

Estimated product

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

(d)

Actual product

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

rounded off to
rounded off to

Estimated product

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

(e)

Actual product

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

rounded off to
rounded off to

Estimated product

	L	TTh	Th	H	T	O
				6	0	0
×				3	0	0
				0	0	0
			0	0	0	0
+	1	8	0	0	0	0
	1	8	0	0	0	0

(f)

Actual product

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

rounded off to
rounded off to

Estimated product

	L	TTh	Th	H	T	O
				6	0	0
×				5	0	0
				0	0	0
			0	0	0	0
+	3	0	0	0	0	0
	3	0	0	0	0	0

3. Length of the stick = 428 cm and the number of sticks to be joined is 245 cm.
To the nearest 100, 428 is rounded off to 400 and 245 is rounded off to 200.
Estimated length of the resulted stick = 400 × 200 = 80000 cm = 800 m

Revision Exercise

1. (a) 243 × 7 = 1701 (b) 624 × 5 = 3120 (c) 843 × 9 = 7587 (d) 731 × 6 = 4386
(e) 423 × 8 = 3384 (f) 504 × 3 =1512 (g) 294 × 4 = 1176 (h) 663 × 2 = 1326

2. (a)

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

(b)

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

(c)

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

(d)

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

(e)

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

(f)

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

Similar work to be done for (g) and (h).

3. (a)

	Th	H	T	O
			4	3
×			4	0
			0	0
+	1	7	2	0
	1	7	2	0

(b)

	TTh	Th	H	T	O
			6	2	4
×				3	0
			0	0	0
+	1	8	7	2	0
	1	8	7	2	0

(c) 8345 × 100 = 834500.

(d)

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

(e)

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

(f)

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

(g)

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

(h)

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

(i)

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

Similar work to be done for (j) (l)

4. (a)

Actual product

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

rounded off to →
rounded off to →

Estimated product

	TTh	Th	H	T	O
				4	0
×				3	0
			0	0	0
+		1	2	0	0
		1	2	0	0

(b)

Actual product

	TTh	Th	H	T	O
			1	2	0
×				5	5
			6	0	0
+		6	0	0	0
		6	6	0	0

rounded off to

rounded off to

Estimated product

	TTh	Th	H	T	O
			1	2	0
×				6	0
			0	0	0
+		7	2	0	0
		7	2	0	0

(c)

Actual product

	TTh	Th	H	T	O
			2	4	2
×			1	9	3
			7	2	6
	2	1	7	8	0
+	2	4	2	0	0
	4	6	7	0	6

rounded off to

rounded off to

Estimated product

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

Similar work to be done for (d) to (f).

5.Solve the following word problems.

(a) Distance covered by the truck in 1 trip = 1,465 km

Distance covered by the truck in 9 trips = 1,465 km × 9 = 13,185 km.

Hence, the truck covers 13,185 km in 9 trips.

```
  1465
×    9
-----
 13185
```

(b) Number of pencils 1 box contains = 1,527 pencils

Number of pencils 72 boxes contains = 1,527 × 72

= 1,09,944 pencils.

Hence, Number of pencils 1 box contains = 1,527 pencils

```
  1527
×   72
------
109944
```

(c) Number of mangoes each tree gives = 1,965

Number of mango trees in Manik Chand's orchard = 72

Total number of mangoes 72 trees give = 1,965 × 72

= 1,41,480 mangoes

Hence, the total number of mangoes given by 72 trees is 1,41,480 mangoes.

```
  1965
×   72
------
141480
```

(d) Number of sweet trays in Anupam Sweet Stall = 1042

Number of sweets each tray contains = 195

Total number of sweets = 1042 × 195 = 2,03,190 sweets.

Hence, the total number of sweets in Anupam Sweet Stall is 2,03,190.

```
  1042
× 195
------
203190
```

(e) Number of schools took part in Mathematics Olympiad = 1,525

Number of students participated from each school in the Olympiad = 325

Total number of students participated in the Olympiad = 1,525 × 325

= 4,95,625 students.

Hence, 4,95,625 students participated in the Mathematics Olympiad.

```
  1525
× 325
------
495625
```

HOTS (Critical Thinking & Reasoning

The missing digits are written in bold.

(a)

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

(b)

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

(c)

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

Case-based Questions

Using the given information, answers of the asked questions are:

1. Cost of 1 comic book = ₹ 160
   Cost of 4 comic books = ₹ 160 × 4 = ₹ 640.
   Hence, the Group A spent ₹ 640 in all.

```
  160
×   4
-----
  640
```

2. Cost of 1 packet of stickers = ₹ 72
   Cost of 12 comic books = ₹ 72 × 12 = ₹ 864
   Group B visited with the amount of money = ₹ 2500
   Money left with the Group B = ₹ 2500 – ₹ 864.= ₹ 1636.
   Hence, ₹ 1636 were left with the Group B.

```
   72          2500
× 12          – 864
-----         ------
  864          1636
```

3. Cost of 1 puzzle box = ₹ 350
   Cost of 25 puzzle boxes = ₹ 350 × 25 = ₹ 8750.
   Cost of 1 packet of colours = ₹ 135
   Cost of 15 packets of colours = ₹ 135 × 15 = ₹ 2025.
   Total money spent by the Group C = ₹ 8750 + ₹ 2025 = ₹ 10,775
   Hence, the Group C spent ₹ 10,775 in all.

```
  350          135          8750
× 25         × 15         + 2025
-----        -----        ------
 8750         2025         10775
```

4. Cost of 112 comic books = ₹ 160 × 112 = ₹ 17,920
   Cost of 240 storybooks = ₹ 105 × 240 = ₹ 25,200.
   Total money spent by the Group D = ₹ 17,920 + ₹ 25,200
   = ₹ 43,120.
   Hence, the Group D spent ₹ 43,120 in all.

```
  160          105          17920
× 112        × 240        + 25200
-----        -----        -------
17920        25200         43120
```

5. Number of stickers in 1 packet = 12
   Cost of 1 sticker = ₹ 6
   Cost of 1 packet of stickers = 12 × ₹ 6 = ₹ 72.
   Cost of 224 packets of stickers = 224 × ₹ 72 = ₹ 16,128.
   Hence, the cost of 224 packets of stickers will be ₹ 16,128.

```
   12           224
×  6          × 72
-----        -----
  72         16128
```

Mental Maths

A. 1. 72 × **10** = 720
   2. Product of 73 and 21 is a/an **odd** number.
   3. Product of 24 × 49 is a/an **even** number.
   4. 44 × 220 = **9680**.
   5. 100 ×400 = **40000**.

B. The complete patterns are given below.

1. $143 \times 7 \times 1 = 1001$
   $143 \times 7 \times 2 = 2002$
   $143 \times 7 \times 3 = \mathbf{3003}$
   $143 \times 7 \times 4 = \mathbf{4004}$
   $143 \times 7 \times 5 = \mathbf{5005}$
   $143 \times 7 \times 6 = \mathbf{6006}$

2. $4 \times 7 \times 1 = 28$
   $4 \times 7 \times 10 = 280$
   $4 \times 7 \times 100 = \mathbf{2800}$
   $4 \times 7 \times 1000 = \mathbf{28000}$
   $4 \times 7 \times 10000 = \mathbf{280000}$
   $4 \times 7 \times 100000 = \mathbf{2800000}$

C. 1. $42 \times 5000 = 21 \times 2 \times 5000 = 21 \times 10000$. Hence the correct option is (c).

2. By grouping property of multiplication $55 \times (72 \times 26) = (55 \times 26) \times 72$. Hence the correct option is (c).

3. $1000 \times 96 = 96000$. Hence the correct option is (a).

4. The other number = $95400 \div 954 = 100$. Hence the correct option is (c).

5. Multiplicand × Multiplier = Product. Hence, the correct option is (d).

Test Your Knowledge–1

(Chapters 1-3)

1. The place value and face value of the underlined digit in:
   (a) 49$\underline{7}$368 are 7000 and 7 respectively.
   (b) 3$\underline{0}$5648 are 0 and 0 respectively.
   (c) 73$\underline{8}$527 are 8000 and 8 respectively.
   (d) 46289$\underline{1}$ are 90 and 9 respectively.

2. The missing numbers are written in bold.
   (a) Here, the next number is 9000 less than the number just before it. Thus, the complete pattern is: 4,26,375 ; 4,35,375 ; 4,44,375; **4,53,375**; **4,62,375**; **4,71,375**;
   (b) Here, the next number is 1 lakh less than the number just before it. Thus, the complete pattern is: 8,97,268 ; 7,97,268 ; 6,97,268 ; **5,97,268** ; **4,97,268** ; **3,97,268**

3. Write the following numbers in the expanded form.
   (a) 8,24,864 = 8,00,000 + 20,000 + 4,000 + 800 + 60 + 4
   (b) 17,56,204 = 10,00,000 + 7,00,000 + 50,000 + 6,000 + 200 + 4
   (c) 63,11,498 = 60,00,000 + 3,00,000 + 10,000 + 1,000 + 400 + 90 + 8
   (d) 8,27,316 = 8,00,000 + 20,000 + 7,000 + 300 + 10 + 6

4. Round off the following numbers to the nearest 10, 100 and 1000.

	Number	Rounded off to the nearest		
		ten	hundred	thousand
(a)	56,738	56,740	56,700	57,000
(b)	9,73,648	9,73,650	9,73,700	9,74,000
(c)	24,30,569	24,30,569	24,30,569	24,31,000
(d)	30,90,009	30,90,010	30,90,000	30,90,000

5. Given: P = 436489 , Q = 97383 and R = 627648.
   (a) P + Q = 436489 + 97383 = 533872
   (b) P + R = 436489 + 627648 = 10646137
   (c) Q + R= 97383 + 627648 = 725031
   (d) P + Q + R = 436489 + 97383 + 627648 = 11,61,520

6. Given: A = 8047268 , B = 973846 and C = 427366.

(a) A – B = 8047268 – 973846 = 7073422 (b) B – C = 973846 – 427366 = 546480

(c) A – C = 8047268 – 427366 = 7616902

(d) A – B – C = 8047268 – 973846 – 427366 = 6099576

7. Sum of two numbers = 132710 + 46836 = 179546.

Other number = sum of two numbers – one number = 179546 – 100087 = 79459.

8. A man bought a car for = ₹ 5,96,275

He sold the car for = ₹ 2,98,395.

Here, the sold the car for less amount, so he gets a loss.

Loss = Bought price – selling price = ₹ 5,96,275 – ₹ 2,98,395 = ₹ 2,97,880.

Hence, the man gets a loss of ₹ 2,97,880

9. Number of bottles in 1 box = 12 bottles

Number of bottles in 264 boxes = 264 × 12 = 3168 bottles

Hence, there are 3168 bottles in 264 boxes.

If one box contains 12 bottles, how many bottles are there in 264 boxes?

10. Multiply the following.

(a) 56 × 30 = 1680 (b) 87 × 600 = 52200

(c) 94 × 1000 = 94000 (d) 400 × 165 = 66000

11. Number of cement bags in the godown = 6500

Quantity of cement in 1 bag = 52 kg

Quantity of cement in 6500 bags = 6500 × 52

Hence, the total amount of cement in the godown is 338000 kg.

```
  6500
×   52
------
338000
```

12. (a)

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

(b)

	L	TTh	Th	H	T	O
			8	7	6	7
×					2	4
+						

(c)

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

(d) 70004 × 99 = (70004 × 100 – 1) = 7000400 – 70004 = 6930396.

13. (a)

Actual product

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

rounded off to → rounded off to →

Estimated product

	TTh	Th	H	T	O
			2	8	0
×				3	0
			0	0	0
+		8	4	0	0
		8	4	0	0

(b)

Actual product

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

rounded off to → rounded off to →

Estimated product

	TTh	Th	H	T	O
			8	7	0
×				4	0
			0	0	0
+		3	4	8	0
		3	4	0	0

(c)

Actual product

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

rounded off to
rounded off to

Estimated product

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

Similar work to be done for (d).

14. (a)

Actual product

	TTh	Th	H	T	O
		2	6	4	8
×			9	3	6
			7	2	6
	2	1	7	8	0
+	2	4	2	0	0
	4	6	7	0	6

rounded off to
rounded off to

Estimated product

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

(b)

Actual product

	TTh	Th	H	T	O
			2	4	2
×			1	9	3
			7	2	6
	2	1	7	8	0
+	2	4	2	0	0
	4	6	7	0	6

rounded off to
rounded off to

Estimated product

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

Similar work to be done for (d).

15. Rounding off to the nearest 100:

(a) 2648 = 2600 and 936 = 900
Estimated product = 2600 × 900
= 2340000.

(b) 57366 = 57300 and 244 = 240
Estimated product = 2600 × 900
= 2340000.

(c) 87364 = 87400 and 172 = 200
Estimated product = 87400 × 200
= 17480000.

(d) 17349 = 17300 and 98 = 100
Estimated product = 17300 × 100
= 1730000.

Chapter 4. Division

Exercise 4.1

1. (a) 0 ÷ 217 = **0** (b) 425 ÷ 1 = **425** (c) 327 ÷ 327 = **1** (d) **0** ÷ 124 = 0
(e) 975 ÷ **1** = 975 (f) 421 ÷ **421** = 1 (g) **721** ÷ 1 = 721 (h) **248** ÷ 248 = 1

2. The division facts for the given multiplication facts are given in the table given below.

S.No.	Multiplication fact	Division facts	
(a)	26 × 3 = 78	78 ÷ 3 = 26	78 ÷ 26 = 3
(b)	55 × 4 = 220	220 ÷ 4 = 55	220 ÷ 55 = 4
(c)	142 × 12 = 1704	1704 ÷ 12 = 142	1704 ÷ 142 = 12
(d)	93 × 9 = 837	837 ÷ 9 = 93	837 ÷ 93 = 9
(e)	164 × 8 = 1312	1312 ÷ 8 = 164	1312 ÷ 164 = 8

3 (a)

```
    3 2 4
3 | 9 7 3
  – 9
    0 7 3
    – 6
      1 3
    – 1 2
        1
```

Dividend = 973
Divisor = 3
Quotient = 324
Remainder = 1

Verification:
divisor × quotient + remainder
= 3 × 324 + 1
= 972 + 1
= 373 = dividend
Hence, our answer is correct.

(b)

```
    4 2 2
2 | 8 4 5
  – 8
    0 4 5
    – 4
      0 5
    – 0 4
        1
```

Dividend = 845
Divisor = 2
Quotient = 422
Remainder = 1

Verification:
divisor × quotient + remainder
= 2 × 422 + 1
= 844 + 1
= 845 = dividend
Hence, our answer is correct.

(c)

```
    1 0 9
5 | 5 4 5
  – 5
    0 4 5
    – 0 0
      4 5
    – 4 5
        0
```

Dividend = 545
Divisor = 5
Quotient = 109
Remainder = 0

Verification:
divisor × quotient + remainder
= 5 × 109 + 0
= 545 + 0
= 545 = dividend
Hence, our answer is correct.

(d) Similar work is done for it.

Exercise 4.2

1. When a number is divided by 10, the ones place digit of the dividend becomes the remainder and quotient will be the number formed by the remaining digits of the number. Following this rule,

(a) In 72 ÷ 10, R = 2 and Q = 7
(b) In 84 ÷ 10, R = 8 and Q = 4
(c) In 246 ÷ 10 , R = 6 and Q = 24
(d) In 504 ÷ 10, R = 4 and Q = 50
(e) In 440 ÷ 10, R = 0 and Q = 44
(f) In 1924 ÷ 10, R = 4 and Q = 192
(g) In 5241 ÷ 10, R = 1 and Q = 524
(h) In 6420 ÷ 10, R = 0 and Q = 642
(i) In 1054 ÷ 10, R = 4 and Q = 105
(j) In 7234 ÷ 10, R = 4 and Q = 723
(k) In 1002 ÷ 10, R = 2 and Q = 100
(l) In 4020 ÷ 10, R = 0 and Q = 402

Note: *Here we take the remainder as R and the quotient as Q.*

2. When a number is divided by 100, the ones and tens digits of the dividend become the remainder, and the quotient will be the number formed by the remaining digits of number. Following this rule,

(a) In 973 ÷ 100, R = 73 and Q = 9
(b) In 645 ÷ 100 , R = 45 and Q = 6
(c) In 287 ÷ 100, R = 87 and Q = 2
(d) In 105 ÷ 100, R = 05 and Q = 1
(e) In 9999 ÷ 100, R = 99 and Q = 99
(f) In 2048 ÷ 100, R = 48 and Q = 20
(g) In 3964 ÷ 100, R = 64 and Q = 39
(h) In 8764 ÷ 100, R = 64 and Q = 87
(i) In 9736 ÷ 100, R = 36 and Q = 97
(j) In 1000 ÷ 100, R = 0 and Q = 10
(k) In 8875 ÷ 100, R = 75 and Q = 88
(l) In 2000 ÷ 100, R = 0 and Q = 20

3. When a number is divided by 1000, the ones, tens and hundreds place digits of the dividend become the remainder, and the number formed by the rest digits will be the quotient. Following this rule,

(a) In 1045 ÷ 1000, R = 45 and Q = 1
(b) In 2734 ÷ 1000, R = 734 and Q = 2
(c) In 1454 ÷ 1000, R = 454 and Q = 1
(d) In 2408 ÷ 1000, R = 408 and Q = 2
(e) In 9999 ÷ 1000, R = 999 and Q = 9
(f) In 4444 ÷ 1000, R = 444 and Q = 4
(g) In 7000 ÷ 1000, R = 0 and Q = 7
(h) In 8094 ÷ 1000, R = 94 and Q = 8
(i) In 15427 ÷ 1000, R = 427 and Q = 15
(j) In 6487 ÷ 1000, R = 487 and Q = 6
(k) In 2717 ÷ 1000, R = 717 and Q = 2
(l) In 9324 ÷ 1000, R = 324 and Q = 9

Exercise 4.3

1. Dividing by long division method, we get the quotient and remainder of each.

(a)
```
      9 3 7
  9 ) 8 4 3 4
    – 8 1
      0 3 3
    – 2 7
        0 6 4
      – 6 3
          1
```
Quotient = 937
Remainder = 1

(b)
```
      1 4 7 2
  5 ) 7 3 6 0
    – 5
      2 3
    – 2 0
        3 6
      – 3 5
          1 0
        – 1 0
            0
```
Quotient = 1472
Remainder = 0

(c)
```
      7 2 7
  6 ) 4 3 6 9
    – 4 2
      0 1 6
    – 1 2
        0 4 9
      – 4 2
            7
```
Quotient = 727
Remainder = 7

(d)
```
      9 1 9
  7 ) 6 4 3 6
    – 6 3
      0 1 3
        – 7
          6 6
        – 6 3
            3
```
Quotient = 919
Remainder = 3

(e)
```
      5 6
 14 ) 7 9 6
    – 7 0
      0 9 6
    – 8 4
        1 2
```
Quotient = 56
Remainder = 12

(f)
```
      3 6
 13 ) 4 8 0
    – 3 9
      0 9 0
      – 7 8
        1 2
```
Quotient = 919
Remainder = 3

(g)
```
      6 1
 16 ) 9 8 7
    – 9 6
      0 2 7
    – 1 6
        1 1
```
Quotient = 61
Remainder = 11

(d)
```
      1 7
 23 ) 4 0 9
    – 2 3
      1 7 9
    – 1 6 1
        1 8
```
Quotient = 17
Remainder = 18

(i)

```
      252
32 ) 8090
    -64
     169
    -160
     090
     -64
      26
```

Quotient = 252
Remainder = 26

(j)

```
      253
21 ) 5327
    -42
     112
    -105
      77
     -63
      14
```

Quotient = 253
Remainder = 14

(k)

```
      372
25 ) 9311
    -75
     181
    -175
     061
     -50
      11
```

Quotient = 372
Remainder = 11

(l)

```
       76
28 ) 2142
    -196
     0182
     -168
       15
```

Quotient = 253
Remainder = 14

2. (a)

```
     1054
8 ) 8434
   -8
    043
    -40
     034
     -32
       2
```

Q = 1054 and R= 2
Check:
divisor × quotient + remainder
= 8 × 1054 + 2
= 8432 + 2
= 8434 = dividend

(b)

```
     636
9 ) 5731
   -54
    033
    -27
     061
     -54
       7
```

Q = 636 and R= 7
Check:
divisor × quotient + remainder
= 9 × 636 + 7
= 5724 + 2
= 5731 = dividend

(c)

```
     720
6 ) 4324
   -42
    012
    -12
     004
     -00
       4
```

Q = 720 and R= 4
Check:
divisor × quotient + remainder
= 6 × 720 + 4
= 4320 + 4
= 4324 = dividend

(d)

```
     470
7 ) 3296
   -28
    049
    -49
     006
     -00
       6
```

Q = 470 and R= 6
Check:
divisor × quotient + remainder
= 7 × 470 + 6
= 3290 + 6
= 3296 = dividend

(e)

```
     68
3 ) 205
   -18
    025
    -24
      1
```

Q = 68 and R= 1
Check:
divisor × quotient + remainder
= 3 × 68 + 1
= 204 + 1
= 205 = dividend

(f)

```
      30
12 ) 364
    -36
     004
     -00
       4
```

Q = 68 and R= 1
Check:
divisor × quotient + remainder
= 3 × 68 + 1
= 204 + 1
= 205 = dividend

(g)
$$\begin{array}{r|l} & 27 \\ \hline 16 & 437 \\ & -32 \\ \hline & 117 \\ & -112 \\ \hline & 5 \end{array}$$

Q = 27 and R= 5
Check:
divisor × quotient + remainder
= 16 × 27 + 5
= 432 + 5
= 437 = dividend

(h)
$$\begin{array}{r|l} & 43 \\ \hline 23 & 999 \\ & -92 \\ \hline & 079 \\ & -69 \\ \hline & 10 \end{array}$$

Q = 43 and R= 10
Check:
divisor × quotient + remainder
= 23 × 43 + 10
= 989 + 10
= 999 = dividend

(i)
$$\begin{array}{r|l} & 157 \\ \hline 34 & 5367 \\ & -34 \\ \hline & 196 \\ & -170 \\ \hline & 267 \\ & 238 \\ \hline & 29 \end{array}$$

Q = 157 and R= 29
Check:
divisor × quotient + remainder
= 34 × 157 + 29
= 5338 + 29
= 5567 = dividend

(j)
$$\begin{array}{r|l} & 252 \\ \hline 28 & 7063 \\ & -56 \\ \hline & 146 \\ & -140 \\ \hline & 063 \\ & 56 \\ \hline & 7 \end{array}$$

Q = 252 and R= 7
Check:
divisor × quotient + remainder
= 28 × 252 + 7
= 7056 + 7
= 7063 = dividend

(k)
$$\begin{array}{r|l} & 111 \\ \hline 72 & 8027 \\ & -72 \\ \hline & 082 \\ & -72 \\ \hline & 107 \\ & -72 \\ \hline & 35 \end{array}$$

Q = 111 and R= 35
Check:
divisor × quotient + remainder
= 72 × 111 + 35
= 7992 + 35
= 8027 = dividend

(l)
$$\begin{array}{r|l} & 56 \\ \hline 96 & 5436 \\ & -480 \\ \hline & 0636 \\ & -576 \\ \hline & 60 \end{array}$$

Q = 56 and R= 60
Check:
divisor × quotient + remainder
= 96 × 56 + 60
= 5376 + 60
= 5436 = dividend

3. Using the division algorithm, we get:
   (a) dividend = divisor × quotient + remainder = 24 × 845 +16 = 20280 + 16 = 20296.
   (b) dividend = divisor × quotient + remainder = 18 × 973 +11 = 17514 + 11 = 17525.
   (c) dividend = divisor × quotient + remainder = 32 × 1423 + 20 = 45536 + 20 = 45556.
   (d) dividend = divisor × quotient + remainder = 24 × 1042 + 7 = 25008 + 7 = 25015.
   (e) dividend = divisor × quotient + remainder = 26 × 4273 + 24 = 111098 + 16 = 111114.

Exercise 4.4

1.

(a) Cost of 4 frocks = ₹ 2960
Cost of 1 frock = ₹ 2960 ÷ 4

$$\begin{array}{r|l} & 740 \\ \hline 4 & 2960 \\ & -28 \\ \hline & 016 \\ & -16 \\ \hline & 00 \end{array}$$

Hence, the cost of 1 frock is ₹ 740.

(b) Total number of soldiers = 1170
Number of soldiers in 1 bus = 45
Number of buses required = 1170 ÷ 4

$$\begin{array}{r|l} & 740 \\ \hline 4 & 2960 \\ & -28 \\ \hline & 016 \\ & -16 \\ \hline & 00 \end{array}$$

Hence, the cost of 1 frock is ₹ 740.

(c) Total number of biscuit packets = 3648
Number of biscuit packets in 1 carton = 24
Number of cartons required = 3648 ÷ 24

```
        1 5 2
24 ) 3 6 4 8
    – 2 4
      1 2 4
    – 1 2 0
          4 8
          4 8
            0
```

Hence, the cost of 1 frock is ₹ 740.

(d) Total number of books in the library = 2885
Number of shelves = 23
Number of books in each shelf = 2885 ÷ 23

```
        1 2 5
23 ) 2 8 8 5
    – 2 3
      0 5 8
    – 4 6
        1 2 5
        1 1 5
          1 0
```

Hence, 125 books can be arranged in each shelf.

(e) Distance covered by the bus in 14 trips
= 3472
Distance covered by the bus in 1 trip
= 3472 ÷ 14

```
        2 4 8
14 ) 3 4 7 2
    – 2 8
      0 6 7
    – 5 6
        1 1 2
      – 1 1 2
            0
```

Hence, the distance covered by the bus in 1 trip is 248 km.

(f) Number of cartons of apples that 16 trucks can carry = 3200
Number of cartons of apples that 1 truck can carry = 3200 ÷ 16

```
        2 0 0
16 ) 3 2 0 0
    – 3 2
      0 0 0
    – 0 0 0
        0 0
      – 0 0
          0
```

Hence, 1 truck can carry 200 cartons of apples.

(g) Number of stamps arranged in 18 albums = 5850
Number of stamps arranged in each album = 5850 ÷ 18
Dividing we get the quotient 36 and the remainder 9.
The remainder 9 shows that 9 stamps were left over.
Hence, there were 36 stamps in each album and 9 stamps left over..

```
        3 6
18 ) 5 8 5 0
    – 5 4
      0 4 5
    – 3 6
        0 9
```

2. (a) 8168 buttons are packed in 8 packets. How many buttons does each packet have?
(b) A shopkeeper bought 5 calculators for ₹ 6535. Find the cost of each calculator.
(c) The cost of 9 school bags is ₹ 3879. Find the cost of each such bag.
(d) If 28 books of Mathematics can be bought for ₹ 6860, find the cost of each book of Mathematics.
(e) A manufacturer packed 8702 erasers in 19 boxes. How many erasers are there in each box?
(f) A farmer had 1690 apples. He packed them in 14 boxes to sell in the marked. Were there any apples left over?

Exercise 4.5

(a) Rounding off the dividend 26 to 30.
Rounding off the divisor 12 to 10.
So, dividing, we get: 30 ÷ 10 = 3.
Hence, the estimated quotient is 3.

(b) Rounding off the dividend 58 to 60.
Rounding off the divisor 32 to 30.
So, dividing, we get: 60 ÷ 30 = 2.
Hence, the estimated quotient is 2.

(c) Rounding off the dividend 44 to 40.
Rounding off the divisor 16 to 20.
So, dividing, we get: 40 ÷ 20 = 2.
Hence, the estimated quotient is 2.

(d) Rounding off the dividend 92 to 90.
Rounding off the divisor 14 to 10.
So, dividing, we get: 90 ÷ 10 = 9.
Hence, the estimated quotient is 9.

(e) Rounding off the dividend 142 to 100.
Rounding off the divisor 23 to 20.
So, dividing, we get: 100 ÷ 20 = 5.
Hence, the estimated quotient is 7.

(f) Rounding off the dividend 252 to 300.
Rounding off the divisor 54 to 50.
So, dividing, we get: 300 ÷ 50 = 6.
Hence, the estimated quotient is 6.

(g) Rounding off the dividend 124 to 100.
Rounding off the divisor 34 to 30.
So, dividing, we get: 100 ÷ 30 = 3.
Hence, the estimated quotient is 3.

(h) Rounding off the dividend 299 to 300.
Rounding off the divisor 29 to 30.
So, dividing, we get: 300 ÷ 30 = 10.
Hence, the estimated quotient is 10.

(i) Rounding off the dividend 1436 to 1000.
Rounding off the divisor 15 to 20.
So, dividing, we get: 1000 ÷ 20 = 50.
Hence, the estimated quotient is 50.

(j) Rounding off the dividend 5843 to 6000.
Rounding off the divisor 64 to 60.
So, dividing, we get: 6000 ÷ 60 = 100.
Hence, the estimated quotient is 100.

(k) Rounding off the dividend 3294 to 3000.
Rounding off the divisor 19 to 20.
So, dividing, we get: 3000 ÷ 20 = 150.
Hence, the estimated quotient is 150.

(l) Rounding off the dividend 2059 to 2000.
Rounding off the divisor 42 to 40.
So, dividing, we get: 2000 ÷ 40 = 50.
Hence, the estimated quotient is 50.

Exercise 4.6

(a) We know that 1 dozen = 12
Cost of 12 apples = ₹ 108
Cost of 1 apple = ₹ 108 ÷ 12 = ₹ 9
Cost of 6 apples = ₹ 9 × 6 = ₹ 54
Hence, the cost of 6 apples is ₹ 54.

(b) Cost of 12 pineapples = ₹ 384
Cost of 1 pineapple = ₹ 384 ÷ 12 = ₹ 32
Cost of 8 pineapples = ₹ 32 × 8 = ₹ 256
Hence, the cost of 8 pineapples is ₹ 256.

(c) Cost of 16 mathematics books = ₹ 2,800
Cost of 1 mathematics book = ₹ 2,800 ÷ 16 = ₹ 175
Cost of 12 mathematics books = ₹ 175 × 12 = ₹ 2,100
Hence, the cost of 8 mathematics books is ₹ 2,100.

(d) Distance covered by a car in 9 hours = 405 km
Distance covered by the car in 1 hour = 405 km ÷ 9 = 45 km
Distance covered by the car in 14 hours = 45 km × 14 = 630 km
Hence, the distance covered by the car in 14 hours is 630 km.

(e) Distance covered by a train in 16 hours = 1152 km
Distance covered by the car in 1 hour = 1152 km ÷ 16 = 72 km
Distance covered by the car in 14 hours = 72 km × 14 = 1008 km

Hence, the distance covered by the car in 14 hours is 1008 km.

(f) Number of books arranged in 5 shelves = 670 books
Number of books arranged in 1 shelf = 670 ÷ 5 = 134 books
Number of books arranged in 3 shelves = 134 × 3 = 402 books
Hence, 402 books can be arranged in 3 shelves.

(g) Amount of money collected by 42 children to donate = ₹ 2,520
Amount of money collected by 1 child to donate = ₹ 2,520 ÷ 42 = ₹ 60
Amount of money collected by 18 children to donate = ₹ 60 × 18 = ₹ 1080.
Hence, 18 children collected ₹ 1080 to donate the oldage home.

Revision Exercise

1. (a) 273 ÷ 1 = **273** (b) 489 ÷ 489 = **1** (c) 0 ÷ 52 = **0** (d) **1452** ÷ 1 = 1452
(e) 2100 ÷ 21 = 100 (f) 1608 ÷ **1** = 1608 (g) 5736 ÷ **5736** = 1 (h) **0** ÷ 41 = 0
(i) 750 ÷ 10 = **75** (j) 5700 ÷ 100 = **57** (k) **1440** ÷ 10 = 144 (l) 180 ÷ **10** = 18

2. Following the rules of a number by 10, 100 and 1000, we get
(a) In 49 ÷ 10, R = 9 and Q = 4
(b) In 968 ÷ 100, R = 68 and Q = 9
(c) In 8427 ÷ 1000, R = 427 and Q = 4
(d) In 560 ÷ 10, R = 0 and Q = 56
(e) In 2700 ÷ 100, R = 0 and Q = 27
(f) In 1407 ÷ 1000, R = 407 and Q = 1
(g) In 1490 ÷ 10, R = 0 and Q = 149
(h) In 1000 ÷ 100, R = 0 and Q = 10
(i) In 4020 ÷ 1000, R = 20 and Q = 4
(j) In 3254 ÷ 100, R = 54 and Q = 32
(k) In 8436 ÷ 10, R = 6 and Q = 843
(l) In 2736 ÷ 1000, R = 2 and Q = 736

1. Dividing by long division method, we get the quotient and remainder of each.

(a)
```
     1 0 0 5
  7 ) 7 0 3 5
    – 7
      0 0 3
    – 0 0
        0 3 5
      – 3 5
          0
```
Quotient = 1005
Remainder = 0

(b)
```
      6 0 9
  4 ) 2 4 3 9
    – 2 4
      0 0 3
    – 0 0 0
          3 9
        – 3 6
            3
```
Quotient = 609
Remainder = 3

(c)
```
      8 6 0
  9 ) 7 7 4 3
    – 7 2
      0 5 4
    – 5 4
          3
```
Quotient = 860
Remainder = 3

(d)
```
       2 1 0
  13 ) 2 7 3 4
     – 2 6
       0 1 3
     – 1 3
           4
```
Quotient = 210
Remainder = 4

(e)
```
       3 5 1
  16 ) 5 6 2 4
     – 4 8
       0 8 2
     – 8 0
         0 2 4
       – 1 6
             8
```
Quotient = 351
Remainder = 8

(f)
```
       3 0 9
  26 ) 8 0 4 9
     – 7 8
       0 2 4
     – 0 0
         2 4 9
       – 2 3 4
           1 5
```
Quotient = 309
Remainder = 15

(g)

```
      7 4 5
12 ) 8 9 4 6
    – 8 4
      0 5 4
    – 4 8
        0 6 6
      – 6 0
          0 6
```

Quotient = 745
Remainder = 6

(h)

```
      2 9 9
24 ) 7 1 8 5
    – 4 8
      2 3 8
    – 2 1 6
        2 2 5
      – 2 1 6
            9
```

Quotient = 299
Remainder = 9

(i)

```
      1 1 2
18 ) 2 0 2 7
    – 1 8
      2 2
    – 1 8
        4 7
      – 3 6
        1 1
```

Quotient = 112
Remainder = 11

(j)

```
      5 2 0
18 ) 9 3 6 7
    – 9 0
      0 3 6
    – 3 6
        0 7
```

Quotient = 520
Remainder = 7

Similar work to be done for (k) and (l).

4. (a)

```
     2 5 6
6 ) 1 5 3 8
   – 1 2
     0 3 3
   – 3 0
       0 3 8
     – 3 6
           2
```

Q = 256 and R= 2
Verification:
divisor × quotient + remainder
= 8 × 256 + 2
= 1536 + 2
= 1538 = dividend
Hence, verified.

(b)

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

Q = 1496 and R= 0
Verification:
divisor × quotient + remainder
= 5 × 1496 + 0
= 7480 + 0
= 7480 = dividend.
Hence, verified.

(c)

```
     1 0 8 0
6 ) 6 4 8 5
   – 6
     0 4 8
   – 4 8
       0 3
```

Q = 1080 and R= 5
Verification:
divisor × quotient + remainder
= 6 × 1080 + 5
= 6480 + 5
= 6485 = dividend
Hence, verified.

(d)

```
      7 0 9
14 ) 9 9 2 8
    – 9 8
      0 1 2 8
    – 1 2 6
          0 2
```

Q = 709 and R= 2
Verification:
divisor × quotient + remainder
= 14 × 709 + 2
= 9926 + 2
= 9928 = dividend.
Hence, verified.

(e)

```
      5 2 5
13 ) 6 8 2 8
    – 6 5
      0 3 2
    – 2 6
        0 6 8
      – 6 5
            3
```

Q = 525 and R= 3
Verification:
divisor × quotient + remainder
= 13 × 525 + 3
= 6825 + 3
= 6828 = dividend
Hence, verified.

(f)

```
      5 1 1
15 ) 7 6 7 2
    – 7 5
      0 1 7
    – 1 5
        2 2
      – 1 5
          7
```

Q = 511 and R= 7
Verification:
divisor × quotient + remainder
= 15 × 511 + 7
= 7665 + 7
= 7672 = dividend.
Hence, verified.

(g)

```
       9 0
27 ) 2 4 4 5
    −2 4 3
     0 0 1 5
```

Q = 90 and R= 15
Verification:
divisor × quotient + remainder
= 27 × 90 + 15
= 2430 + 15
= 2445 = dividend
Hence, verified.

(h)

```
       3 3 4
17 ) 5 6 8 0
    −5 1
     0 5 8
    −5 1
       7 0
     −6 8
         2
```

Q = 511 and R= 7
Verification:
divisor × quotient + remainder
= 17 × 334 + 2
= 5678 + 2
= 5680 = dividend.
Hence, verified.

(i)

```
       4 7 0
18 ) 8 4 7 2
    −7 2 3
     1 2 7
    −1 2 6
       1 2
```

Q = 470 and R= 12
Verification:
divisor × quotient + remainder
= 18 × 470 + 12
= 8460 + 12
= 8472 = dividend
Hence, verified.

(j)

```
       6 6 8
14 ) 9 3 6 4
    −8 4
     0 9 6
    −8 4
       1 2 4
     −1 1 2
         1 2
```

Q = 668 and R= 14
Verification:
divisor × quotient + remainder
= 14 × 668 + 12
= 9352 + 12
= 9364 = dividend.
Hence, verified.

Similar work to be done for (k) and (l).

5. Rounding off to the nearest 10:

(a) 2477 = 2480 and 16 = 20

```
       1 2 4
20 ) 2 4 8 0
    −2 0
     0 4 8
    −4 0
     0 8 0
    −8 0
     1 1
```

So, the estimated quotient is 124.

(b) 8243 = 8240 and 14 = 10

```
       8 2 4
10 ) 8 2 4 0
    −8 0
     0 2 4
    −2 0
     0 4 0
    −4 0
       0
```

So, the estimated quotient is .824.

(c) 9354 = 9350 and 15 = 20

```
       4 6 7
20 ) 9 3 5 0
    −8 0
     1 3 5
    −1 2 0
       1 5 0
     −1 4 0
       1 0
```

So, the estimated quotient is 467.

(d) 1604 = 1600 and 13 = 10

```
       1 6 0
10 ) 1 6 0 0
    −1 0
     0 6 0
    −6 0
       0
```

So, the estimated quotient is 160.

6

(a) Total number of pens = 1476
Number of packets they are packed = 12
Number of pens in each packet = 1476 ÷ 12

```
       1 2 3
12 ) 1 4 7 6
    −1 2
     0 2 7
    −2 4
     0 3 6
    −3 6
       0
```

Hence, each packet contains 123 pens.

(b) Amount Aditya spent for tickets = ₹ 7620
Number of tickets he bought = 12
Cost of each ticket = ₹ 7620 ÷ 12

```
       6 3 5
12 ) 7 6 2 0
    −7 2
     0 4 2
    −3 6
     0 6 0
    −6 0
       0
```

Hence, the cost of each ticket is ₹ 635.

(c) Total points scored in a game = 9968
Number of rounds for scoring points = 14
Number of points scored in each round = 9968 ÷ 14
= 712 points.
Hence, 712 points were scored in each round.

```
   712
14 9968
  -98
   016
  -14
    028
   -28
     0
```

7. (a) Cost of 6 kites = ₹ 120
Cost of 1 kite = ₹ 120 ÷ 6 = ₹ 20.
Cost of 16 kites = 16 × ₹ 20 = ₹ 320.
Hence, the cost of 16 kites is ₹ 320.

(b) Cost of 72 L of milk = ₹ 2448
Cost of 1 L of milk = ₹ 2448 ÷ 72 = ₹ 34.
Cost of 125 L of milk = 125 × ₹ 35 = ₹ 4375.
Hence, the cost of 125 L of milk would be ₹ 320.

(c) Quantity of milk poured in 8 glasses = 2000 mL
Quantity of milk poured in 1 glass = 2000 mL ÷ 8 = 250 mL
Quantity of milk poured in 12 glasses = 250 mL × 12 = 3000 mL.
Hence, the quantity of milk that 12 glasses contain is 3000 mL.

(d) Cost of 15 tickets of the new multiplex theatre = ₹ 1875
Cost of 1 ticket of the new multiplex theatre = ₹ 1875 ÷ 15 = ₹ 125.
Cost of 24 tickets of the new multiplex theatre = ₹ 125 × 24 = ₹ 3000.
Hence, the cost of 24 tickets of the new multiplex theatre is ₹ 3000.

HOTS (Creating Thinking & Reasoning)

1. First we find the product of 72 and 24.
The product of 72 and 24 is 1728.
Now, we the product 1728 by 96.
1728 ÷ 96 = 18.
Hence the answer is 18.

	Th	H	T	O
			7	2
×			2	4
		2	8	8
+	1	4	4	0
	1	7	2	8

```
   18
96 1728
  -96
   768
  -768
     0
```

2. The largest four-digit number = 9999
The largest two-digit number = 99
Dividing, we get: 9999 ÷ 99 = 101.
Hence, the quotient is 101 and the remainder is 0.

```
   101
99 9999
  -99
   099
  -99
    0
```

Case-based Questions

1. Number of fossils the paleontologist keeps in boxes = 1476
Number of fossils in each box = 12
Number of boxes of fossils that can be made = 1476 ÷ 12 = 123.
Hence, 123 boxes of fossils can be made.

2. Total number of pilots having flying experience = 6
Time of flying experience taken by these pilots = 1,266 hours
Experience time of each pilot = 1,266 ÷ 6 = 211 hours.
Hence, each of these pilots has a flying experience of 211 hours.

3. Number of slices of dried fruits a space shuttle carries = 340 slices
   Number of astronauts = 10
   Number of slices (packets) of dried fruits each astronaut takes = 340 ÷ 10 = 34 slices.
   Hence, each of the astronauts takes 34 slices of dried fruits.
4. Number of cookies the chef bakes = 210
   Number of cookies he packed in 1 box = 30
   Number of boxes required to pack all cookies = 210 ÷ 30 = 7.
   Hence, the chef needs 7 boxes to pack all the cookies.
5. Total number of brushes the artist has = 168
   Number of brushes in 1 box = 14
   Number of boxes of brushes 168 ÷ 14 = 12
   Hence, the artist has 12 boxes of brushes.

Mental Maths

A. The completed division patterns are given on the next page.

1.	2.	3.
8 ÷ 2 = 4	81 ÷ 9 = 9	36 ÷ 6 = 6
80 ÷ 2 = 40	810 ÷ 9 = 90	360 ÷ 6 = 60
800 ÷ 2 = 400	8100 ÷ 9 = 900	3600 ÷ 6 = 600
8000 ÷ 2 = 4000	81000 ÷ 9 = 9000	36000 ÷ 6 = 6000
80000 ÷ 2 = 40000	810000 ÷ 9 = 90000	360000 ÷ 6 = 60000

B.
1. Using the division rule by 100, we get 9600 ÷ 100 = 96. Hence, the correct option is (b).
2. 350 ÷ 7 = 50. Hence, the correct option is (a).
3. 5600 ÷ 8 = 700. Hence, the correct option is (c)
4. Total number of photographs = 1236
   Number of photographs can be fit in each page = 12
   Number of pages Rakhi needs = 1236 ÷ 12 = 103.
   Hence, the correct option is (d).
5. Rounding off to the nearest ten, 4231 = 4230 and 17 = 20. So the best estimation for 4231 ÷ 17 is 4230 ÷ 20. Hence, the correct option is (b).

Chapter 5. Multiples and Factors

Exercise 5.1

1. The first six multiples of:
   (a) 2 are: 2 × 1, 2 × 2, 2 × 3, 2 × 4, 2 × 5 and 2 × 6, *i.e.*, 2, 4, 6, 8, 10 and 12.
   (b) 3 are: 3 × 1, 3 × 2, 3 × 3, 3 × 4, 3 × 5 and 3 × 6, *i.e.*, 3, 6, 9, 12, 15 and 18.
   (c) 7 are: 7 × 1, 7 × 2, 7 × 3, 7 × 4, 7 × 5 and 7 × 6, *i.e.*, 7, 14, 21, 28, 35 and 42.
   (d) 8 are: 8 × 1, 8 × 2, 8 × 3, 8 × 4, 8 × 5 and 8 × 6, *i.e.*, 8, 16, 24, 32, 40 and 48.
   (e) 11 are: 11 × 1, 11 × 2, 11 × 3, 11 × 4, 11 × 5 and 11 × 6, *i.e.*, 11, 22, 33, 44, 55 and 66.
   (f) 10 are: 10 × 1, 10 × 2, 10 × 3, 10 × 4, 10 × 5 and 10 × 6, *i.e.*, 10, 20, 30, 40, 50 and 60.
   (g) 15 are: 15 × 1, 15 × 2, 15 × 3, 15 × 4, 15 × 5 and 15 × 6, *i.e.*, 15, 30, 45, 60, 75 and 90.
   (h) 20 are: 20× 1, 20 × 2, 20 × 3, 20 × 4, 20 × 5 and 20 × 6, *i.e.*, 20, 40, 60, 80, 100 and 120.
   (i) 24 are: 24 × 1, 24 × 2, 24 × 3, 24 × 4, 24 × 5 and 24 × 6, *i.e.*, 24, 48, 72, 96, 120 and 144.
   (j) 32 are: 32 × 1, 32 × 2, 32 × 3, 32 × 4, 32 × 5 and 32 × 6, *i.e.*, 32, 64, 96, 128, 160 and 192.

(k) 55 are: 55 × 1, 55 × 2, 55 × 3, 55 × 4, 55 × 5 and 55 × 6, *i.e.*, 55, 110, 165, 220, 275 and 330.

(l) 75 are: 75 × 1, 75 × 2, 75 × 3, 75 × 4, 75 × 5 and 75 × 6, *i.e.*, 75, 150, 225, 300, 375 and 450.

(m) 84 are: 84 × 1, 84 × 2, 84 × 3, 84 × 4, 84 × 5 and 84 × 6, *i.e.*, 84, 168, 252, 336, 420 and 504.

(n) 90 are: 90 × 1, 90 × 2, 90 × 3, 90 × 4, 90 × 5 and 90 × 6, *i.e.*, 9, 180, 270, 360, 450 and 540.

(o) 95 are: 95 × 1, 95 × 2, 95 × 3, 95 × 4, 95 × 5 and 95 × 6, *i.e.*, 95, 190, 285, 380, 475 and 570.

2. (a) The 8th multiple of 9 = 8 × 9 = 72.

(b) The 4th multiple of 12 = 4 × 12 = 48.

(c) Multiple of 11 are: 11 × 1 = 11, 11 × 2 = 22, 11 × 3 = 33, 11 × 4 = 44, 11 × 5 = 55, 11 × 6 = 66, 11 × 7 = 77, 11 × 8 = 8, 11 × 9 = 99, 11 × 10 = 110. Here, 110 is greater than 100.

Hence, the multiples of 11 less than 100 are: 11, 22, 33, 44, 55, 66, 77, 88 and 99.

(d) We know that 13 × 6 = 78. So, the first four multiples of 13 greater than 78 are: 13 × 7 = 91, 13 × 8 = 104, 13 × 9 = 117, 13 × 10 = 130.

Hence, the first four multiples of 13 greater than 78 are: 91, 104, 117 and 130.

(e) The first four even multiples of 9 are: 9 × 2 = 18, 9 × 4 = 36, 9 × 6 = 54, 9 × 8 = 72.

Hence, the first four even multiples of 9 are: 18, 36, 54 and 108.

(f) The first four odd multiples of 15 are: 15 × 1 = 15, 15 × 3 = 45, 15 × 5 = 75, 15 × 7 = 105.

Hence, the first four odd multiples of 15 are: 15, 45, 75 and 105.

(g) We know that 6 × 8 = 48 and 6 × 20 = 120. So the multiples of 6 between 48 and 120 are: 6 × 9 = 54, 6 × 10 = 60, 6 × 11 = 66, 6 × 12 = 72, 6 × 13 = 78, 6 × 14 = 84, 6 × 15 = 90, 6 × 16 = 96, 6 × 17 = 102, 6 × 18 = 108, and 6 × 19 = 114.

Hence, the required multiples of 6 are: 54, 60, 66, 72, 78, 84, 90, 96, 102, 108 and 114.

(h) Multiples of 3 are: 3, 6, 9, 12, 15, 18, 21, ...

The first three multiples of 7 divisible by 3 are: 7 × 3, 7 × 6, and 7 × 9, *i.e.*, 21, 42, and 63.

Hence, the first three multiples of 7 divisible by 3 are: 21, 42, and 63.

3. (a) As 7 × 7 = 49, 49 is a multiple of 7.

(b) As 13 × 5 = 65, so 65 is a multiple of 5.

(c) Dividing 155 by 16, we get the remainder 11.

```
      9
16 ) 155
    -144
     011
```

Hence,155 is not a multiple of 16.

(d) Dividing 909 by 9, we find that no remainder is left.

Hence, 909 is a multiple of 9.

```
    101
9 ) 909
   -9
    009
    009
      0
```

(e) Dividing 7548 by 8, we get the remainder 4.

```
     943
8 ) 7548
   -72
    034
    -32
      28
     -24
      04
```

Hence,7548 is not a multiple of 8.

(f) Dividing 5484 by 14, we get the remainder 10.

```
      39
14 ) 5484
    -42
     128
    -126
       24
      -14
       10
```

Hence, 5484 is not a multiple of 14.

4. If the second number is completely divided by the first number without any remainder, so it is a multiple of the first number.

(a) Dividing 96 by 9, we get

$$\begin{array}{r} 10 \\ 9\overline{)\,96} \\ -90 \\ \hline 6 \end{array}$$

As remainder is 6, so 96 is not a multiple of 9.

(b) Dividing 110 by 7, we get

$$\begin{array}{r} 15 \\ 7\overline{)\,110} \\ -105 \\ \hline 5 \end{array}$$

As remainder is 5, so 110 is not a multiple of 7

(c) Dividing 128 by 8, we get

$$\begin{array}{r} 16 \\ 8\overline{)\,128} \\ -128 \\ \hline 0 \end{array}$$

As remainder is 0, so 128 is a multiple of 8

(d) Here, $12 \times 12 = 144$, so the second number 144 is a multiple of the first number 12.

Exercise 5.2

1. (a) Multiples of 5 are: 5, 10, 15, 20, 25, 30, 35, **40**,45, ...
Multiples of 8 are: 8, 16, 24, 32, **40**, 48, 56, 64,72, 80, ...
The first common multiple of 5 and 8 is 40.
Hence, the first four common multiples of 5 and 8 are 40, 80, 120 and 160.

(b) Multiples of 8 are: 8, 16, **24**, 32, 40, **48**, 56, 64, **72**, 80, 88, **96**, ...
Multiples of 12 are: 12, **24**, 36, **48**, 60, **72**, 84, **96**, ...
Hence, the first four common multiples of 8 and 12 are 24, 48, 72 and 96.

(c) Multiples of 6 are: 6, 12, **18**, 24, 30, **36**, 42, 48, **54**, 60, 66, **72**, 78, ...
Multiples of 9 are: 9, **18**, 27, **36**, 45, **54**, 63, **72**, ...
Hence, the first four common multiples of 6 and 9 are 18, 36, 54 and 72.

(d) Multiples of 8 are: 8, 16, 24, 32, **40**, 48, 56, 64, 72, **80**, 88, 96, ...
Multiples of 10 are: 10, 20, 30, **40**, 50, 60, 70, **80**, ...
The first common multiple of 8 and 10 is 40.
Hence, the first four common multiples of 8 and 10 are 40, 80, 120 and 160.

(e) Multiples of 2 are: 2, 4, 6, 8, 10, **12**, 14, 16, 18, 20, 22, **24**, ...
Multiples of 4 are: 4, 8, **12**, 16, 20, **24**, 28, ...
Multiples of 6 are: 6, **12**, 18, **24**, 30, 36, 42, 48, 54, 60, 66, 72, 78, ...
The first common multiple of 2, 4 and 6 is 12.
Hence, the first four common multiples of 2, 4 and 6 are: 12, 24, 36 and 48.

(f) Multiples of 5 are: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, ..., 110, 115, **120**, ...
Multiples of 6 are: 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, ..., 96, 102, 108, 114, **120**, ...
Multiples of 8 are: 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, ..., 96, 104, 112, **120**, ...
The first common multiple of 5, 6 and 8 is 120.
Hence, the first four common multiples of 5, 6 and 8 are 120, 240, 360 and 480.

(g) Multiples of 3 are: 3, 6, 9, 12, 15, **18**, 21, 24, 27, 30, 33, **36**, ..., 99, 102, 105, ...
Multiples of 6 are: 6, 12, **18**, 24, 30, **36**, 42, 48, 54, 60, 66, ..., 96, 102, 108, 114, 120, ...
Multiples of 9 are: 9, **18**, 27, **36**, 45, 54, 63, 72, ...
The first common multiple of 3, 6 and 9 is 18.
Hence, the first four common multiples of 3, 6 and 9 are 18, 36, 54 and 72.

(h) Multiples of 5 are: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, **60**, ..., 110, 115, 120, ...
Multiples of 10 are: 10, 20, 30, 40, 50, **60**, 70, 80, ...
Multiples of 12 are: 12, 24, 36, 48, **60**, 72, 84, 96, ...
The first common multiple of 5, 10 and 12 is 60.
Hence, the first four common multiples of 5, 10 and 12 are 60, 120, 180 and 240.

2. (a) Multiples of 5 are: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, **60**, 65, 70, ...
Multiples of 12 are: 12, 24, 36, 48, **60**, 72, 84, 96, ...
The first common multiple of 5 and 12 is 60, which is the LCM of 5 and 12.
Hence, the LCM of 5 and 12 is 60.

(b) Multiples of 8 are: 8, 16, 24, 32, **40**, 48, 56, 64, 72, 80, 88, ..., 96, 104, 112, 120, ...
Multiples of 10 are: 10, 20, 30, **40**, 50, 60, 70, 80, 90, 100, ...
The first common multiple of 8 and 10 is 40, which is the LCM of 8 and 10.
Hence, the LCM of 8 and 10 is 40.

(c) Multiples of 4 are: 4, 8, 12, 16, **20**, 24, 28, 32, 36, 40, ...
Multiples of 10 are: 10, **20**, 30, 40, 50, 60, 70, 80, 90, 100, ...
The first common multiple of 4 and 10 is 20, which is the LCM of 4 and 10.
Hence, the LCM of 4 and 10 is 20.

(d) Multiples of 6 are: 6, 12, 18, 24, **30**, 36, 42, 48, 54, **60**, 66, 72, 78, ...
Multiples of 15 are: 15, **30**, 45, **60**, 75, 90, 105, 120, ...
The first common multiple of 6 and 15 is 30, which is the LCM of 6 and 15.
Hence, the LCM of 6 and 15 is 30.

(e) Multiples of 2 are: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, ..., 38, **40**, 42, 44, ... 66, 68 , 70, ...
Multiples of 5 are: 5, 10, 15, 20, 25, 30, 35, **40**, 45, 50, 55, 60, 65, 70, ...
Multiples of 8 are: 8, 16, 24, 32, **40**, 48, 56, 64, 72, 80, 88, ..., 96, 104, 112, 120, ...
The first common multiple of 2, 5 and 8 is 40, which is the LCM of 2, 5 and 8.
Hence, the LCM of 2, 5 and 8 is 40.

(f) Multiples of 5 are: 5, 10, 15, 20, 25, **30**, 35, 40, 45, 50, 55, **60**, 65, 70, ..., 90, 95, 100, ...
Multiples of 10 are: 10, 20, **30**, 40, 50, **60**, 70, 80, 90, 100, 110, ...
Multiples of 15 are: 15, **30**, 45, **60**, 75, **90**, 105, 120, ...
The first common multiple of 5, 10 and 15 is 30, which is the LCM of 5, 10 and 15.
Hence, the LCM of 5, 10 and 15 is 30.

(g) Multiples of 4 are: 4, 8, 12, 16, 20, 24, 28, 32, **36**, 40, ..., 64, 68, **72**, 76, 80, ...
Multiples of 6 are: 6, 12, 18, 24, 30, **36**, 42, 48, 54, 60, 66, **72**, 78, ...
Multiples of 9 are: 9, 18, 27, **36**, 45, 54, 63, **72**, 81, 90, 99, ...
The common multiples of 4, 6 and 9 are 36, 72, ... in which 36 is the least.
Hence, the LCM of 4, 6 and 9 is 36.

(h) Multiples of 6 are: 6, 12, 18, 24, 30, **36**, 42, 48, 54, 60, 66, **72**, 78, ...
Multiples of 9 are: 9, 18, 27, **36**, 45, 54, 63, **72**, 81, 90, 99, ...
Multiples of 18 are: 18, **36**, 54, **72**, 92, 108, ...
The common multiples of 4, 6 and 9 are 36, 72, ... in which 36 is the least.
Hence, the LCM of 6, 9 and 18 is 36.

3 . The common multiples of 2, 4 and 8 are coloured.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80

Exercise 5.3

1. Using the multiplication method, we find the factors of the given numbers as follows.

(a) We can write 84 as:

$1 \times 84 = 84$, which shows that 1 and 84 are factors of 84.
$2 \times 42 = 84$, which shows that 2 and 42 are factors of 84.
$3 \times 28 = 84$, which shows that 3 and 28 are factors of 84.
$4 \times 21 = 84$, which shows that 4 and 21 are factors of 84.
$6 \times 14 = 84$, which shows that 6 and 14 are factors of 84.
$7 \times 12 = 84$, which shows that 7 and 12 are factors of 84.
Hence, the factors of 84 are: 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42 and 84.

(b) We can write 52 as:

$1 \times 52 = 52$, which shows that 1 and 52 are factors of 52.
$2 \times 26 = 52$, which shows that 2 and 26 are factors of 52.
$4 \times 13 = 52$, which shows that 4 and 13 are factors of 52.
Hence, the factors of 52 are: 1, 2, 4, 13, 26 and 52.

(c) We can write 96 as:

$1 \times 96 = 96$, which shows that 1 and 96 are factors of 96.
$2 \times 48 = 96$, which shows that 2 and 48 are factors of 96.
$3 \times 32 = 96$, which shows that 3 and 32 are factors of 96.
$4 \times 24 = 96$, which shows that 4 and 24 are factors of 96.
$6 \times 16 = 96$, which shows that 6 and 16 are factors of 96.
$8 \times 12 = 96$, which shows that 8 and 12 are factors of 96.
Hence, the factors of 52 are: 1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48 and 96.

(d) We can write 120 as:

$1 \times 120 = 120$, which shows that 1 and 12 are factors of 120.
$2 \times 60 = 120$, which shows that 2 and 60 are factors of 120.
$3 \times 40 = 120$, which shows that 3 and 40 are factors of 120.
$4 \times 30 = 120$, which shows that 4 and 30 are factors of 120.
$5 \times 24 = 120$, which shows that 5 and 24 are factors of 120.
$6 \times 20 = 120$, which shows that 6 and 20 are factors of 120.
$8 \times 15 = 120$, which shows that 8 and 15 are factors of 120.
$10 \times 12 = 120$, which shows that 10 and 12 are factors of 120.
Hence, the factors of 120 are: 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60 and 120.

2. Using the division method, we find the factors of the given numbers as follows.

(a) We can write 64 as:

64 ÷ 1 = 64, which shows that 1 and 64 are factors of 64.
64 ÷ 2 = 32, which shows that 2 and 32 are factors of 64.
64 ÷ 4 = 16, which shows that 4 and 16 are factors of 64.
64 ÷ 8 = 8, which shows that 8 is a factor of 64.
Hence, the factors of 64 are: 1, 2, 4, 8, 16, 32 and 64.

(b) We can write 64 as:

56 ÷ 1 = 56, which shows that 1 and 56 are factors of 64.
56 ÷ 2 = 28, which shows that 2 and 28 are factors of 64.
56 ÷ 4 = 14, which shows that 4 and 14 are factors of 64.
56 ÷ 7 = 8, which shows that 7 and 8 are factors of 56.
Hence, the factors of 56 are: 1, 2, 4, 7, 8, 14, 28 and 56.

(c) We can write 45 as:

45 ÷ 1 = 45, which shows that 1 and 45 are factors of 45.
45 ÷ 3 = 15, which shows that 3 and 15 are factors of 45.
45 ÷ 5 = 9, which shows that 5 and 9 are factors of 45.
Hence, the factors of 45 are: 1, 3, 5, 9, 15 and 45.

(c) We can write 105 as:

105 ÷ 1 = 105, which shows that 1 and 105 are factors of 105.
105 ÷ 3 = 35, which shows that 3 and 15 are factors of 105.
105 ÷ 5 = 21, which shows that 5 and 21 are factors of 105.
105 ÷ 7 = 15, which shows that 7 and 15 are factors of 105.
Hence, the factors of 105 are: 1, 3, 5, 7, 15, 21, 35 and 105.

3. (a) Dividing 108 by 9, we get

$$\begin{array}{r|l} & 12 \\ \hline 9 & 108 \\ & -9 \\ \hline & 018 \\ & -18 \\ \hline & 0 \end{array}$$

As remainder is 0, so 9 is a factor of 108.

(b) Dividing 270 by 5, we get

$$\begin{array}{r|l} & 54 \\ \hline 5 & 270 \\ & -25 \\ \hline & 020 \\ & -20 \\ \hline & 0 \end{array}$$

As remainder is 0, so 5 is a factor of 270.

(c) As the ones place digit of 145 is not zero, so it will not be completely divided by 10. Hence, 10 is not a factor of 145.

(d) Dividing 310 by 6, we get

$$\begin{array}{r|l} & 51 \\ \hline 6 & 310 \\ & -30 \\ \hline & 010 \\ & -6 \\ \hline & 4 \end{array}$$

As remainder is 4, so 6 is not a factor of 310.

(e) Dividing 192 by 15, we get

$$\begin{array}{r|l} & 12 \\ \hline 16 & 192 \\ & -16 \\ \hline & 032 \\ & -23 \\ \hline & 0 \end{array}$$

As remainder is 0, so 16 is a factor of 192.

(f) Dividing 200 by 20, we get

$$\begin{array}{r|l} & 10 \\ \hline 20 & 200 \\ & -20 \\ \hline & 00 \\ & -00 \\ \hline & 0 \end{array}$$

As remainder is 0, so 20 is a factor of 200.

4. To check if the second number is a factor of the first number, we divide the first number by the second number.

(a) Dividing 272 by 8, we get

$$\begin{array}{r} 34 \\ 8\overline{)272} \\ -24 \\ \hline 32 \\ -32 \\ \hline 0 \end{array}$$

As remainder is 0, so 8 is not a factor of 272.

(b) Dividing 125 by 5, we get

$$\begin{array}{r} 25 \\ 5\overline{)125} \\ -10 \\ \hline 25 \\ -25 \\ \hline 0 \end{array}$$

As remainder is 0, so 5 is a factor of 125.

(c) Dividing 240 by 15, we get

$$\begin{array}{r} 19 \\ 15\overline{)240} \\ -15 \\ \hline 90 \\ -90 \\ \hline 0 \end{array}$$

As remainder is 0, so 15 is a factor of 240.

(d) The factors of 195 are 1, 3, 5, 13, 15, 39, 65, and 195. Hence, 14 is not a factor of 195.

(a) We can write 64 as:

5. (a) Since $2 \times 4 \times 8 = 64$; 2, 4 and 8 are the factors of **64**.

(b) Since $4 \times 5 \times 7 = 140$; **4**, **5**, and 7 are the factors of 140.

(c) Since $8 \times 9 \times 10 = 720$; 8, **9**, and **10** are the factors of 720.

(d) Since $5 \times 8 \times 2 = 80$; 5, 8 and 2 are the **factors** of 80.

Exercise 5.4

1. (a) Factors of 21 are: **1**, **3**, **7** and **21**.
Factors of 63 are: **1**, **3**, **7**, 9, **21** and 63.
Hence, the common factors are 1, 3, 7 and 21.

(b) Factors of 18 are: **1**, **2**, 3, 6, 9 and 18.
Factors of 56 are: **1**, **2**, 4, 7, 8, 14, 28, and 56
Hence, the common factors are 1 and 2.

(c) Factors of 6 are: **1**, **2**, **3** and **6**.
Factors of 30 are:**1**, **2**, **3**, 5, **6**, 10, 15 and 30.
Hence, the common factors are 1, 2, 3 and 6.

(d) Factors of 16 are: **1**, **2**, 4, 8 and 16
Factors of 58 are: **1**, **2**, 29 and 58.
Hence, the common factors are 1 and 2.

(e) Factors of 28 are: **1**, 2, 4, **7**, 14 and 28.
Factors of 42 are:**1**, 2, 3, 6, **7**, 14, 21 and 42.
Factors of 49 are:**1**, **7** and 49.
Hence, the common factors are 1 and 7..

(f) Factors of 22 are: **1**, **2**, 11 and 22.
Factors of 32 are: **1**, **2**, 4, 8, 16 and 32.
Factors of 66 are: **1**, **2**, 3, 6, 11, 22 and 33, 66.
Hence, the common factors are 1 and 2.

(g) Factors of 30 are: **1**, 2, **3**, **5**, 6, 10, **15** and 30.
Factors of 45 are: **1**, **3**, **5**, 9, **15** and 45.
Factors of 75 are:**1**, **3**, **5**, **15**, 25 and 75.
Hence, the common factors are 1, 3, 5 and 15.

(h) Factors of 60 are: **1**, **2**, 3, **4**, **5**, 6, **10**, 12, 15, **20**, 30, 60
Factors of 80 are: **1**, **2**, **4**, **5**, 8, **10**, 16, **20**, 40 and 80.
Factors of 120 are:**1**, **2**, 3, **4**, **5**, 6, 8, **10**, 12, 15, **20**, 24, 30, 40, 60, 120.
Hence, the common factors are 1, 2, 4, 5, 10 and 20

2. We know that the two numbers which have only 1 as the common factor are called co-primes.

(a) Factors of 18 are: 1, 2, 3, 6, 9 and 18.
Factors of 23 are: 1 and 23.
The common factor is 1 only. Hence, they are co-primes.

(b) Factors of 16 are: 1, 2, 4, 8 and 16.
Factors of 21 are: 1, 3, 7 and 21.
The common factor is 1 only. Hence, they are co-primes.

(c) Factors of 20 are: 1, 2, 4, 5, 10 and 20.
Factors of 24 are: 1, 2, 4, 6, 12 and 24.
The common factors are 1, 2 and 4. Hence, they are not co-primes.

(d) Factors of 42 are: 1, 2, 3, 6, 7, 14, 21 and 42.
Factors of 100 are: 1, 2, 4, 5, 10, 20, 25, 50 and 100
The common factors are 1 and 2. Hence, they are not co-primes.

(e) Factors of 21 are: 1, 3, 7 and 21.
Factors of 35 are: 1, 5, 7 and 35.
The common factors are 1 and 7. Hence, they are not co-primes.

(f) Factors of 48 are: 1, 2, 3, 4, 6, 8, 12, 16, 24 and 48.
Factors of 64 are: 1, 2, 4, 8, 16, 32, and 64.
The common factors are 1, 2, 4 and 8. Hence, they are not co-primes.

(g) Factors of 15 are: 1, 3, 5 and 15.
Factors of 40 are: 1, 2, 4, 5, 8, 10, 20 and 40.
The common factors are 1 and 5. Hence, they are not co-primes.

(f) Factors of 12 are: 1, 2, 3, 4, 6 and 12.
Factors of 32 are: 1, 2, 4, 8, 16 and 32.
The common factors are 1, 2 and 4. Hence, they are not co-primes.

3. We know that the HCF of two or more numbers is their largest common factor.

(a) Factors of 12 are: 1, 2, 3, 4, 6 and 12.
Factors of 15 are: 1, 3, 5 and 15.
The common factors are 1 and 3. Hence, the HCF of 12 and 15 is 3.

(b) Factors of 25 are: 1, 5 and 25.
Factors of 40 are: 1, 2, 4, 5, 8, 10, 20 and 40.
The common factor are 1 and 5. Hence, the HCF of 25 and 40 is 5.

(c) Factors of 18 are: 1, 2, 3, 6, 9 and 18.
Factors of 27 are: 1, 3, 9 and 27.
The common factors are 1, 3 and 9. Hence, the HCF of 18 and 27 is 9.

(d) Factors of 56 are:1, 2, 4, 7, 8, 14, 28 and 56.
Factors of 60 are: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 and 60.
The common factors are 1, 2 and 4. Hence, the HCF of 56 and 60 is 4.

(e) Factors of 15 are: 1, 3, 5 and 15.
Factors of 24 are: 1, 2, 3, 4, 6, 8, 12 and 24.
Factors of 32 are: 1, 2, 4, 8, 16 and 32.
The common factor is 1. Hence, the HCF of 15, 24 and 32 is 1.

(f) Factors of 45 are:1, 3, 5, 9, 15 and 45.
Factors of 72 are: 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36 and 72.
Factors of 90 are: 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45 and 90.
The common factor are 1, 3 and 9. Hence, the HCF of 45, 72 and 90 is 9.

(g) Factors of 32 are: 1, 2, 4, 8, 16 and 32.
Factors of 48 are: 1, 2, 3, 4, 6, 8, 12, 16, 24 and 48.
Factors of 64 are: 1, 2, 4, 8, 16, 32 and 64.
The common factors are 1, 2, 4, 8 and 16. Hence, the HCF of 32, 48 and 64 is 16.

(h) Factors of 35 are:1, 5, 7 and 35.
Factors of 45 are: 1, 3, 5, 9, 15 and 45.
Factors of 80 are: 1, 2, 4, 5, 8, 10, 16, 20, 40 and 80.
The common factor are 1 and 5. Hence, the HCF of 35, 45 and 80 is 5.

4. (a) The two-digit numbers less than 50 are: 12, 13,14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47 and 48.
The two-digit numbers having 2 as a factor are divisible by 2, *i.e.*, they are even numbers.
Hence, the required two-digit numbers having 2 as a factor are:12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46 and 48

(b) The two-digit numbers having 3 as a factor are multiples of 3.

Hence, the required two-digit numbers having 3 as a factor are: 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45 and 48.

(c) The two-digit numbers having 2 and 3 as their factors are multiples of 6.

Hence, the required two-digit numbers having 2 and 3 as their factors are: 6,12, 18, 24, 30, 36, 42, 48, ...

(d) The two-digit numbers having 5 as a factor but not 10 as a factor are multiples of 5 which have 5 as their ones place digit.

Hence, the required two-digit numbers having 5 as a factor but not 10 are: 5,15, 25, 35, 45, 55, 65, 75, 85, ...

(e) The factors of 120 are: 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60 and 120.

Hence, the required even factors are: 2, 4, 6, 8, 10, 12, 20, 24, 30, 40, 60 and 120.

5. We know that co-primes have 1 as the only common factor. Hence, the HCF of all the given numbers is 1.

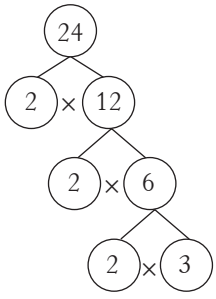
Exercise 5.5

1. We know that numbers having only two factors (1 and the number itself) are called prime numbers.
   (a) The prime numbers between 1 and 20 are: 2 , 3 , 5 , 7 , 11 , 13 , 17 and 19.
   (b) The prime numbers between 22 and 45 are: 23, 29, 31, 37, 41 and 43.
   (c) The prime numbers between 45 and 80 are: 47, 53, 59, 61, 67, 71, 73 and 79.
   (d) The prime numbers between 80 and 100 are: 83, 89 and 97.
2. (a) The factors of 72 are: 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36 and 72. As the factors are more than two, so 72 is a composite number.
   (b) The factors of 82 are: 1, 2, 41 and 82. As the factors are more than two, so 82 is a composite number.
   (c) The factors of 29 are: 1 and 29. As the factors are only two, so 29 is a prime number.
   (d) The factors of 26 are: 1, 2, 13 and 26. As the factors are more than two, so 26 is a composite number.
   (e) The factors of 93 are: 1, 3, 31 and 93. As the factors are more than two, so 93 is a composite number.
   (f) The factors of 25 are: 1, 5 and 25. As the factors are more than two, so 25 is a composite number.
   (g) The factors of 71 are: 1 and 71. As the factors are only two, so 71 is a prime number.
   (h) The factors of 46 are: 1, 2, 23, 46. As the factors are more than two, so 46 is a composite number.
   (i) The factors of 47 are: 1 and 47. As the factors are only two, so 47 is a prime number.
   (j) The factors of 73 are: 1 and 73. As the factors are only two, so 73 is a prime number.
3. (a) The number has only 1 factor, it is neither a composite nor a prime number. Hence, the given statement is true.
   (b) The smallest prime number 2. Hence, the given statement is false.
   (c) The only even prime number is 2. Hence, the given statement is true.
   (d) A prime number has only two factors, 1 and the number itself. Hence, the given statement is false.
   (e) The greatest 2-digit composite number is 99. Hence, the given statement is false.
   (f) Composite numbers have more than two factors. Hence, the given statement is true.
   (g) The smallest composite number is 4. Hence, the given statement is true.

Exercise 5.6

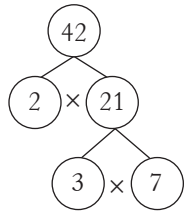
1. The factorisation of the given numbers by factor tree method is as follows.

(a)



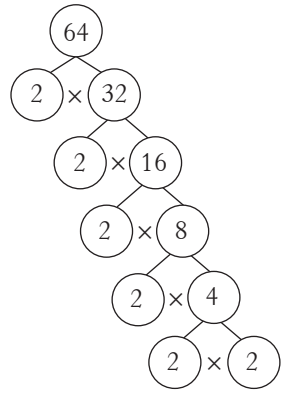
Hence, $24 = 2 \times 2 \times 2 \times 3$.

(b)



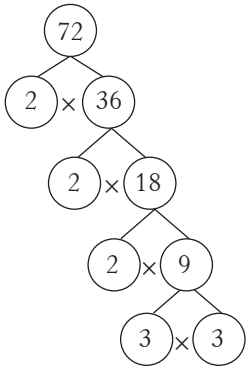
Hence, $42 = 2 \times 3 \times 7$.

(c)



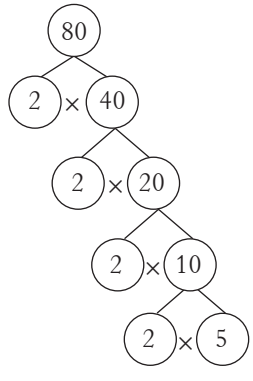
Hence, $64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 23$

(d)



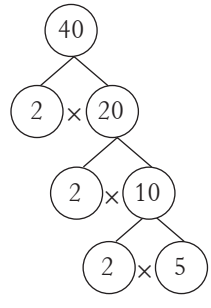
Hence, $72 = 2 \times 2 \times 2 \times 3 \times 3$.

(e)



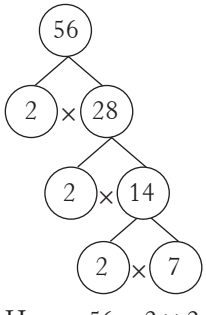
Hence, $80 = 2 \times 2 \times 2 \times 2 \times 2 \times 5$.

(f)



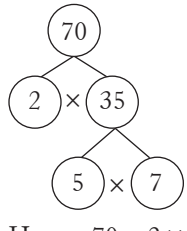
Hence, $40 = 2 \times 2 \times 2 \times 5$.

(g)



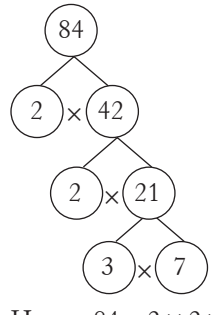
Hence, $56 = 2 \times 2 \times 2 \times 7$.

(h)



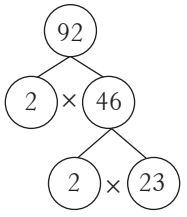
Hence, $70 = 2 \times 5 \times 7$.

(i)



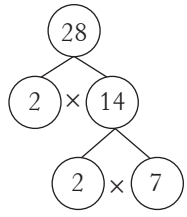
Hence, $84 = 2 \times 2 \times 3 \times 7$.

(j)



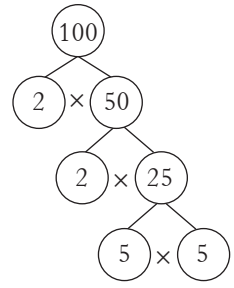
Hence, $92 = 2 \times 2 \times 23$.

(k)



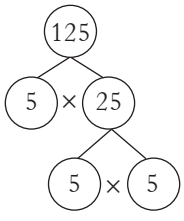
Hence, $28 = 2 \times 2 \times 7$.

(l)



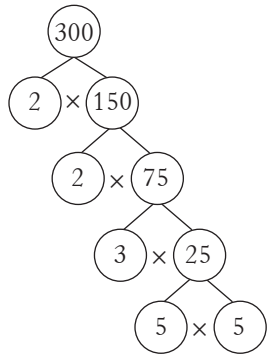
Hence, $100 = 2 \times 2 \times 5 \times 5$.

(m)



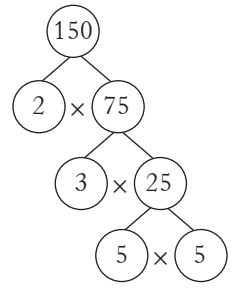
Hence, $125 = 5 \times 5 \times 5$.

(h)



Hence, $300 = 2 \times 3 \times 5 \times 5$.

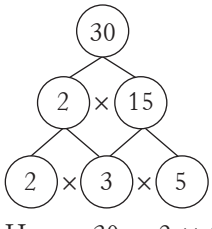
(i)



Hence, $150 = 2 \times 3 \times 5 \times 5$.

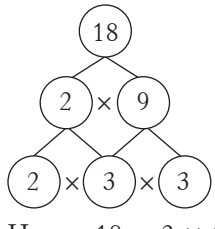
2. The complete factor trees are given below.

(a)



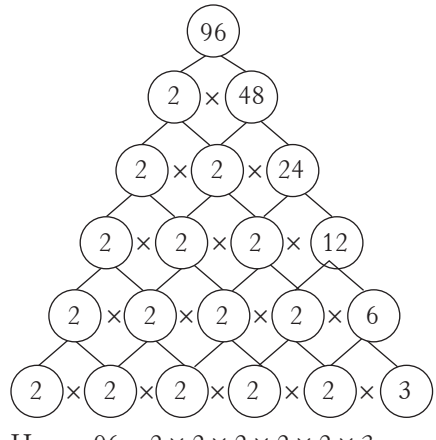
Hence, $30 = 2 \times 3 \times 5$.

(b)



Hence, $18 = 2 \times 3 \times 3$.

(c)



Hence, $96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$

Exercise 5.7

1. We know that numbers having 0, 2, 4, 6 or 8 at ones place are divisible by 2. It means the numbers divisible by 2 are even numbers. Following it, we find that:
   (a) 4250 is divisible by 2 because its ones place digit is 0.
   (b) 3725 is not divisible by 2 because it is an odd number.
   (c) 8324 is divisible by 2 because its ones place digit is 4.
   (d) 1028 is divisible by 2 because its ones place digit is 8.
   (e) 5041 is not divisible by 2 because it is an odd number.
   (f) 3242 is divisible by 2 because its ones place digit is 2.
   (g) 1321 is not divisible by 2 because it is an odd number.

(h) 6933 is not divisible by 2 because it is an odd number.
(i) 8246 is divisible by 2 because its ones place digit is 6.
(j) 6546 is divisible by 2 because its ones place digit is 6.

2. We know that if the sum of the digits of a number is divisible by 3, the number is divisible by 3.
   (a) The sum of digits of 3342 = 3 + 3 + 4 + 2 = 12, which is divisible by 3. Hence, 3342 is divisible by 3.
   (b) The sum of digits of 4733 = 4 + 7 + 3 + 3 = 17, which is not divisible by 3. Hence, 4733 is not divisible by 3.
   (c) The sum of digits of 6485 = 6 + 4 + 8 + 5 = 23, which is not divisible by 3. Hence, 6485 is not divisible by 3.
   (d) The sum of digits of 1336 = 1 + 3 + 3 + 6 = 13, which is not divisible by 3. Hence, 1336 is not divisible by 3.
   (e) The sum of digits of 2505 = 2 + 5 + 0 + 5 = 12, which is divisible by 3. Hence, 2505 is divisible by 3.
   (f) The sum of digits of 6720 = 6 + 7 + 2 + 0 = 15, which is divisible by 3. Hence, 6720 is divisible by 3.
   (g) The sum of digits of 2532 = 2 + 5 + 3 + 2 = 12, which is divisible by 3. Hence, 2532 is divisible by 3.
   (h) The sum of digits of 6357 = 6 + 3 + 5 + 7 = 21, which is divisible by 3. Hence, 6357 is divisible by 3.
   (i) The sum of digits of 9628 = 9 + 6 + 2 + 8 = 25, which is not divisible by 3. Hence, 9628 is not divisible by 3.
   (j) The sum of digits of 7028 = 7 + 0 + 2 + 8 = 17, which is not divisible by 3. Hence, 7028 is not divisible by 3.

3. We know that numbers having 0 or 5 in the ones place are divisible by 5.
   (a) 1495 is divisible by 5 because its ones place digit is 5.
   (b) 8320 is divisible by 5 because its ones place digit is 0.
   (c) 2464 is not divisible by 5 because its ones place digit is neither 0 nor 5.
   (d) 7555 is divisible by 5 because its ones place digit is 5.
   (e) 4390 is divisible by 5 because its ones place digit is 0.
   (f) 9600 is divisible by 5 because its ones place digit is 0.
   (g) 7505 is divisible by 5 because its ones place digit is 5.
   (h) 9000 is divisible by 5 because its ones place digit is 0.
   (i) 9684 is divisible by 5 because its ones place digit is neither 0 nor 5.
   (j) 7505 is divisible by 5 because its ones place digit is 5.

4. Numbers having 0 in the ones place are divisible by 10.
   (a) 8725 is not divisible by 10 because its ones place digit is not 0.
   (b) 5736 is not divisible by 10 because its ones place digit is not 0.
   (c) 9505 is not divisible by 10 because its ones place digit is not 0.
   (d) 4320 is divisible by 10 because its ones place digit is 0.
   (e) 8800 is divisible by 10 because its ones place digit is 0.
   (f) 9640 is divisible by 10 because its ones place digit is 0.
   (g) 6928 is not divisible by 10 because its ones place digit is not 0.
   (h) 5705 is not divisible by 10 because its ones place digit is not 0.

(i) 3147 is not divisible by 10 because its ones place digit is not 0.

(j) 5120 is divisible by 10 because its ones place digit is 0.

Revision Exercise

1. The first five multiples of:
   (a) 14 are: 14× 1, 14 × 2, 14 × 3, 14 × 4 and 14 × 5, *i.e.*, 14, 28, 42, 56, and 70.
   (b) 19 are: 19× 1, 19 × 2, 19 × 3, 19 × 4 and 19 × 5, *i.e.*, 19, 38, 57, 76, and 95.
   (c) 23 are: 23 × 1, 23 × 2, 23 × 3, 23 × 4 and 23 × 5, *i.e.*, 23, 46, 69, 92, and 115.
   (d) 26 are: 26× 1, 26 × 2, 26 × 3, 26 × 4 and 26 × 5, *i.e.*, 26, 52, 78, 104 and 130.
   (e) 72 are: 72× 1, 72 × 2, 72 × 3, 72 × 4 and 72 × 5, *i.e.*, 72, 144, 216, 288 and 360.

2. The factors of
   (a) 48 are: 1, 2, 3, 4, 6, 8, 12, 16, 24 and 48.
   (b) 72 are: 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36 and 72.
   (c) 66 are: 1, 2, 3, 6, 11, 22, 33 and 66.
   (d) 96 are: 1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48 and 96.
   (e) 240 are: 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 16, 20, 24, 30, 40, 48, 60, 80, 120 and 240.
   (f) 240 are: 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 16, 20, 24, 30, 40, 48, 60, 80, 120 and 240.
   (g) 160 are: 1, 2, 4, 5, 8, 10, 16, 20, 32, 40, 80 and 160.
   (h) 145 are: 1, 5, 29 and 145.
   (i) 290 are: 1, 2, 5, 10, 29, 58, 145 and 290.
   (j) 350 are: 1, 2, 5, 7, 10, 14, 25, 35, 50, 70, 175 and 350

3. (a) Factors of 42 are: 1, 2, 3, 6, 7, 14, 21 and 42.
   Factors of 62 are: 1, 2, 31 and 62.
   Hence, the common factors are 1 and 2.

   (b) Factors of 104 are: 1, 2, 4, 8, 13, 26, 52 and 104.
   Factors of 190 are: 1, 2, 5, 10, 19, 38, 95 and 190.
   Hence, the common factors are 1, 2, 5 and 10.

   (c) Factors of 160 are: 1, 2, 4, 5, 8, 10, 16, 20, 32, 40, 80 and 160.
   Factors of 184 are:1, 2, 4, 8, 23, 46, 92 and 184.
   Hence, the common factors are 1, 2, 4 and 8.

   (d) Factors of 204 are: 1, 2, 3, 4, 6, 12, 17, 34, 51, 68, 102 and 204.
   Factors of 272 are: 1, 2, 4, 8, 16, 17, 34, 68, 136 and 272.
   Hence, the common factors are 1, 2, 4, 17, 34, 68

4. (a) Multiples of 15 are: 15, 30, 45, 60, 75, 90, 105, 120, 135, 150, ...
   Multiples of 20 are: 20, 40, 60, 80, 100, 120, 140, ...
   The first common multiple of 15 and 20 is 60.
   Hence, the first four common multiples of 15 and 20 are 60, 120, ...

   (b) Multiples of 18 are: 18, 36, 54, 72, 90, 108, 126, 144, 162, 180, ...
   Multiples of 30 are: 30, 60, 90, 120, 150, 180, 210, ...
   The first common multiple of 18 and 30 is 90.
   Hence, the first four common multiples of 18 and 30 are 90, 180, ...

   (c) Multiples of 60 are: 60, 120, 180, 240, 300, 360, 420, ...
   Multiples of 90 are: 90, 180, 270, 360, 450, 540, ...
   The first common multiple of 60 and 90 is 180.
   Hence, the first four common multiples of 60 and 90 are 180, 360, ...

(d) Multiples of 18 are: 18, 36, 54, 72, 90, 108, 126, 144, 162, 180, ...
Multiples of 24 are: 24, 48, 72, 96, 120, 144, ...
The first common multiple of 18 and 24 is 72.
Hence, the first four common multiples of 18 and 24 are 72, 144, ...

5. (a) Multiples of 2 are: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, **26**, ...
Multiples of 13 are: 13, **26**, 39, 52, 65, 78, ...
The first common multiple of 2 and 13 is 26, which is the LCM of 2 and 13.
Hence, the LCM of 2 and 13 is 26.

(b) Multiples of 4 are: 4, 8, 12, 16, 20, 24, 28, 32, **36**, 40, 44, 48, 52, 56, ...
Multiples of 9 are: 9, 18, 27, **36**, 45, 54, 63, 72, ...
The first common multiple of 4 and 9 is 36, which is the LCM of 4 and 9.
Hence, the LCM of 4 and 9 is 36.

(c) Multiples of 10 are: 10, 20, 30, 40, **50**, 60, 70, 80, 90, 100, ...
Multiples of 25 are: 25, **50**, 75, 100, 125, 250, ...
The first common multiple of 10 and 25 is 50.
Hence, the LCM of 10 and 25 is 50.

(d) Multiples of 16 are: 16, 32, 48, 64, 80, 96, 112, 128, **144**, 160, 176, ...
Multiples of 36 are: 36, 72, 108, **144**, 180, 216, 252, 288, 324, ...
The first common multiple of 16 and 36 is 144.
Hence, the LCM of 16 and 36 is 144.

6. We know that the HCF of two or more numbers is their largest common factor.

(a) Factors of 21 are: 1, 3, 7 and 21.
Factors of 105 are: 1, 3, 5, 7, 15, 21, 35 and 105.
The common factors are 1, 3, 7 and 21. Hence, the HCF of 21 and 105 is 21.

(b) Factors of 56 are: 1, 2, 4, 7, 8, 14, 28 and 56.
Factors of 112 are: 1, 2, 4, 7, 8, 14, 16, 28, 56 and 112.
The common factor are 1, 2, 4, 7, 8, 14, 28 and 56. Hence, the HCF of 56 and 112 is 56.

(c) Factors of 84 are: 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, and 84
Factors of 120 are: 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60 and 120.
The common factors are 1, 2, 3, 4, 6 and 12. Hence, the HCF of 84 and 120 is 12.

(d) Factors of 45 are:1, 3, 5, 9, 15, and 45.
Factors of 150 are: 1, 2, 3, 5, 6, 10, 15, 25, 30, 50, 75 and 150.
The common factors are 1, 3, 5, and 15. Hence, the HCF of 45 and 150 is 15.

7. The complete tables are given below.

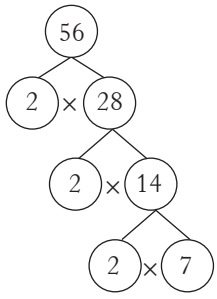
S.No.	Numbers	Factors
(a)	16	1, 2, 4, 8, and 16
(b)	17	1 and 17
(c)	24	1, 2, 3, 4, 6, 8, 12 and 24.
(d)	29	1 and 29
(e)	32	1, 2, 4, 8, 16 and 32

S.No.	Numbers	Factors
(f)	37	1, 37
(g)	42	1, 2, 3, 6, 7, 14, 21 and 42
(h)	43	1 and 43
(i)	56	1, 2, 4, 7, 8, 14, 28 and 56
(j)	61	1, 61

S.No.	Numbers	Factors
(k)	72	1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36 and 72
(l)	77	1,7, 11 and 77
(m)	81	1, 3, 9, 27, and 81
(n)	83	1 and 83
(o)	95	1, 5, 19 and 95

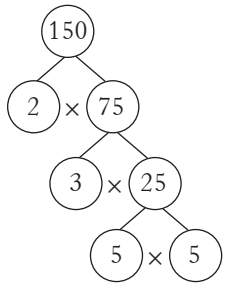
8. The factorisation of the given numbers by factor tree method is as follows.

(a)



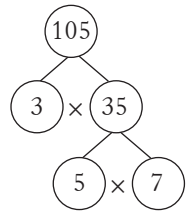
Hence, $56 = 2 \times 2 \times 2 \times 7$.

(b)



Hence, $150 = 2 \times 3 \times 5 \times 5$.

(c)



Hence, $105 = 3 \times 5 \times 7$

Similar work to be done for (d) and (e).

8. (a) A number is divisible if its ones place digit is 0, 2, 4, 6 or 8. Hence, (i) 430, (iii) 178, (iv) 200 and (v) 904 are divisible by 2.

(b) A number is divisible by 3 if the sum of its digits is divisible by 3. Thus:

(i) sum of digits of 4256 = 4 + 2 + 5 + 6 = 17, which is not divisible by 3. Hence, 4256 is not divisible by 3.

(ii) sum of digits of 3081= 3 + 0 + 8 + 1 = 12, which is divisible by 3. Hence, 4256 is divisible by 3.

(iii) sum of digits of 5004= 5 + 0 + 0 + 4 = 9, which is divisible by 3. Hence, 4256 is divisible by 3.

(iv) sum of digits of 83451= 5 + 3 + 4 + 5 + 1 = 18, which is divisible by 3. Hence, 83451 is divisible by 3.

(v) sum of digits of 95634= 9 + 5 + 6 + 3 + 4 = 27, which is divisible by 3. Hence, 95634 is divisible by 3.

(c) (i) 425 is divisible by 5 because its ones place digit is 5.

(ii) 4968 is not divisible by 5 because its ones place digit is not 5.

(iii) 4205 is divisible by 5 because its ones place digit is 5.

(iv) 8255 is divisible by 5 because its ones place digit is 5.

(v) 4960 is divisible by 5 because its ones place digit is 0.

(d) (i) 85 is not divisible by 10 because its ones place digit is not 0.

(ii) 280 is divisible by 10 because its ones place digit is 0.

(iii) 300 is divisible by 10 because its ones place digit is 0.

(iv) 4360 is divisible by 10 because its ones place digit is 0.

(v) 1926 is not divisible by 10 because its ones place digit is not 0.

HOTS (Creating Thinking & Reasoning)

1. Five pairs of prime numbers which add up to another prime numbers are: (2, 3), (2, 5), (2, 11), (2, 17), (2, 41).
2. (a) The required 2-digit prime number is 39 which follows all the given conditions.

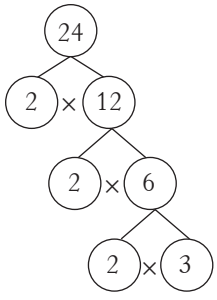
(b) The required 3-digit number is 625 which follows all the given conditions.

(c) The required prime number lying between 70 and 100 is 71 which follows all the given conditions.

Case-based Questions

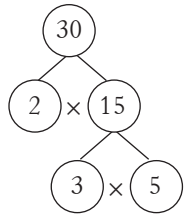
1. As $5 \times 6 = 30$, 5 is a factor of 30.
2. Factors of 36 are: 1, 2, 3, 4, 6, 9, 12, 18 and 36.

3. (a)



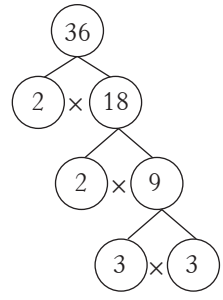
Hence, $24 = 2 \times 2 \times 2 \times 3$.

(b)



Hence, $30 = 2 \times 3 \times 5$

(c)



Hence, $36 = 2 \times 2 \times 3 \times 3$

4. Factors of 36 are: 1, 2, 3, 4, 6, 9, 12, 18 and 36.

   Factors of 30 are: 1, 2, 3 and 5.

   Factors of 24 are: 1, 2 and 3.

   Common factors are: 1, 2 and 3.

5. **Finding HCF:** From question 4, the common factors of 24, 30 and 36 are: 1, 2 and 3. The largest of the common factors is 3. Hence, the HCF of 24, 30 and 36 is 3.

   Finding LCM: Multiples of 24 are: 24, 48, 72, 96, 120, 144, 168, 192, 216, 240, 264, 288, 312, 336, **360**, ...

   Multiples of 30 are: 30, 60, 90, 120, 150, 180, 210, 240, 270, 300, 330, **360**, 360, 390, ...

   Multiples of 36 are: 36, 72, 108, 144, 180, 216, 252, 288, 324, **360**, 396, 432, 468, 504, 540, ...

   The first common multiple is 360.

   Hence, the LCM of 24, 30 and 36 is 360.

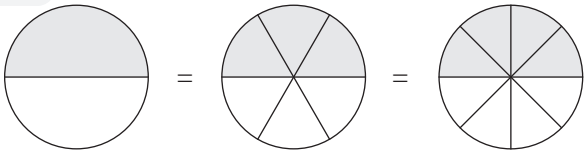
Mental Maths

A. 1. $4 \times 9 = 36$, 36 is a multiple of **4** and **9**.
   2. $8 \times 7 = 56$, 56 is a multiple of 8 and **7**.
   3. $9 \times$ **9** $= 81$, 81 is a multiple of **9**.
   4. $5 \times 9 = 45$, 5 and 9 are factors of **45**.
   5. $4 \times 6 =$ **24**, 4 and 6 are factors of **24**.
   6. $12 \times$ **5** $= 60$, 12 and **5** are factors of **60**.

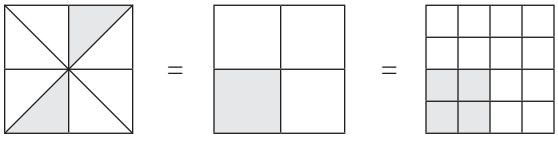
B. 1. 9th multiple of 18 is $9 = 162$. Hence, the correct option is (c).
   2. A multiple of 12 in the given options is 24. Hence, the correct option is (d).
   3. Multiple of 10 from 30 to 150 are: 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, which are 13 in number. Hence, the correct option is (d).
   4. (a) Sum of digits of $194 = 1 + 9 + 4 = 14$ which is not divisible by 3.
      (b) Sum of digits of $273 = 2 + 7 + 3 = 12$ which is divisible by 3 but the given number in not divisible by 2.
      (c) Sum of digits of $486 = 4 + 8 + 6 = 18$ which is divisible by 3. The number 486 is also divisible by 2.

      Hence, the correct option is (c)
   5. As $45 \times 4 = 180$. So the LCM of 45 and 180 is 180. Hence, the correct option is (c).
   6. Both the numbers 34 and 53 are primes. So, their HCF is 1. Hence, the correct option is (c).
   7. A prime number has only two factors. Hence, the correct option is (a).
   8. 4 is not a factor of 85 Hence, the correct option is (b).

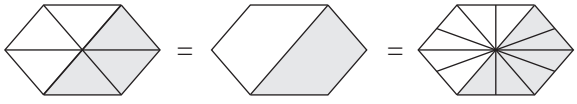
Exercise 6.1

1. (a) 

$\frac{1}{2} = \frac{3}{6} = \frac{4}{8}$

(b) 

$\frac{2}{8} = \frac{1}{4} = \frac{4}{16}$

(c) 

$\frac{3}{6} = \frac{1}{2} = \frac{6}{12}$

2. Five equivalent fractions:

(a) for $\frac{3}{8}$ are: $\frac{3\times2}{8\times2}, \frac{3\times3}{8\times3}, \frac{3\times4}{8\times4}, \frac{3\times5}{8\times5}, \frac{3\times6}{8\times6} = \frac{6}{16}, \frac{9}{24}, \frac{12}{32}, \frac{15}{40}$, and $\frac{18}{48}$.

(b) for $\frac{2}{11}$ are: $\frac{2\times2}{11\times2}, \frac{2\times3}{11\times3}, \frac{2\times4}{11\times4}, \frac{2\times5}{11\times5}, \frac{2\times6}{11\times6} = \frac{4}{22}, \frac{6}{33}, \frac{8}{44}, \frac{10}{55}$, and $\frac{12}{66}$.

(c) for $\frac{6}{11}$ are: $\frac{6\times2}{11\times2}, \frac{6\times3}{11\times3}, \frac{6\times4}{11\times4}, \frac{6\times5}{11\times5}, \frac{6\times6}{11\times6} = \frac{6}{22}, \frac{12}{33}, \frac{18}{44}, \frac{24}{55}$, and $\frac{30}{66}$.

(d) for $\frac{5}{12}$ are: $\frac{5\times2}{12\times2}, \frac{5\times3}{12\times3}, \frac{5\times4}{12\times4}, \frac{5\times5}{12\times5}, \frac{5\times6}{12\times6} = \frac{10}{24}, \frac{15}{36}, \frac{20}{48}, \frac{25}{60}$, and $\frac{30}{72}$.

(e) for $\frac{80}{120}$ are: $\frac{80\times2}{120\times2}, \frac{80\times3}{120\times3}, \frac{80\times4}{120\times4}, \frac{80\times5}{120\times5}, \frac{80\times6}{120\times6} = \frac{160}{240}, \frac{240}{360}, \frac{320}{480}, \frac{400}{600}$ and $\frac{480}{720}$.

3. (b) $\frac{8}{9} = \frac{8\times8}{9\times8} = \frac{64}{72}$ (c) $\frac{6}{12} = \frac{6\times8}{12\times8} = \frac{48}{96}$ (d) $\frac{5}{13} = \frac{5\times5}{13\times5} = \frac{25}{65}$

(e) $\frac{12}{20} = \frac{12\div2}{20\div2} = \frac{6}{10}$ (f) $\frac{15}{40} = \frac{15\div5}{40\div5} = \frac{3}{8}$ (g) $\frac{36}{60} = \frac{36\div6}{60\div6} = \frac{6}{10}$

(h) $\frac{65}{125} = \frac{65\div5}{125\div5} = \frac{13}{25}$ (i) $\frac{11}{\ldots} = \frac{66}{72} = \frac{66\div6}{72\div6} = \frac{11}{12}$ (j) $\frac{\ldots}{16} = \frac{49}{112} = \frac{49\div7}{112\div7} = \frac{7}{16}$

(k) $\frac{\ldots}{9} = \frac{42}{63} = \frac{42\div7}{63\div7} = \frac{6}{9}$ (l) $\frac{16}{\ldots} = \frac{128}{160} = \frac{128\div8}{160\div8} = \frac{16}{20}$

4. An equivalent fraction of $\frac{40}{70}$ with:

(a) numerator 80 $= \frac{40 \times 2}{70 \times 2} = \frac{80}{140}$

(b) numerator 120 $= \frac{40 \times 3}{70 \div 3} = \frac{120}{210}$

(c) numerator 20 $= \frac{40 \div 2}{70 \div 2} = \frac{20}{35}$

(b) numerator 4 $= \frac{40 \times 10}{70 \div 10} = \frac{4}{7}$

5. An equivalent fraction of $\frac{16}{24}$ with:

(a) denominator 72 $= \frac{16 \times 3}{24 \times 3} = \frac{48}{72}$

(b) denominator 96 $= \frac{16 \times 4}{24 \div 4} = \frac{64}{96}$

(c) denominator 3 $= \frac{16 \div 8}{24 \div 8} = \frac{2}{3}$

(b) denominator 6 $= \frac{16 \div 4}{24 \div 4} = \frac{4}{6}$

Exercise 6.2

1. A fraction is said to be in the lowest terms if its numerator and denominator have no common factor except 1.

(a) We have $\frac{16}{24}$.

Factors of 16 are: 1, 2, 4, 8 and 16

Factors of 24 are: 1, 2, 3, 4, 6, 8, 12 and 24

Common factors are: 1, 2, 4 and 8.

As the numerator and the denominator have more common factors, so the given fraction $\frac{16}{24}$ is not in its lowest terms.

(b) We have $\frac{42}{75}$.

Factors of 42 are: 1, 2, 3, 14, 21 and 42

Factors of 75 are: 1, 3, 5, 15, 25 and 75

Common factors are: 1 and 3

As the numerator and the denominator have more common factors, so the given fraction $\frac{42}{75}$ is not in its lowest terms.

(c) We have $\frac{1}{20}$.

Here, the numerator and the denominator have the common factor 1 only.

So, the given fraction $\frac{1}{20}$ is in its lowest terms.

(d) We have $\frac{20}{30}$.

Factors of 20 are: 1, 2, 4, 5, 10 and 20

Factors of 30 are: 1, 2, 3, 5, 6, 10, 15 and 30

Common factors are: 1, 2, 5 and 10.

As the numerator and the denominator have more common factors, so the given fraction $\frac{20}{30}$ is not in its lowest terms.

(e) We have $\frac{7}{13}$.

Here, the numerator and the denominator have the common factor 1 only.

So, the given fraction $\frac{7}{13}$ is in its lowest terms.

(f) We have $\frac{9}{63}$.

Factors of 20 are: 1, 3, and 9

Factors of 30 are: 1, 3, 7, 9, 21, and 63

Common factors are: 1, 3 and 9.

As the numerator and the denominator have more common factors, so the given fraction $\frac{9}{63}$ is not in its lowest terms.

(g) We have $\frac{16}{80}$.

Here, the numerator and the denominator are even numbers, so the have more common factors. So, the given fraction $\frac{16}{80}$ is in its lowest terms.

(h) We have $\frac{11}{15}$.

Here, the numerator and the denominator have the common factors 1 only. So, the given fraction $\frac{11}{15}$ is in its lowest terms.

Similar work to be done for (i) and (j).

2. (a) We have $\frac{24}{40}$.

Factors of 24 are: 1, 2, 3, 4, 6, 8, 12 and 24.
Factors of 40 are: 1, 2, 4, 5, 8, 10, 20 and 40.
Common factors are: 1, 2, 4 and 8.

So, $\frac{24 \div 2}{40 \div 2} = \frac{12 \div 2}{20 \div 2} = \frac{6 \div 2}{10 \div 2} = \frac{3}{5}$.

Hence, $\frac{3}{5}$ is the lowest term of $\frac{24}{40}$.

(b) We have $\frac{40}{50}$.

Factors of 40 are: 1, 2, 4, 5, 8, 10, 20 and 40.
Factors of 50 are: 1, 2, 5, 10, 25 and 50.
Common factors are: 1, 2, 5 and 10.

So, $\frac{40 \div 2}{50 \div 2} = \frac{20}{25}, \frac{20 \div 5}{25 \div 5} = \frac{4}{5}$.

Hence, $\frac{4}{5}$ is the lowest term of $\frac{40}{50}$.

(c) We have $\frac{27}{45}$.

Factors of 27 are: 1, 3, 9 and 27.
Factors of 45 are: 1, 3, 5, 9, 15 and 45.
Common factors are: 1, 3 and 9.

So, $\frac{27 \div 3}{45 \div 3} = \frac{9}{15}, \frac{9}{15} = \frac{9 \div 3}{15 \div 3} = \frac{3}{5}$

Hence, $\frac{3}{5}$ is the lowest term of $\frac{27}{45}$.

(d) We have $\frac{8}{24}$.

Factors of 8 are: 1, 2, 4 and 8.
Factors of 24 are: 1, 2, 3, 4, 6, 8, 12 and 24.
Common factors are: 1, 2, 4 and 8.

So, $\frac{8 \div 2}{24 \div 2} = \frac{4}{12}, \frac{4}{12} = \frac{4 \div 4}{12 \div 4} = \frac{1}{3}$.

Hence, $\frac{1}{3}$ is the lowest term of $\frac{8}{24}$.

(e) We have $\frac{9}{15}$.

Factors of 9 are: 1, 3 and 9.
Factors of 15 are: 1, 3, 5 and 15.
Common factors are: 1 and 3.

So, $\frac{9 \div 3}{15 \div 3} = \frac{3}{5}$.

Hence, $\frac{3}{5}$ is the lowest term of $\frac{9}{15}$.

(f) We have $\frac{10}{25}$.

Factors of 10 are: 1, 2, 5 and 10.
Factors of 25 are: 1, 2, 5 and 25.
Common factors are: 1, 2 and 5.

So, $\frac{10 \div 5}{25 \div 5} = \frac{2}{5}$.

Hence, $\frac{2}{5}$ is the lowest term of $\frac{10}{15}$.

(g) We have $\frac{5}{25}$.

Factors of 5 are: 1 and 5.
Factors of 25 are: 1, 5 and 25.
Common factors are: 1 and 5.

So, $\frac{5 \div 5}{25 \div 5} = \frac{1}{5}$.

Hence, $\frac{1}{5}$ is the lowest term of $\frac{5}{25}$.

(h) We have $\frac{26}{78}$.

Factors of 26 are: 1, 2, 13 and 26.
Factors of 78 are: 1, 2, 3, 6, 13, 26, 39 and 78.
Common factors are: 1, 2, 13 and 26.

So, $\frac{26 \div 2}{78 \div 2} = \frac{13}{39}, \frac{26 \div 13}{39 \div 13} = \frac{2}{3}$.

Hence, $\frac{2}{3}$ is the lowest term of $\frac{26}{78}$.

Similar work to done for (i) and (j).

3. (a) We have $\frac{55}{105}$.

Factors of 55 are: 1, 5, 11 and 55.

Factors of 105 are: 1, 3, 5, 7, 15, 21, 35 and 105.

Common factors are: 1 and 5, so HCF is 5.

Dividing the numerator and the denominator by 8, we get the fraction $\frac{55 \div 5}{105 \div 5} = \frac{11}{11}$, which is in its lowest terms.

(b) We have $\frac{54}{80}$.

Factors of 54 are: 1, 2, 3, 5, 8, 10, 20 and 40.

Factors of 50 are: 1, 2, 5, 10, 25 and 50.

Common factors are: 1, 5, and 10, so HCF is 10.

Dividing the numerator and the denominator by 10, we get the fraction $\frac{40 \div 10}{50 \div 10} = \frac{4}{5}$ which is in its lowest terms.

(c) We have $\frac{88}{121}$.

Factors of 88 are: 1, 2, 4, 8, 11, 22, 44, and 88.

Factors of 121 are: 1, 11 and 121.

Common factors are: 1 and 11, so HCF is 11.

Dividing the numerator and the denominator by 11, we get the fraction $\frac{88 \div 11}{121 \div 11} = \frac{8}{11}$, which is in its lowest terms.

(d) We have $\frac{36}{39}$.

Factors of 36 are: 1, 2, 3, 4, 6, 9, 12, 18, and 36.

Factors of 39 are: 1, 3, 13 and 39.

Common factors are: 1 and 3, so HCF is 3.

Dividing the numerator and the denominator by 3, we get the fraction $\frac{36 \div 3}{39 \div 3} = \frac{12}{13}$, which is in its lowest terms.

(e) We have $\frac{18}{48}$.

Factors of 18 are: 1, 2, 3, 6, 9 and 18.

Factors of 48 are: 1, 2, 3, 4, 6, 8, 12, 16, 24 and 48.

Common factors are: 1, 2, 3 and 6, so HCF is 6.

Dividing the numerator and the denominator by 6, we get the fraction $\frac{18 \div 6}{48 \div 6} = \frac{3}{8}$, which is in its lowest terms.

(f) We have $\frac{40}{72}$.

Factors of 40 are: 1, 2, 4, 5, 8, 10, 20 and 40.

Factors of 72 are: 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36 and 72.

Common factors are: 1, 2, 4 and 8, so HCF is 8.

Dividing the numerator and the denominator by 8, we get the fraction $\frac{40 \div 8}{72 \div 8} = \frac{5}{9}$, which is in its lowest terms.

(g) We have $\frac{36}{56}$.

Factors of 36 are: 1, 2, 3, 4, 6, 9, 12, 18, and 36.

Factors of 56 are: 1, 2, 4, 7, 8, 14, 28 and 56.

Common factors are: 1, 2 and 4, so HCF is 4.

Dividing the numerator and the denominator by 4, we get the fraction $\frac{36 \div 4}{56 \div 4} = \frac{9}{14}$, which is in its lowest terms.

(h) We have $\frac{24}{39}$.

Factors of 24 are: 1, 2, 3, 4, 6, 8, 12 and 24.

Factors of 39 are: 1, 3, 13 and 39.

Common factors are: 1 and 3, so HCF is 4.

Dividing the numerator and the denominator by 3, we get the fraction $\frac{24 \div 3}{39 \div 3} = \frac{8}{13}$, which is in its lowest terms.

(i) We have $\frac{12}{30}$.

Factors of 12 are: 1, 2, 3, 4, 6 and 12.

Factors of 30 are: 1, 3, 5, 6, 10, 15 and 30.

Common factors are: 1, 2 and 6, so HCF is 6.

Dividing the numerator and the denominator by 6, we get the fraction $\frac{12 \div 6}{30 \div 6} = \frac{2}{5}$, which is in its lowest terms.

(h) We have $\frac{9}{81}$.

Factors of 9 are: 1, 3 and 9.

Factors of 81 are: 1, 3, 9, 27 and 81.

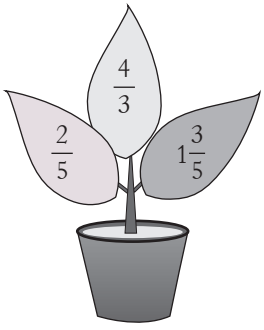
Common factors are: 1, 3 and 9, so HCF is 9.

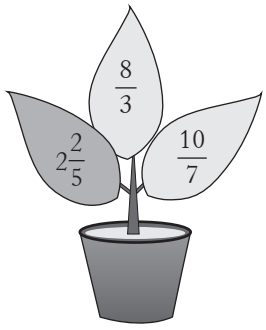
Dividing the numerator and the denominator by 9, we get the fraction $\frac{9 \div 9}{81 \div 9} = \frac{1}{9}$, which is in its lowest terms.

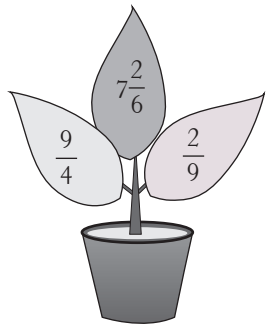
Exercise 6.3

1. Fractions with the same denominator are like fractions.
   (a) The given fractions are unlike fractions because their denominators are not same.
   (b) The given fractions are like fractions because their denominators are same, i.e., 5.
   (c) The given fractions are like fractions because their denominators are same, i.e., 8.
   (d) The given fractions are unlike fractions because their denominators are not same.
   (e) The given fractions are like fractions because their denominators are same, i.e., 11.
   (f) The given fractions are like fractions because their denominators are same, i.e., 14.
2. (a), (c), (g) and (j) are proper fractions because the numerator of each of these fractions is smaller than the denominator.

   (b), (e) and (f) are mixed fractions because each of these fractions is a combination of a whole number and a proper fraction.

   (d), (h) and (i) are improper fractions because the numerator of each of these fractions is greater than the denominator.
3. (a) 

(b) 

(c) 

4. A fraction with the denominator 1 is called a unit fraction. Five unit fractions are: $\frac{1}{6}$, $\frac{1}{11}$, $\frac{1}{15}$, $\frac{1}{51}$ and $\frac{1}{17}$.
5. To change an improper fraction into a mixed fraction, we divide the numerator by the denominator. The quotient becomes the whole number and the remainder the numerator of the resulting fraction. Following this method, we get

   (a) We have $\frac{29}{6}$.

   Dividing the numerator 29 by the denominator 6, we get the quotient 4 and the remainder 5.

   Hence, the required mixed fraction is $4\frac{5}{6}$.

   (b) We have $\frac{93}{67}$.

   Dividing the numerator 93 by the denominator 67, we get the quotient 1 and the remainder 26.

   Hence, the required mixed fraction is $1\frac{26}{67}$.

(c) We have $\frac{86}{18}$.

Dividing the numerator 86 by the denominator 18, we get the quotient 4 and the remainder 14.

Hence, the required mixed fraction is $4\frac{14}{18}$.

(d) We have $\frac{76}{9}$.

Dividing the numerator 76 by the denominator 9, we get the quotient 8 and the remainder 4.

Hence, the required mixed fraction is $8\frac{4}{9}$.

(e) We have $\frac{184}{9}$.

Dividing the numerator 184 by the denominator 9, we get the quotient 20 and the remainder 4.

Hence, the required mixed fraction is $20\frac{4}{9}$.

(f) We have $\frac{55}{8}$.

Dividing the numerator 55 by the denominator 8, we get the quotient 6 and the remainder 7.

Hence, the required mixed fraction is $6\frac{7}{8}$.

(g) We have $\frac{28}{9}$.

Dividing the numerator 28 by the denominator 9, we get the quotient 3 and the remainder 1.

Hence, the required mixed fraction is $3\frac{1}{9}$.

(h) We have $\frac{72}{10}$.

Dividing the numerator 72 by the denominator 10, we get the quotient 7 and the remainder 2.

Hence, the required mixed fraction is $7\frac{2}{10}$.

Similar work to be done for (i) and (j).

6. To change a mixed fraction into an improper fraction, we multiply the whole number by the denominator and add the numerator to the product. The number so obtained becomes the numerator of the improper fraction and the denominator remains the same. Following this method, we get

(a) $5\frac{2}{3} = 5 \times 3 + 2 = 15 + 2 = 17$. Hence, the required improper fraction is $\frac{55}{8}$.

(b) $1\frac{4}{11} = 1 \times 11 + 4 = 11 + 4 = 15$. Hence, the required improper fraction is $\frac{15}{11}$.

(c) $3\frac{3}{7} = 3 \times 7 + 3 = 21 + 3 = 27$. Hence, the required improper fraction is $\frac{27}{7}$.

(d) $2\frac{4}{9} = 2 \times 9 + 4 = 18 + 4 = 22$. Hence, the required improper fraction is $\frac{22}{9}$.

(e) $6\frac{5}{14} = 6 \times 14 + 5 = 84 + 5 = 89$. Hence, the required improper fraction is $\frac{89}{14}$.

(f) $7\frac{3}{9} = 7 \times 9 + 3 = 63 + 3 = 66$. Hence, the required improper fraction is $\frac{66}{9}$.

(g) $4\frac{9}{15} = 4 \times 15 + 9 = 60 + 9 = 69$. Hence, the required improper fraction is $\frac{69}{15}$.

(h) $2\frac{1}{14} = 2 \times 14 + 1 = 28 + 1 = 29$. Hence, the required improper fraction is $\frac{29}{14}$.

(i) $9\frac{2}{11} = 9 \times 11 + 2 = 99 + 2 = 101$. Hence, the required improper fraction is $\frac{101}{11}$

(j) $15\frac{14}{17} = 15 \times 17 + 14 = 255 + 14 = 269$. Hence, the required improper fraction is $\frac{269}{14}$.

7 (a) In $\frac{44}{5}$, $44 = 8 \times 5 + 4$. Hence, $\frac{44}{5} = 8\frac{\mathbf{4}}{5}$.

(b) We have $\frac{72}{7}$. Dividing 72 by 7, we get the quotient 10 and the remainder 2. Hence, $\frac{72}{7} = \mathbf{10}\frac{2}{7}$.

(c) In $4\frac{3}{8}$, $4 \times 8 = 3 = 35$. Hence, $4\frac{3}{8} = \frac{\mathbf{35}}{8}$.

(d) We have $5\frac{2}{9}$. Here, $5 \times 9 + 2 = 45 + 2 = 47$. Hence, $5\frac{2}{9} = \frac{47}{\mathbf{9}}$.

(e) We have $\frac{28}{5}$. Dividing 28 by 5, we get the quotient 5 and the remainder 3. Hence, $\frac{28}{5} = 5\frac{3}{\mathbf{5}}$.

(f) We have $\frac{56}{9}$. Dividing 56 by 9, we get the quotient 6 and the remainder 2. Hence, $\frac{56}{6} = \mathbf{6}\frac{2}{\mathbf{5}}$.

(g) We have $\frac{22}{3}$. Dividing 22 by 3, we get the quotient 7 and the remainder 1. Hence, $\frac{22}{3} = 7\frac{\mathbf{1}}{\mathbf{5}}$.

(h) We have $4\frac{2}{13}$. Here, $4 \times 13 + 2 = 52 + 2 = 54$. Hence, $4\frac{2}{13} = \frac{\mathbf{54}}{13}$.

Exercise 6.4

1. We know that in a pair of like fractions, the fraction with greater numerator is greater. Hence,

(a) $\frac{4}{5} > \frac{3}{5}$ (b) $\frac{2}{9} < \frac{3}{9}$ (c) $\frac{7}{11} > \frac{2}{11}$ (d) $\frac{1}{6} < \frac{5}{6}$

(e) $\frac{3}{18} < \frac{5}{18}$ (b) $\frac{2}{7} < \frac{4}{7}$ (g) $\frac{3}{8} < \frac{5}{8}$ (h) $\frac{8}{15} > \frac{4}{15}$

2. In a pair of unlike fractions with same numerator, the fraction with greater denominator is smaller.

(a) $\frac{5}{7} > \frac{5}{9}$ (b) $\frac{3}{11} < \frac{3}{8}$ (c) $\frac{4}{10} < \frac{4}{8}$ (d) $\frac{6}{16} < \frac{6}{10}$

(e) $\frac{8}{15} < \frac{8}{13}$ (f) $\frac{3}{7} > \frac{3}{8}$ (g) $\frac{5}{9} > \frac{5}{14}$ (h) $\frac{1}{6} > \frac{1}{4}$

3. (a) We have $\frac{1}{6}$ and $\frac{5}{12}$.
LCM of the denominators 6 and 12 is 12.
Converting the given fractions into like fractions with denominator 12, we get
$\frac{1 \times 2}{6 \times 2} = \frac{2}{12}$
Now we have the like fractions $\frac{2}{12}$ and $\frac{5}{12}$.
Comparing their numerators, we get $\frac{2}{12} < \frac{5}{12}$.

(b) We have $\frac{5}{16}$ and $\frac{4}{8}$.
LCM of the denominators 8 and 16 is 16.
Converting the given fractions into like fractions with denominator 16, we get
$\frac{4 \times 2}{8 \times 2} = \frac{8}{16}$
Now we have the like fractions $\frac{5}{16}$ and $\frac{8}{16}$.
Comparing their numerators, we get $\frac{5}{16} < \frac{8}{16}$.

(c) We have $\frac{7}{9}$ and $\frac{2}{8}$.
Multiples of 9 = 9,18, 27, 36, 45, 54, 63, **72**, ...
Multiples of 8 = 8,16, 24, 32, 40, 48, 56, 64, **72**, ...
LCM of the denominators 8 and 9 is 72.
Converting the given fractions into like fractions with denominator 72, we get
$\frac{7 \times 8}{9 \times 8} = \frac{56}{72}$ and $\frac{2 \times 9}{8 \times 9} = \frac{18}{72}$
Now we have the like fractions $\frac{56}{72}$ and $\frac{18}{72}$.
Comparing their numerators, we get $\frac{56}{72} > \frac{18}{72}$.

(d) We have $\frac{4}{5}$ and $\frac{6}{9}$.
Multiples of 5 = 5,10, 15, 20, 25, 30, 35, 40, **45**, 50, ...
Multiples of 9 = 9,18, 27, 36, **45**, 54, ...
LCM of the denominators 5 and 9 is 45.
Converting the given fractions into like fractions with denominator 45, we get
$\frac{4 \times 9}{5 \times 9} = \frac{36}{45}$ and $\frac{6 \times 5}{9 \times 5} = \frac{30}{45}$
Now we have the like fractions $\frac{36}{44}$ and $\frac{30}{45}$.
Comparing their numerators, we get $\frac{36}{45} > \frac{30}{45}$.

(c) We have $\frac{7}{9}$ and $\frac{2}{8}$.

Multiples of 9 = 9,18, 27, 36, 45, 54, 63, **72**, ...

Multiples of 8 = 8,16, 24, 32, 40, 48, 56, 64, **72**, ...

LCM of the denominators 8 and 9 is 72.

Converting the given fractions into like fractions with denominator 72, we get

$\frac{7 \times 8}{9 \times 8} = \frac{56}{72}$ and $\frac{2 \times 9}{8 \times 9} = \frac{18}{72}$

Now we have the like fractions $\frac{56}{72}$ and $\frac{18}{72}$.

Comparing their numerators, we get $\frac{56}{72} > \frac{18}{72}$.

(d) We have $\frac{4}{5}$ and $\frac{6}{9}$.

Multiples of 5 = 5,10, 15, 20, 25, 30, 35, 40, **45**, 50, ...

Multiples of 9 = 9,18, 27, 36, **45**, 54, ...

LCM of the denominators 5 and 9 is 45.

Converting the given fractions into like fractions with denominator 45, we get

$\frac{4 \times 9}{5 \times 9} = \frac{36}{45}$ and $\frac{6 \times 5}{9 \times 5} = \frac{30}{45}$

Now we have the like fractions $\frac{36}{45}$ and $\frac{30}{45}$.

Comparing their numerators, we get $\frac{36}{45} > \frac{30}{45}$.

(e) We have $\frac{1}{3}$ and $\frac{9}{7}$.

Multiples of 3 = 3, 6, 9,12, 18, **21**, 24, ...

Multiples of 7 = 7,14, **21**, 28, 35, 42, ...

LCM of the denominators 3 and 7 is 21.

Converting the given fractions into like fractions with denominator 72, we get

$\frac{1 \times 7}{3 \times 7} = \frac{7}{21}$ and $\frac{9 \times 3}{7 \times 3} = \frac{27}{21}$

Now we have the like fractions $\frac{7}{21}$ and $\frac{27}{21}$.

Comparing their numerators, we get $\frac{7}{21} < \frac{27}{21}$.

(f) We have $\frac{5}{11}$ and $\frac{3}{9}$.

Multiples of 9 = 9,18, 27, 36, **45**, 54, 63, 72, 81, 90, **99**, ...

Multiples of 11 = 11, 22, 33, 44, 55, 66, 77, 88, **99**, 110, ...

LCM of the denominators 11 and 9 is 99.

Converting the given fractions into like fractions with denominator 45, we get

$\frac{5 \times 9}{11 \times 9} = \frac{45}{99}$ and $\frac{3 \times 11}{9 \times 11} = \frac{33}{99}$

Now we have the like fractions $\frac{45}{99}$ and $\frac{33}{99}$.

Comparing their numerators, we get $\frac{45}{99} > \frac{33}{99}$.

(g) We have $\frac{6}{14}$ and $\frac{4}{8}$.

Multiples of 14 = 14, 28, 42, 56, 70, 84, ...

Multiples of 8 = 8,16, 24, 32, 40, 48, 56, ...

LCM of the denominators 14 and 8 is 56.

Converting the given fractions into like fractions with denominator 56, we get

$\frac{6 \times 4}{14 \times 4} = \frac{24}{56}$ and $\frac{4 \times 7}{8 \times 7} = \frac{28}{56}$

Now we have the like fractions $\frac{14}{56}$ and $\frac{28}{56}$.

Comparing their numerators, we get $\frac{14}{56} < \frac{28}{56}$.

(h) We have $\frac{3}{16}$ and $\frac{5}{8}$.

Multiples of 16 = **16**,32, 48, 64, 80, 99, ...

Multiples of 8 = 8,**16**, 24, 32, 40, 48, 56, ...

LCM of the denominators 16 and 8 is 16.

Converting the given fractions into like fractions with denominator 45, we get

$\frac{3 \times 1}{16 \times 1} = \frac{3}{16}$ and $\frac{5 \times 2}{8 \times 2} = \frac{10}{16}$

Now we have the like fractions $\frac{3}{16}$ and $\frac{10}{16}$.

Comparing their numerators, we get $\frac{3}{16} < \frac{10}{16}$.

4. (a) We have $\frac{4}{5}$ and $\frac{3}{7}$.

By cross multiplication, we get

$\frac{4}{5}$ $\quad$ $\frac{3}{7}$

$4 \times 7 \quad 3 \times 5$

$27 \quad 15$

As $27 > 15$, so $\frac{4}{5} > \frac{3}{7}$.

(b) We have $\frac{6}{8}$ and $\frac{2}{9}$.

By cross multiplication, we get

$\frac{6}{8}$ $\quad$ $\frac{2}{9}$

$6 \times 9 \quad 2 \times 8$

$54 \quad 16$

As $54 > 16$, so $\frac{6}{8} > \frac{2}{9}$.

(c) We have $\frac{4}{5}$ and $\frac{3}{9}$.

By cross multiplication, we get

$\frac{4}{5}$ $\quad$ $\frac{3}{9}$

$4 \times 9 \quad 3 \times 5$

$36 \quad 15$

As $36 > 15$, so $\frac{4}{5} > \frac{3}{9}$.

(d) We have $\frac{5}{8}$ and $\frac{4}{7}$.

By cross multiplication, we get

$\frac{5}{8}$ $\quad$ $\frac{4}{7}$

$5 \times 7 \quad 4 \times 8$

$35 \quad 32$

As $35 > 32$, so $\frac{5}{8} > \frac{4}{7}$.

(e) We have $\frac{2}{9}$ and $\frac{7}{7}$.

By cross multiplication, we get

$\frac{2}{9}$ $\quad$ $\frac{7}{7}$

$2 \times 7 \quad 7 \times 9$

$14 \quad 63$

As $14 < 63$, so $\frac{2}{9} < \frac{7}{7}$.

(f) We have $\frac{7}{12}$ and $\frac{5}{6}$.

By cross multiplication, we get

$\frac{7}{12}$ $\quad$ $\frac{5}{6}$

$7 \times 6 \quad 5 \times 12$

$42 \quad 60$

As $42 < 60$, so $\frac{7}{12} > \frac{5}{6}$.

(g) We have $\frac{4}{9}$ and $\frac{1}{12}$.

By cross multiplication, we get

$\frac{4}{9}$ $\quad$ $\frac{1}{12}$

$4 \times 12 \quad 1 \times 9$

$48 \quad 9$

As $48 > 9$, so $\frac{4}{9} > \frac{1}{12}$.

(h) We have $\frac{19}{22}$ and $\frac{10}{11}$.

By cross multiplication, we get

$\frac{19}{22}$ $\quad$ $\frac{10}{11}$

$19 \times 11 \quad 10 \times 22$

$209 \quad 220$

As $209 < 220$, so $\frac{19}{22} < \frac{10}{11}$.

5. To arrange the like fractions in ascending order, write them with their numerators in ascending order keeping the common denominator same. Also, to arrange unlike fractions with same numerator, write them with their denominators in ascending order. Following these rules, we get:

(a) the given fractions $\frac{1}{3}, \frac{5}{3}, \frac{2}{3}, \frac{4}{3}, \frac{3}{3}$ in ascending order are: $\frac{1}{3}, \frac{2}{3}, \frac{3}{3}, \frac{4}{3}, \frac{5}{3}$.

(b) the given fractions $\frac{5}{10}, \frac{2}{10}, \frac{8}{10}, \frac{3}{10}, \frac{1}{10}$ in ascending order are: $\frac{1}{10}, \frac{2}{10}, \frac{3}{10}, \frac{5}{10}, \frac{8}{10}$.

(c) the given fractions $\frac{11}{14}, \frac{11}{13}, \frac{11}{10}, \frac{11}{18}, \frac{11}{19}$ in ascending order are: $\frac{11}{10}, \frac{11}{13}, \frac{11}{14}, \frac{11}{18}, \frac{11}{19}$.

(d) the given fractions $\frac{19}{12}, \frac{19}{16}, \frac{19}{11}, \frac{19}{10}, \frac{19}{14}$ in ascending order are: $\frac{19}{10}, \frac{19}{11}, \frac{19}{12}, \frac{19}{14}, \frac{19}{16}$.

6. To arrange the like fractions in descending order, write them with their numerators in descending order keeping the common denominator same. Also, to arrange unlike fractions with same numerator in descending order, write them with their denominators in ascending order. Following these rules, we get:
   (a) the given fractions $\frac{9}{13}, \frac{11}{13}, \frac{4}{13}, \frac{8}{13}, \frac{3}{13}$ in descending order are: $\frac{11}{13}, \frac{9}{13}, \frac{8}{13}, \frac{4}{13}, \frac{3}{13}$.
   (b) the given fractions $\frac{16}{17}, \frac{5}{17}, \frac{23}{17}, \frac{24}{17}, \frac{8}{17}$ in descending order are: $\frac{24}{17}, \frac{23}{17}, \frac{16}{17}, \frac{8}{17}, \frac{5}{17}$.
   (c) the given fractions $\frac{15}{18}, \frac{15}{24}, \frac{15}{29}, \frac{15}{13}, \frac{15}{10}$ in descending order are: $\frac{15}{10}, \frac{15}{13}, \frac{15}{18}, \frac{15}{24}, \frac{15}{29}$.
   (d) the given fractions $\frac{12}{14}, \frac{12}{8}, \frac{12}{6}, \frac{12}{9}, \frac{12}{10}$ in descending order are: $\frac{12}{6}, \frac{12}{8}, \frac{12}{9}, \frac{12}{10}, \frac{12}{14}$.

Exercise 6.5

1. We know that to add two or more like fractions, just add the numerators and write the denominator as it is. If the sum is an improper fraction, then we convert it into mixed fraction. Following this procedure, we add the given fractions.
   (a) $\frac{7}{9}+\frac{2}{9}=\frac{9}{9}=1.$ (b) $\frac{11}{15}+\frac{2}{15}=\frac{13}{15}.$ (c) $\frac{17}{21}+\frac{5}{21}=\frac{22}{21}=1\frac{1}{21}.$
   (d) $\frac{8}{12}+\frac{8}{12}=\frac{16}{12}=1\frac{4}{12}.$ (e) $\frac{4}{5}+\frac{2}{5}+\frac{3}{5}=\frac{9}{5}=1\frac{4}{5}.$ (f) $\frac{3}{14}+\frac{8}{14}+\frac{4}{14}=\frac{15}{14}=1\frac{1}{14}.$
   (g) $\frac{8}{15}+\frac{2}{15}+\frac{4}{15}=\frac{14}{15}.$ (h) $\frac{9}{11}+\frac{3}{11}+\frac{8}{11}=\frac{20}{11}=1\frac{9}{11}.$

2. We know that to subtract like fractions, we just subtract the numerators and write denominator as it is. If the difference is an improper fraction, then we convert it into mixed fraction.
   (a) $\frac{4}{15}-\frac{3}{15}=\frac{1}{15}.$ (b) $\frac{6}{18}-\frac{4}{18}=\frac{2}{18}=\frac{1}{9}.$ (c) $\frac{7}{14}-\frac{3}{14}=\frac{4}{14}=\frac{2}{7}.$
   (d) $\frac{12}{17}-\frac{2}{17}=\frac{10}{17}.$ (e) $\frac{13}{15}-\frac{12}{15}=\frac{1}{15}.$ (f) $\frac{15}{24}-\frac{11}{24}=\frac{4}{24}=\frac{1}{6}.$
   (g) $\frac{7}{19}-\frac{3}{19}=\frac{4}{19}.$ (h) $\frac{15}{24}-\frac{13}{24}=\frac{2}{24}=\frac{1}{12}.$

3. While adding, first convert the mixed numbers into improper fractions and then add.
   (a) $\frac{9}{7}+\frac{2}{7}=\frac{11}{7}=1\frac{4}{7}.$ (b) $\frac{5}{15}+\frac{4}{15}=\frac{9}{15}=\frac{3}{5}.$
   (c) $7\frac{4}{5}+2\frac{1}{5}=\frac{39}{5}+\frac{11}{5}=\frac{50}{5}=10.$ (d) $5\frac{3}{20}+2\frac{4}{20}=\frac{53}{20}+\frac{44}{20}=\frac{97}{20}=4\frac{17}{20}.$
   (e) $5\frac{2}{9}+4\frac{3}{9}=\frac{47}{9}+\frac{39}{9}=\frac{86}{9}=9\frac{5}{9}.$ (f) $10\frac{3}{4}+\frac{30}{4}=\frac{43}{4}+\frac{30}{4}=\frac{73}{4}=18\frac{1}{4}.$
   (g) $4\frac{1}{11}+2\frac{2}{11}=\frac{45}{11}+\frac{24}{11}=\frac{69}{11}=6\frac{3}{11}.$ (h) $6\frac{1}{4}+\frac{2}{4}+1\frac{1}{4}=\frac{25}{4}+\frac{2}{4}+\frac{5}{4}=\frac{32}{4}=8.$

3. While subtracting, first convert the mixed numbers into improper fractions and then subtract.
   (a) $\frac{9}{5}-\frac{2}{5}=\frac{7}{5}=1\frac{2}{5}.$ (b) $\frac{8}{7}-\frac{3}{7}=\frac{5}{7}.$
   (c) $8\frac{3}{5}-2\frac{1}{5}=\frac{43}{5}-\frac{11}{5}=\frac{32}{5}=6\frac{2}{5}.$ (d) $6\frac{5}{12}-3\frac{3}{12}=\frac{77}{12}-\frac{39}{12}=\frac{38}{12}=3\frac{2}{12}=3\frac{1}{6}.$
   (e) $\frac{72}{16}-\frac{64}{16}=\frac{8}{16}=\frac{1}{2}.$ (f) $1\frac{1}{80}-\frac{16}{80}=\frac{81}{80}-\frac{16}{80}=\frac{65}{80}=\frac{13}{16}.$

(g) $7\frac{5}{12} - 4\frac{2}{12} = \frac{89}{12} - \frac{50}{12} = \frac{39}{12} = 3\frac{3}{12}$.

(h) $5\frac{4}{17} - 2\frac{3}{17} = \frac{89}{17} - \frac{37}{17} = \frac{52}{17} = 3\frac{1}{17}$.

5. (a) Money given to Saket by his grandmother = ₹ $10\frac{1}{2}$

Money given him by his mother = ₹ $\frac{50}{2}$

Total money with Saket = ₹ $10\frac{1}{2}$ + ₹ $\frac{50}{2}$ = ₹ $\frac{21}{2}$ + ₹ $\frac{50}{2}$ = ₹ $\frac{71}{2}$ = ₹ $35\frac{1}{2}$.

Hence, Saket now has ₹ $35\frac{1}{2}$ with him.

(b) Part of cake eaten by Rakhi = $\frac{4}{12}$

Part of cake eaten by her brother Saransh = $\frac{5}{12}$

Part of cake eaten by both them = $\frac{4}{12} + \frac{5}{12} = \frac{9}{12} = \frac{3}{4}$.

Hence, they altogether ate $\frac{3}{4}$ of the cake.

(c) Distance ran by Soni in 10 s = $75\frac{1}{4}$ m

Distance ran by Rani in 10 s = $68\frac{3}{4}$ m

More distance ran by Soni than Rani = $75\frac{1}{4}$ m – $68\frac{3}{4}$ m = $74\frac{5}{4}$ m – $68\frac{3}{4}$ m = $6\frac{2}{4}$ m.

Hence, Soni ran $6\frac{2}{4}$ m more than Rani.

(d) Part of the wall painted first day by Ravi = $\frac{3}{10}$

Part of the wall painted first day by Lakhan = $\frac{1}{10}$

Part of the wall painted first day by both = $\frac{3}{10} + \frac{1}{10} = \frac{4}{10} = \frac{2}{5}$.

The whole wall to be painted is considered as 1.

Part of the wall remained to paint = $1 - \frac{2}{5} = \frac{5}{5} - \frac{2}{5} = \frac{3}{5}$.

Hence, the part of the wall they have to paint to complete the wall is $\frac{3}{5}$.

Exercise 6.6

1. To add subtract unlike fractions, we first convert them to like fractions by taking LCM of the denominators and then add.

(a) We have $\frac{2}{5}+\frac{3}{4}$.

Multiples of 5 = 5, 10, 15, **20**, 25, 30, ...

Multiples of 4 = 4, 8, 12, 16, **20**, 24, ...

LCM of the denominators 4 and 5 is 20.

$\frac{2\times4}{5\times4}=\frac{8}{20}$ and $\frac{3\times5}{4\times5}=\frac{15}{20}$

Now, $\frac{8}{20}+\frac{15}{20}=\frac{23}{20}$.

Hence, $\frac{2}{5}+\frac{3}{4}=\frac{23}{20}$.

(b) We have $\frac{3}{7}+\frac{2}{9}$.

Multiples of 7 = 7, 14, 21, 28, 35, 42, 49, 56, **63**, 70, ...

Multiples of 9 = 9, 18, 27, 36, 45, 54, **63**, ...

LCM of the denominators 7 and 9 is 63.

$\frac{3\times9}{7\times9}=\frac{27}{63}$ and $\frac{2\times7}{9\times7}=\frac{14}{63}$

Now, $\frac{27}{63}+\frac{14}{63}=\frac{41}{63}$.

Hence, $\frac{3}{7}+\frac{2}{9}=\frac{41}{63}$.

(c) We have $\frac{4}{7}+\frac{2}{3}$.

Multiples of 7 = 7, 14, **21**, 28, 35, 42, ...

Multiples of 3 = 3, 6, 9, 12, 15, 18, **21**, ...

LCM of the denominators 7 and 3 is 21.

$\frac{4\times3}{7\times3}=\frac{12}{21}$ and $\frac{2\times7}{3\times7}=\frac{14}{21}$

Now, $\frac{12}{21}+\frac{14}{21}=\frac{26}{21}=1\frac{5}{21}$.

Hence, $\frac{4}{7}+\frac{2}{3}=1\frac{5}{21}$.

(d) We have $\frac{5}{3}+\frac{1}{4}$.

Multiples of 3 = 3 = 3, 6, 9, **12**, 15, 18, 21, ...

Multiples of 4 = 4, 8, **12**, 16, 20, 24, ...

LCM of the denominators 3 and 4 is 12.

$\frac{5\times4}{3\times4}=\frac{20}{12}$ and $\frac{1\times3}{4\times3}=\frac{3}{12}$

Now, $\frac{20}{12}+\frac{3}{12}=\frac{23}{12}=1\frac{11}{12}$.

Hence, $\frac{5}{3}+\frac{1}{4}=\,=1\frac{11}{12}$.

(e) We have $\frac{1}{2}+\frac{3}{4}+\frac{1}{6}$.

Multiples of 2 = 2, 4, 6, 8, 10, **12**, 14, ...

Multiples of 4 = 4, 8, **12**, 16, 20, 24, ...

Multiples of 6 = 6, **12**, 18, 24, 30, 36, ...

LCM of the denominators 2, 4 and 6 is 12.

$\frac{1\times6}{2\times6}=\frac{6}{12}$, $\frac{3\times3}{4\times3}=\frac{9}{12}$ and $\frac{1\times2}{6\times2}=\frac{2}{12}$

Now, $\frac{6}{12}+\frac{9}{12}+\frac{2}{12}=\frac{17}{12}=1\frac{5}{12}$.

Hence, $\frac{1}{2}+\frac{3}{4}+\frac{1}{6}=\frac{17}{12}=1\frac{5}{12}$.

(f) We have $\frac{4}{6}+\frac{7}{8}+\frac{1}{4}$.

Multiples of 6 = 6, 12, 18, **24**, 30, 36, ...

Multiples of 8 = 8, 16, **24**, 32, 40, 48, ...

Multiples of 4 = 4, 8, 12, 16, 20, **24**, ...

LCM of the denominators 4, 6 and 8 is 24.

$\frac{4\times4}{6\times4}=\frac{16}{24}$, $\frac{7\times3}{8\times3}=\frac{21}{24}$ and $\frac{1\times6}{4\times6}=\frac{6}{24}$

Now, $\frac{16}{24}+\frac{21}{24}+\frac{6}{24}=\frac{43}{24}=1\frac{19}{24}$.

Hence, $\frac{4}{6}+\frac{7}{8}+\frac{1}{4}=1\frac{19}{24}$.

(g) We have $\frac{3}{4}+\frac{1}{6}+\frac{1}{2}$.

Multiples of 2 = 2, 4, 6, 8, 10, **12**, 14, ...

Multiples of 4 = 4, 8, **12**, 16, 20, 24, ...

Multiples of 6 = 6, **12**, 18, 24, 30, 36, ...

LCM of the denominators 2, 4 and 6 is 12.

$\frac{3\times3}{4\times3}=\frac{9}{12}$, $\frac{1\times2}{6\times2}=\frac{2}{12}$ and $\frac{1\times6}{2\times6}=\frac{6}{12}$

Now, $\frac{9}{12}+\frac{2}{12}+\frac{6}{12}=\frac{17}{12}=1\frac{5}{12}$.

Hence, $\frac{3}{4}+\frac{1}{6}+\frac{1}{2}=\frac{17}{12}=1\frac{5}{12}$.

(h) We have $\frac{1}{5}+\frac{3}{4}+\frac{1}{16}$.

Multiples of 4 = 4, 8, 12, 16, 20, ...,76, **80**, ...

Multiples of 5 = 5, 10, 15, 20, ..., 75, **80**, ...

Multiples of 16 = 16, 32, 48, 64, **80**, 96, ...

LCM of the denominators 4, 5 and 16 is 80.

$\frac{1\times16}{5\times16}=\frac{16}{80}$, $\frac{3\times20}{4\times20}=\frac{60}{80}$ and $\frac{1\times5}{16\times5}=\frac{5}{80}$

Now, $\frac{16}{80}+\frac{60}{80}+\frac{5}{80}=\frac{81}{80}=1\frac{1}{80}$.

Hence, $\frac{1}{5}+\frac{3}{4}+\frac{1}{16}=1\frac{1}{80}$.

2. To subtract unlike fractions, we first convert them to like fractions by taking LCM of the denominators and then subtract.

(a) We have $\frac{3}{4}-\frac{7}{20}$.
Multiples of 4 = 4, 8, 12, 16, **20**, 24, ...
Multiples of 20 = **20**, 40, 60, 80, ...
LCM of the denominators 4 and 20 is 20.
$\frac{3\times5}{4\times5}=\frac{15}{20}$ and $\frac{7\times1}{20\times1}=\frac{7}{20}$
Now, $\frac{15}{20}-\frac{7}{20}=\frac{8}{20}=\frac{2}{5}$.
Hence, $\frac{3}{4}-\frac{7}{20}=\frac{2}{5}$.

(b) We have $\frac{13}{10}-\frac{2}{5}$.
Multiples of 10 = **10**, 20, 30, 40, 50, ...
Multiples of 5 = 5, **10**, 15, 20, 25, 30, 35, ...
LCM of the denominators 5 and 10 is 10.
$\frac{13\times1}{10\times1}=\frac{13}{10}$ and $\frac{2\times2}{5\times2}=\frac{4}{10}$
Now, $\frac{13}{10}-\frac{4}{10}=\frac{9}{10}$.
Hence, $\frac{13}{10}-\frac{2}{5}=\frac{9}{10}$.

(c) We have $\frac{3}{5}-\frac{4}{10}$.
Multiples of 5 = 5, **10**, 15, 20, 25, 30, ...
Multiples of 10 = **10**, 20, 30, 40, 50, ...
LCM of the denominators 5 and 10 is 10.
$\frac{3\times2}{5\times2}=\frac{6}{10}$ and $\frac{4\times1}{10\times1}=\frac{4}{10}$
Now, $\frac{6}{10}-\frac{4}{10}=\frac{2}{10}=\frac{1}{5}$.
Hence, $\frac{3}{5}-\frac{4}{10}=\frac{1}{5}$.

(d) We have $\frac{15}{8}-\frac{5}{24}$.
Multiples of 8 = 8, 16, **24**, 32, 40, ...
Multiples of 24 = **24**, 48, 72, ...
LCM of the denominators 8 and 24 is 24.
$\frac{15\times3}{8\times3}=\frac{45}{24}$ and $\frac{5\times1}{24\times1}=\frac{5}{24}$
Now, $\frac{45}{24}-\frac{5}{24}=\frac{40}{24}=\frac{5}{3}=1\frac{2}{3}$.
Hence, $\frac{15}{8}-\frac{5}{24}=1\frac{2}{3}$.

(e) We have $\frac{2}{3}-\frac{3}{5}$.
Multiples of 5 = 5, 10, **15**, 20, 25, 30, ...
Multiples of 3 = 3, 6, 9, 12, **15**, 18, ...
LCM of the denominators 3 and 5 is 15.
$\frac{2\times5}{3\times5}=\frac{10}{15}$ and $\frac{3\times3}{5\times3}=\frac{9}{15}$
Now, $\frac{10}{15}-\frac{9}{15}=\frac{1}{15}$.
Hence, $\frac{2}{3}-\frac{3}{5}=\frac{1}{15}$.

(f) We have $\frac{3}{16}-\frac{1}{8}$.
Multiples of 8 = 8, 16, **24**, 32, 40, ...
Multiples of 16 = **16**, 32, 48, 64, ...
LCM of the denominators 8 and 16 is 16.
$\frac{3\times1}{16\times1}=\frac{3}{16}$ and $\frac{1\times2}{8\times2}=\frac{2}{16}$
Now, $\frac{3}{16}-\frac{2}{16}=\frac{1}{16}$.
Hence, $\frac{3}{16}-\frac{1}{8}=\frac{1}{16}$.

(g) We have $\frac{3}{4}-\frac{1}{2}$.
Multiples of 2 = 2, **4**, 6, 8, 10, 12, ...
Multiples of 4 = **4**, 8, 12, 16, 20, ...
LCM of the denominators 2 and 4 is 4.
$\frac{3\times1}{4\times1}=\frac{3}{4}$ and $\frac{1\times2}{2\times2}=\frac{2}{4}$
Now, $\frac{3}{4}-\frac{2}{4}=\frac{1}{4}$.
Hence, $\frac{3}{4}-\frac{1}{2}=\frac{1}{4}$.

(h) We have $\frac{8}{9}-\frac{2}{3}$.
Multiples of 3 = 3, 6, **9**, 12, 15, ...
Multiples of 9 = **9**, 18, 27, 36, ...
LCM of the denominators 3 and 9 is 9.
$\frac{8\times1}{9\times1}=\frac{8}{9}$ and $\frac{2\times3}{3\times3}=\frac{6}{9}$
Now, $\frac{8}{9}-\frac{6}{9}=\frac{2}{9}$.
Hence, $\frac{8}{9}-\frac{2}{3}=\frac{2}{9}$.

3. (a) $2\frac{1}{2}+1\frac{2}{3}=\frac{5}{2}+\frac{5}{3}$ [LCM of 2 and 3 = 6]
$=\frac{15}{6}+\frac{10}{6}=\frac{35}{6}=5\frac{5}{6}$.

(b) $3\frac{2}{5}+2\frac{1}{4}=\frac{17}{5}+\frac{9}{4}$ [LCM of 4 and 5 = 20]
$=\frac{68}{20}+\frac{45}{20}=\frac{113}{20}=5\frac{13}{20}$.

(c) $2\frac{1}{6}+2\frac{1}{3}=\frac{13}{6}+\frac{7}{3}$ [LCM of 3 and 6 = 6]
$=\frac{13}{6}+\frac{14}{6}=\frac{27}{6}=4\frac{3}{6}$.

(d) $3\frac{1}{4}+5\frac{1}{12}=\frac{13}{4}+\frac{61}{12}$ [LCM of 4 and 12 = 12]
$=\frac{39}{12}+\frac{61}{12}=\frac{100}{12}=6\frac{4}{12}=6\frac{1}{3}$.

(e) $4\frac{1}{3}-\frac{2}{5}=\frac{13}{3}-\frac{2}{5}$ [LCM of 3 and 5 = 15]
$=\frac{65}{15}-\frac{6}{15}=\frac{59}{15}=3\frac{14}{15}$.

(f) $4\frac{4}{9}-2\frac{2}{7}=\frac{40}{9}-\frac{16}{7}$ [LCM of 7 and 9 = 63]
$=\frac{280}{63}+\frac{144}{63}=\frac{36}{63}=\frac{12}{21}$.

(g) $5\frac{1}{8}-2\frac{4}{9}=\frac{41}{8}-\frac{22}{9}$ [LCM of 8 and 9 = 72]
$=\frac{369}{72}-\frac{176}{72}=\frac{193}{72}=2\frac{49}{72}$.

(h) $3\frac{2}{4}-2\frac{3}{4}=\frac{14}{4}-\frac{11}{4}=\frac{3}{4}$.

4. (a) Fraction of pocket money spent on buying a bat = $\frac{4}{5}$

Fraction of pocket money spent on buying a video game = $\frac{5}{8}$

Fraction of pocket money spent in all = $\frac{4}{5}+\frac{5}{8}=\frac{32}{40}+\frac{25}{8}=\frac{7}{8}$.

Hence, Sunny spent $\frac{7}{8}$ of his pocket money.

(b) Quantity of oil bought by Mamta = $2\frac{1}{4}$ L = $\frac{9}{4}$ L = $\frac{18}{8}$ L

Quantity of oil bought by Madhurima = $2\frac{5}{8}$ L = $\frac{21}{8}$ L

As $\frac{21}{8}$ L is greater than $\frac{18}{8}$ L, so Madhurima bought more oil.

Difference = $\frac{21}{8}$ L − $\frac{18}{8}$ L = $\frac{3}{8}$ L

Hence, Madhurima bought $\frac{3}{8}$ L more oil than Mamta.

Revision Exercise

1. Four equivalent fractions:

(a) for $\frac{1}{6}$ are: $\frac{1\times2}{6\times2}, \frac{1\times3}{6\times3}, \frac{1\times4}{6\times4}, \frac{1\times5}{6\times5}=\frac{2}{12}, \frac{3}{18}, \frac{4}{24}$ and $\frac{5}{30}$.

(b) for $\frac{3}{7}$ are: $\frac{3\times2}{7\times2}, \frac{3\times3}{7\times3}, \frac{3\times4}{7\times4}, \frac{3\times5}{7\times5}, \frac{3\times6}{7\times6}=\frac{6}{14}, \frac{9}{21}, \frac{12}{28}$ and $\frac{15}{35}$.

(c) for $\frac{8}{11}$ are: $\frac{8\times2}{11\times2}, \frac{8\times3}{11\times3}, \frac{8\times4}{11\times4}, \frac{8\times5}{11\times5}, \frac{8\times6}{11\times6}=\frac{16}{22}, \frac{24}{33}, \frac{32}{44}$ and $\frac{40}{55}$.

(d) for $\frac{3}{8}$ are: $\frac{3\times2}{8\times2}, \frac{3\times3}{8\times3}, \frac{3\times4}{8\times4}, \frac{3\times5}{8\times5}, \frac{3\times6}{8\times6}=\frac{6}{16}, \frac{9}{24}, \frac{12}{32}$ and $\frac{15}{40}$.

(e) for $\frac{9}{13}$ are: $\frac{9\times2}{13\times2}, \frac{9\times3}{13\times3}, \frac{9\times4}{13\times4}, \frac{9\times5}{13\times5} = \frac{18}{26}, \frac{27}{39}, \frac{36}{52}, \frac{45}{65}$, and $\frac{54}{78}$.

2. (a) $\frac{3}{5} = \frac{3\times2}{5\times2} = \frac{\mathbf{6}}{10}$ (b) $\frac{2}{9} = \frac{2\times4}{9\times4} = \frac{8}{36}$ (c) $\frac{10}{13} = \frac{10\times1}{10\times15} = \frac{10}{\mathbf{150}}$

(s) $\frac{9}{7} = \frac{9\div9}{72\div9} = \frac{1}{\mathbf{8}}$

3. We know that like fractions have same denominator and unlike fractions have different denominators.
   (a) The given fractions have different denominators, so they are unlike fractions.
   (b) The given fractions have same denominator, so they are like fractions.
   (c) The given fractions have different denominators, so they are unlike fractions.

4. Fractions in (c), (d), (f) and (i) are proper fractions because the numerator of each of these fractions is smaller than the denominator.

   Fractions in (a), (e) (g) and (j) are mixed fractions because each of these fractions is a combination of a whole number and a proper fraction.

   Fractions in (b) and (h) are improper fractions because the numerator of each of these fractions is greater than the denominator.

5 (a) We have $\frac{75}{8}$. Dividing 75 by 8, we get the quotient 9 and the remainder 3. Hence, $\frac{75}{8} = 9\frac{3}{8}$.

   (b) We have $\frac{42}{13}$. Dividing 42 by 13, we get the quotient 3 and the remainder 3. Hence, $\frac{42}{13} = 3\frac{3}{13}$.

   (c) We have $\frac{15}{4}$. Dividing 15 by 4, we get the quotient 3 and the remainder 3. Hence, $\frac{15}{4} = 3\frac{3}{4}$.

   (d) We have $\frac{34}{9}$. Dividing 34 by 9, we get the quotient 3 and the remainder 7. Hence, $\frac{34}{9} = 3\frac{7}{9}$.

   (e) We have $\frac{26}{7}$. Dividing 26 by 7, we get the quotient 3 and the remainder 5. Hence, $\frac{26}{7} = 3\frac{5}{7}$.

   (f) We have $\frac{42}{5}$. Dividing 42 by 5, we get the quotient 8 and the remainder 2. Hence, $\frac{42}{5} = 8\frac{2}{5}$.

6. To change a mixed fraction into an improper fraction, we multiply the whole number by the denominator and add the numerator to the product. The number so obtained becomes the numerator of the improper fraction and the denominator remains the same. Following this method, we get

   (a) $2\frac{3}{5} = 2\times5+3 = 10+3 = 13$. Hence, the required improper fraction is $\frac{13}{5}$.

   (b) $4\frac{1}{7} = 4\times7+1 = 28+1 = 29$. Hence, the required improper fraction is $\frac{29}{7}$.

   (c) $5\frac{7}{9} = 5\times9+7 = 45+7 = 52$. Hence, the required improper fraction is $\frac{52}{9}$.

   (d) $12\frac{2}{11} = 12\times11+2 = 132+2 = 134$. Hence, the required improper fraction is $\frac{134}{11}$.

   (e) $1\frac{16}{27} = 1\times27+16 = 27+16 = 43$. Hence, the required improper fraction is $\frac{43}{27}$.

   (f) $7\frac{2}{5} = 7\times5+2 = 35+2 = 37$. Hence, the required improper fraction is $\frac{37}{5}$.

7. (a) The given fractions $\frac{1}{7}, \frac{3}{7}, \frac{2}{7}, \frac{8}{7}, \frac{5}{7}$ in ascending order are: $\frac{1}{7}, \frac{2}{7}, \frac{3}{7}, \frac{5}{7} 8\frac{5}{7}$.

(b) The given fractions $\frac{5}{9}, \frac{5}{4}, \frac{5}{8}, \frac{5}{3}, \frac{5}{14}$ in ascending order are: $\frac{5}{14}, \frac{5}{9}, \frac{5}{8}, \frac{5}{4}, \frac{5}{3}$.

(c) We have $3\frac{1}{15}, 2\frac{4}{15}, 3\frac{7}{15}, 1\frac{4}{15}, 5\frac{2}{15}$. Converting these mixed numbers into the improper fractions we get: $\frac{46}{15}, \frac{34}{15}, \frac{52}{15}, \frac{19}{15}, \frac{77}{15}$ which in ascending order are: $\frac{19}{15}, \frac{34}{15}, \frac{46}{15}, \frac{52}{15}, \frac{77}{15}$.

Hence, the given fractions in ascending order are: $1\frac{4}{15}, 2\frac{4}{15}, 3\frac{1}{15}, 3\frac{7}{15}, 5\frac{2}{15}$.

8. (a) The given fractions $\frac{2}{25}, \frac{3}{25}, \frac{18}{25}, \frac{4}{25}, \frac{9}{25}, \frac{7}{25}$ in descending order are: $\frac{18}{25}, \frac{9}{25}, \frac{7}{25}, \frac{4}{25}, \frac{3}{25}, \frac{2}{25}$.

(b) The given fractions $\frac{10}{13}, \frac{10}{9}, \frac{10}{3}, \frac{10}{21}, \frac{10}{17}$ in descending order are: $\frac{10}{3}, \frac{10}{9}, \frac{10}{13}, \frac{10}{17}, \frac{10}{21}$.

(c) We have $4\frac{2}{11}, 2\frac{3}{11}, 7\frac{4}{11}, 5\frac{4}{11}, 3\frac{8}{11}$. Converting these mixed numbers into the improper fractions we get: $\frac{46}{11}, \frac{25}{11}, \frac{81}{11}, \frac{59}{11}, \frac{41}{11}$ which in descending order are: $\frac{81}{11}, \frac{59}{11}, \frac{46}{11}, \frac{41}{11}, \frac{25}{11}$.

Hence, the given fractions in ascending order are: $7\frac{4}{11}, 5\frac{4}{11}, 4\frac{2}{11}, 3\frac{8}{11}, 2\frac{3}{11}$.

9. (a) $\frac{2}{5} + \frac{3}{5} + \frac{8}{5} = \frac{13}{5} = 2\frac{3}{5}$.

(b) $\frac{5}{18} + 3\frac{2}{18} + 4\frac{4}{18} = \frac{5}{18} + \frac{56}{18} + \frac{76}{18} = \frac{5 + 56 + 76}{18} = \frac{137}{18} = 7\frac{11}{18}$.

(c) $4\frac{3}{7} + 2\frac{6}{7} + 5\frac{2}{7} = \frac{31}{7} + \frac{20}{7} + \frac{37}{7} = \frac{31 + 20 + 37}{7} = \frac{88}{7} = 12\frac{4}{7}$.

10. (a) $\frac{8}{15} - \frac{4}{15} = \frac{4}{15}$.

(b) $4\frac{7}{11} - \frac{5}{11} = \frac{51}{11} - \frac{5}{11} = \frac{46}{11} = 4\frac{2}{11}$.

(c) $9\frac{2}{13} - 4\frac{3}{13} = \frac{119}{13} - \frac{55}{13} = \frac{64}{13} = 4\frac{12}{13}$.

(d) $\frac{14}{15} - \frac{3}{9} = \frac{42}{45} - \frac{15}{45} = \frac{42 - 15}{45} = \frac{27}{45} = \frac{3}{5}$. [LCM of 15 and 9 = 45]

11. (a) Distance of Pawan's school from his house = $5\frac{2}{7} = \frac{37}{7}$ km

Distance of zoo from his school = $4\frac{1}{7} = \frac{29}{7}$ km

Distance between Pawan's house and zoo = $\frac{37}{7}$ km + $\frac{29}{7}$ km = $\frac{37 + 29}{7}$ km = $\frac{66}{7}$ km = $9\frac{3}{7}$ km.

Hence, the distance between Pawan's house and zoo is $9\frac{3}{7}$ km.

(b) Quantity of water in the tank = 50 L

Quantity of water used by the family = $26\frac{3}{4} = \frac{107}{4}$ L

Quantity of water left in the tank = $50 - \frac{107}{4} = \frac{200}{4} - \frac{107}{4} = \frac{93}{4} = 23\frac{1}{4}$ L

Hence, $23\frac{1}{4}$ L of water was left in the tank.

HOTS (Creative and Reasoning)

1. Sum of the given two fractions $= 4\frac{2}{15} + 5\frac{3}{20} = \frac{62}{15} + \frac{103}{20} = \frac{248}{60} + \frac{309}{60}$ [LCM of 15 and 20 = 60]

$$= \frac{248 + 309}{60} = \frac{557}{60}$$

Sum of the three fractions $= 12\frac{3}{5}$ [Given]

Third fraction = Sum of the three fractions – Sum of two fractions

$$= 12\frac{3}{5} - \frac{557}{60} = \frac{63}{5} - \frac{557}{60} = \frac{756}{60} - \frac{557}{60}$$ [LCM of 5 and 60 = 60]

$$= \frac{756 - 557}{60} = \frac{199}{60} = 3\frac{19}{60}.$$

Hence, the third fraction is $3\frac{19}{60}$.

2. Difference of two fractions $= 5\frac{4}{25}$ and smaller fraction $= 3\frac{2}{10}$ [Given]

The bigger fraction = difference of two fractions + smaller fraction

$$= 5\frac{4}{25} + 3\frac{2}{10} = \frac{129}{25} + \frac{32}{10} = \frac{258}{50} + \frac{160}{50}$$ [LCM of 25 and 10 = 50]

$$= \frac{418}{50} = 8\frac{18}{50} = 8\frac{9}{25}.$$

Hence, the bigger fraction is $8\frac{9}{25}$.

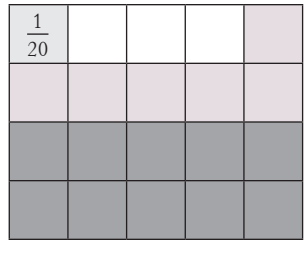
3. Sum of $5\frac{3}{4}$ and $3\frac{5}{8} = \frac{23}{4} + \frac{29}{8} = \frac{46}{8} + \frac{29}{8} = \frac{75}{8}$ [LCM of 4 and 8 = 8]

Sum of $6\frac{2}{5}$ and $4\frac{3}{10} = \frac{32}{5} + \frac{43}{10} = \frac{64}{10} + \frac{43}{10} = \frac{107}{10}$ [LCM of 5 and 10 = 10]

Difference between the two sums $= \frac{107}{10} - \frac{75}{8} = \frac{428}{40} - \frac{375}{40} = \frac{53}{40} = 1\frac{13}{40}$. [LCM of 8 and 10 = 40]

Hence, $6\frac{2}{5} + 4\frac{3}{10}$ is greater than $5\frac{3}{4} + 3\frac{5}{8}$ by $1\frac{13}{40}$.

Case-based Questions



1. In the along side figure, part shown by ▭ represents $\frac{1}{20}$, parts shown ▭ by represent $\frac{3}{10}$ or $\frac{6}{20}$ and parts shown by ▭ represent $\frac{5}{10}$ or $\frac{10}{20}$.
2. The denominator of $\frac{1}{20}$ is 20, the denominator of $\frac{3}{10}$ is 10 and that of $\frac{5}{10}$ is 10.
3. The four fractions equivalent to $\frac{3}{10}$ are: $\frac{6}{20}, \frac{9}{30}, \frac{12}{40}$ and $\frac{15}{50}$.
4. The fraction $\frac{5}{10}$ in its simplest form is $\frac{5}{10} \div \frac{5}{5} = \frac{1}{2}$.
5. The part of the rangoli that Sujata completed in three days $= \frac{3}{10} + \frac{1}{20} + \frac{5}{10} = \frac{6}{20} + \frac{1}{20} + \frac{10}{20} = \frac{17}{20}$.

Mental Maths

A. 1. To add like fractions, we just add the **numerators** and the **denominator** remains same.

2. To subtract like fractions, we just subtract the **numerators** and the **denominator** remains same.

3. $\frac{5}{12}$ and $\frac{10}{24}$ are **equivalent** fractions.

4. $\frac{2}{15}$ and $\frac{3}{8}$ are **unlike** fractions.

5. If two fractions have the same numerator, the fraction with the smaller **denominator** is the greater fraction.

B. 1. Fractions with same denominator are called like fractions. Hence, the given statement is true.

2. Fractions with same numerators but different denominators are unlike fractions. Hence, the given statement is false.

3. A fraction with same numerator and same denominator is always 1.

4. $\frac{5}{5}$ is not an improper fraction. Hence, the given statement is false.

5. Out of two given fractions with the same numerator, the one having the smaller denominator is greater than the other. Hence, the given statement is false.

C. 1. $2\frac{1}{4} + 3\frac{3}{4} = 2 + 3 + \frac{1}{4} + \frac{3}{4} = 5 + 1 = 6$. Hence, the correct option is (d).

2. $8\frac{2}{7} - 4\frac{1}{7} = \frac{58}{7} - \frac{29}{7} = \frac{29}{7} = 4\frac{1}{7}$. Hence, the correct option is (b).

3. To get an equivalent fraction, we **multiply** the numerator and denominator by a common factor. Hence, the correct option is (b).

4. One day has 24 days. One-fourth of the day $= \frac{24}{4} = 6$ days. Hence, the correct option is (d).

5. From the given fractions, the fraction in option (a) is in its simplest form. Hence, the correct option is (a).

5. When the numerator is equal to the denominator, the fraction represents **a whole number**. Hence, the correct option is (d)

Test Your Knowledge–2

(Chapters 4-6)

1. (a) Dividing 594 by 28, we get

$$\begin{array}{r} 21 \\ 28\overline{)\,594} \\ -56 \\ \hline 038 \\ -28 \\ \hline 10 \end{array}$$

Hence, the quotient is 21 and the remainder is 10.

(b) Dividing 243 by 27, we get

$$\begin{array}{r} 9 \\ 27\overline{)\,243} \\ -243 \\ \hline 0 \end{array}$$

Hence, the quotient is 9 and the remainder is 0.

(c) Dividing 6270 by 85, we get

$$\begin{array}{r} 73 \\ 85\overline{)\,6270} \\ -595 \\ \hline 0320 \\ -255 \\ \hline 65 \end{array}$$

Hence, the quotient is 73 and the remainder is 65.

2. (a) Dividing 568 by 1, we get the quotient 568 and the remainder 0.

(b) Dividing 9364 by 10, we get the quotient 936 and the remainder 4.

(c) Dividing 83649 by 100, we get the quotient 836 and the remainder 49.

(d) Dividing 0 by 24, we get the quotient 0 and the remainder 24.

(e) Dividing 27368 by 1000, we get the quotient 27 and the remainder 368.

(f) Dividing 482 by 482, we get the quotient 1 and the remainder 0.

3. Total number of students who wanted to ride the coaster = 1800

Number of students that a car can carry = 6

Number of cars needed to carry all the students = $1800 \div 6 = 300$.

Hence, the students need 300 cars.

4. (a) $6 \div 2 = 3$
$60 \div 2 = 30$
$600 \div 2 = 300$
$6000 \div 2 = 3000$

(b) $8000 \div 4 = 2000$
$8000 \div 40 = 200$
$8000 \div 400 = 300$
$8000 \div 4000 = 3000$

5. (a) First 4 multiples of 8 are: 8, 16, 24, 32.
(b) First 4 multiples of 6 are: 6, 12 , 18, 24
(c) First 3 multiples of 12 are: 12, 24, 36
(d) Three factors of 100 are: 2 , 5 , 10
(e) Three factors of 75 are: 3 , 15 , 25
(f) Three factors of 56 are: 7, 4, 8

Hence, the correct matching of column A and column B is: (a) — (iv), (b) — (vi), (c) — (ii), (d) — (i), (e) — (iii) and (f) — (v).

6. (a) Factors of 18 = 1, 2, 3, 6, 9 and 18.
Factors of 30 = 1, 2, 3, 5, 6, 10, 15 and 30.
Common factors are: 1, 2 and 6

(b) Factors of 72 = 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36 and 72.
Factors of 90 = 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, and 90.
Common factors are: 1, 2 and 6

(c) Factors of 48 = 1, 2, 3, 4, 6, 8, 12, 16, 24 and 48.
Factors of 60 = 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, and 60.
Common factors are: 1, 2, 3, 4, 6, and 12.

7. (a) $12\frac{3}{7} = 12 \times 7 + 3 = 84 + 3 = 87$. Hence, the required improper fraction is $\frac{87}{7}$.

(b) $10\frac{5}{7} = 10 \times 7 + 5 = 70 + 5 = 75$. Hence, the required improper fraction is $\frac{75}{7}$.

(c) $8\frac{3}{9} = 8 \times 9 + 3 = 72 + 3 = 75$. Hence, the required improper fraction is $\frac{75}{9}$.

8. (a) $\frac{3}{11} + \frac{4}{11} = \frac{7}{11}$ (b) $\frac{5}{19} + \frac{3}{19} = \frac{8}{19}$.

(c) $3\frac{1}{8} + 2\frac{3}{8} = \frac{25}{8} + \frac{19}{8} = \frac{44}{8} = 5\frac{4}{8} = 5\frac{1}{2}$.

9. (a) $\frac{9}{15} - \frac{4}{15} = \frac{5}{15} = \frac{1}{3}$. (b) $\frac{6}{18} - \frac{2}{18} = \frac{4}{18} = \frac{2}{9}$.

(c) $4\frac{3}{7} + 2\frac{1}{7} = \frac{31}{7} + \frac{15}{7} = \frac{16}{7} = 2\frac{2}{7}$.

10. Quantity of milk Meena has = 8 L

Quantity of milk Meena used for pudding = $2\frac{1}{4} = \frac{9}{4}$ L

Quantity of milk Meena used for curd = $3\frac{1}{4} = \frac{13}{4}$ L

Total quantity of milk Meena used $= \frac{9}{4} + \frac{13}{4} = \frac{22}{4} = 5\frac{2}{4} = 5\frac{1}{2}$.

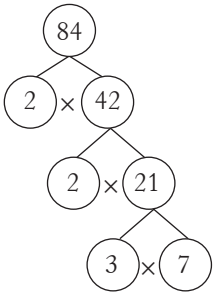
Quantity of milk left with Meena $= 8 - 5\frac{1}{2} = \frac{8}{1} - \frac{11}{2} = \frac{16}{2} - \frac{11}{2} = \frac{5}{2} = 2\frac{1}{2}$ L.

Hence, $2\frac{1}{2}$ litres of milk is left with Meena.

11. Multiples of 23 are: 23, 46, 69, 92, 115, 138, **161**, 184, 207, 230, ...
Multiples of 7 are: 7, 14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84, 91, 98, 105, ..., **161**, 168, 175, ...
First common multiple is 161, which is an odd number.
Hence, the required number is 161.

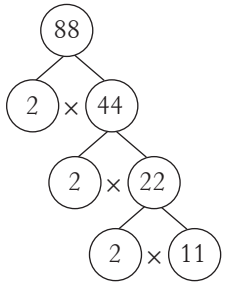
12. The factorisation of the given numbers by factor tree method is as follows.

(a)



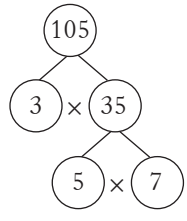
Hence, $84 = 2 \times 2 \times 3 \times 7$.

(b)



Hence, $88 = 2 \times 2 \times 2 \times 11$.

(c)



Hence, $105 = 3 \times 5 \times 7$

Model Test Paper–1

(Chapters 1-6)

1. (a) The numeral for thirteen lakh and sixty-five is **13,00,065**.
   (b) 1 lakh is equal to **100 thousands** in International System.
   (c) The successor of 2,488 is **2,489**.
   (d) When we round off 683 to the nearest hundred, the number is **700**.
   (e) The place value of 5 in 2,05,624 is 5,000.

2. (a)

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

(b)

	L	T Th	Th	H	T	O
	7 ~~8~~	11 ~~2~~	16 ~~6~~	6 ~~7~~	13 ~~3~~	3
–	4	9	8	5	6	3
	3	2	8	1	7	0

(c)

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

(d)

	L	T Th	Th	H	T	O
	8 ~~9~~	13 ~~3~~	5 ~~6~~	12 ~~2~~	4 ~~5~~	10 ~~0~~
–		8	2	6	4	8
	5	5	3	6	0	2

Hence, the required number is 5,53,602.

(e)

	L	T Th	Th	H	T	O
			6	12	5	10
	5	6	7	2	6	0
+			2	6	4	8
	5	6	4	6	1	2

Hence, the required number is 5,64,612.

(f)

	L	T Th	Th	H	T	O
		9	10	2	15	14
	8	~~0~~	~~0~~	~~3~~	~~6~~	~~4~~
–	4	9	3	2	8	6
	4	0	7	0	7	8

Hence, the required number is 4,07,078.

3. Number of English books in the library = 26,483
Number of Hindi books in the library = 82,264
Number of French books in the library = 2,643
Total number of books in the library
= 26,483 + 82,264 + 2,643
= 1,11,399 books.
Hence, there are 1,11,399 books in the library.

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

4. Money earned by Mr. X in a year = ₹ 2,60,365
Money earned by Mr. Y in a year = ₹ 3,72,649
More money earned by Mr. Y than Mr X
= ₹ 3,72,649 = ₹ 2,60,365
= ₹ 1,12,284.
Hence, Mr. Y earned ₹ 1,12,284 more than Mr. X in a year.

	L	T Th	Th	H	T	O
				5	14	
	3	7	2	~~6~~	~~4~~	9
–	2	6	0	3	6	5
	1	1	2	2	8	4

5.(a) (i) 2436×2
$= (2000 + 400 + 30 + 6) \times 2$
$= (2000 \times 2) + (400 \times 2) + (30 \times 2) + (6 \times 2)$
$= 4000 + 800 + 60 + 12 = 4872.$
Hence, $2436 \times 2 = 4872$.

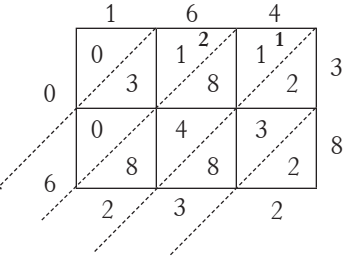
8	2000	400	30	6
	2000×2 = 4000	400×2 = 800	30×2 = 60	6×2 = 12

(ii) 5364×12
$= (5000 + 300 + 60 + 4) \times 12$
$= (5000 \times 12) + (300 \times 12) + (60 \times 12) + (4 \times 12)$
$= 60000 + 3600 + 720 + 48 = 64368.$
Hence, $5364 \times 12 = 64368$.

8	2000	400	30	6
	2000×2 = 4000	400×2 = 800	30×2 = 60	6×2 = 12

(b) (i) $93 \times 500 = 93 \times 100 \times 5 = 9300 \times 5 = 46500.$
(ii) $148 \times 28 = 148 \times (20 + 8) = 148\ 20 + 148 \times 8 = 2960 + 1184 = 4144.$

(c) We have 164×38. To multiply by the lattice method:
Draw a 3×2 grid and divide the boxes of the grid diagonally. Write the multiplicand on the top and the multiplier on the side as shown in the figure. Start multiplying from the leftmost digit of the multiplicand with the leftmost digit of the multiplier. In this case, start multiplying from 1 by 3. Here, $1 \times 3 = 3$, which can be written as 03. Write 0 in the top-left part and 3 in the right-bottom part to the box. Similarly, multiply the multiplicand by another digit of the multiplier. In this case, start from 1 by 8. At the end, add the



numbers written diagonally in the boxes. If the sum is a 2-digit number, carry the tens place digit to the next column.

Hence, $164 \times 38 = 6232$.

(d) (i) dividing 460 by 10, we get the quotient 45 and the remainder 0.

(ii) dividing 5700 by 100, we get the quotient 57 and the remainder 0.

(e). (i) Dividing 594 by 28, we get

$$\begin{array}{r} 189 \\ 14\overline{)\,2648} \\ -14 \\ \hline 124 \\ -112 \\ \hline 128 \\ -126 \\ \hline 2 \end{array}$$

Hence, the quotient is 189 and the remainder is 2.

(ii) Dividing 9376 by 42, we get

$$\begin{array}{r} 223 \\ 42\overline{)\,9376} \\ -84 \\ \hline 097 \\ -84 \\ \hline 136 \\ -126 \\ \hline 10 \end{array}$$

Hence, the quotient is 223 and the remainder is 10.

3. (a) A number is divisible by 2 if it is an even number, i.e., it ones place digit is 0, 2, 4, 6 or 8. The numbers in (i), (iii) and iv) are even numbers, so they are divisible by 2.

(b) A number is divisible by 3 if the sum of its digits is divisible by 3.

(i) Sum of the digits of 5322 = 5 + 3 + 2 + 2 = 12, which is divisible by 3. Hence, the given number 5322 is divisible by 3.

(ii) Sum of the digits of 9360 = 9 + 3 + 6 + 0 = 18, which is divisible by 3. Hence, the given number 9360 is divisible by 3.

(iii) Sum of the digits of 6404 = 6 + 4 + 0 + 4 = 14, which is not divisible by 3. Hence, the given number 6404 is not divisible by 3.

(iv) Sum of the digits of 1413 = 1 + 4 + 1 + 3 = 9, which is divisible by 3. Hence, the given number 1413 is divisible by 3.

(c) A number is divisible by 4 if the number formed by its last two digits is divisible by 4.

(i) We have 2648. The number formed by its last two digits is 48, which is divisible by 4. Hence, the given number 2648 is divisible by 4.

(ii) We have 2654. The number formed by its last two digits is 54, which is not divisible by 4. Hence, the given number 2654 is not divisible by 4.

(iii) We have 9327. The number formed by its last two digits is 27, which is not divisible by 4. Hence, the given number 9327 is not divisible by 4.

(iv) We have 42328. The number formed by the last two digits is 28, which is divisible by 4. Hence, the given number 42328 is divisible by 4.

(d) A number is divisible by 6 if it is divisible by both 2 and 3.

(i) We have 6426, which is an even number. So it is divisible by 2. Sum of digits = 6 + 4 + 2 + 6 = 18, which is divisible by 3. Hence, the given number 6426 is divisible by 6.

(ii) We have 93120, which is an even number. So it is divisible by 2. Sum of digits = 9 + 3 + 1 + 2 + 0 = 15, which is divisible by 3. Hence, the given number 93120 is divisible by 6.

(iii) We have 43262, which is an even number. So it is divisible by 2. Sum of digits = 4 + 3 + 2 + 6 + 2 = 17, which is not divisible by 3. Hence, the given number 43262 is not divisible by 6.

(iv) We have 80343, which is not an even number. So it is not divisible by 2. Hence, the given number 80343 is not divisible by 6.

(e) A number is divisible by 9 if the sum of its digits is divisible by 9.

(i) We have 9360. Sum of its digits = 9 + 3 + 6 + 0 = 18, which is divisible by 9. Hence, the given number 9360 is divisible by 9.

(ii) We have 8298. Sum of its digits = 8 + 2 + 9 + 8 = 27, which is divisible by 9. Hence, the given number 8298 is divisible by 9.

(iii) We have 15301. Sum of its digits = 1 + 5 + 3 + 0 + 1 = 10, which is not divisible by 9. Hence, the given number 15301 is not divisible by 9.

(iv) We have 40320. Sum of its digits = 4 + 0 + 3 + 2 + 0 = 9, which is divisible by 9. Hence, the given number 40320 is divisible by 9.

7. (a) $\frac{21}{36} = \frac{21 \div 3}{36 \div 3} = \frac{\mathbf{7}}{12}$ (b) $\frac{15}{27} = \frac{15 \div 3}{27 \div 3} = \frac{5}{9}$ (c) $\frac{4}{8} = \frac{4 \times 5}{8 \times 5} = \frac{20}{40}$

(d) $\frac{16}{6} = \frac{16 \div 2}{6 \div 2} = \frac{\mathbf{8}}{3}$

8. (a) $\frac{9}{12} + \frac{10}{12} = \frac{9 + 10}{12} = \frac{19}{12} = 1\frac{7}{12}$. (b) $4\frac{3}{10} + 2\frac{3}{10} = \frac{43}{10} + \frac{23}{10} = \frac{43 + 23}{10} = \frac{66}{10} = 6\frac{6}{10}$.

(c) $\frac{11}{13} - \frac{8}{13} = \frac{11 - 8}{13} = \frac{3}{13}$. (d) $5\frac{2}{9} + 3\frac{4}{9} = \frac{47}{9} - \frac{31}{9} = \frac{47 + 31}{9} = \frac{16}{9} = 1\frac{7}{9}$.

9. The cost of 1 table = ₹ 1820

The cost of 12 tables = 12 × ₹ 1820 = ₹ 21840.

Hence, the cost of 12 tables is ₹ 21840.

10. Total number of trees planted = 14126

Number of rows = 14

Number of trees in each row = 14126 ÷ 14 = 1009 trees.

Hence, there are 1009 trees in one row.

11. (a) We have 2 , 6 , 18 , 54, ... Here, a number is three times its predecessor, except the first number. Hence, the next number in the series is 54 × 3 = 162.

(b) We have 4 , 8 , 16 , 32, ... Here, a number is twice its predecessor, except the first number. Hence, the next number in the series is 32 × 2 = 64.

(c) We have 5 , 20 , 80 , 320, ... Here, a number is four times its predecessor, except the first number. Hence, the next number in the series is 320 × 4 = 1280.

12 The equivalent fraction of $\frac{3}{7}$ with:

(a) denominator 63 = $\frac{3 \times 9}{7 \times 9} = \frac{27}{63}$. (b) numerator 21 = $\frac{3 \times 7}{7 \times 7} = \frac{21}{49}$.

(c) denominator 28 = $\frac{3 \times 4}{7 \times 4} = \frac{12}{28}$. (d) numerator 15 = $\frac{3 \times 5}{7 \times 5} = \frac{15}{35}$.

Chapter 7. Geometry

Exercise 7.1

1. (a) It is a point. (b) It is a line segment. (c) It is a ray. (d) It is a line.
2. (a) It is a curved line. (b) It is a vertical line. (c) It is a slanting line.
   (d) It is a horizontal line.
3. From the given figure:

(a) nine points are: E, J, K, L, M, N, O, P, and R.
(b) a line is JR.
(c) six rays are: KL, KN, MN, MP, OJ and ER.
(d) four line segments are: KO, KE, KM and EO.

4. The given figure has seven lines. They are: ST, SV, SU, TV, UV, UW and VW.
5. The students will do it themselves.
6. The line segments of the given measures have been drawn below.

(a) $4\frac{1}{2}$ cm = 4.5 cm

(b) 8 cm

(c) $9\frac{1}{2}$ cm = 9.5 cm

(d) $6\frac{1}{2}$ cm = 6.5 cm

(e) $2\frac{1}{2}$ cm = 2.5 cm

(f) $7\frac{1}{2}$ cm = 7.5 cm

(g) 6.4 cm

(h) $9\frac{1}{2}$ cm = 9.5 cm

7. (a) **Parallel** lines never intersect.
(b) **Intersecting** lines have a common point.
(c) Two intersecting lines can intersect only at **one** point.
(d) Symbol || shows **parallel** lines.
(e) All the non-parallel lines are **intersecting** lines.

Exercise 7.2

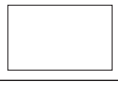
1. Figures in (b) and (d) represent angles.
2. (a) acute angle (b) acute angle (c) right angle (d) acute angle (e) obtuse angle
3. We know that the middle letter of an angle can be used to represent the angle. Thus, using the single letter, the given angle is:
(a) $\angle P$ (b) $\angle S$ (c) $\angle O$ (d) $\angle O$ (e) $\angle B$
4. Using the single letters the given angles are: (a) $\angle P$ (b) $\angle 1$ (c) $\angle 2$ (d) $\angle g$ (e) $\angle l$
5. (a) The points lying in the interior of $\angle PET$ are: k, t and v
(b) The points lying in the exterior of $\angle PET$ are: l, m, n, and p
(c) The points lying on the $\angle PET$ are: P, E, T, h, and r

Exercise 7.3

1. We know that figures with different starting and end points are called **open figures**. Figures with same starting point and end point are called **closed figures**. We use these facts for identifying the shapes.
(a) It is an open figure. (b) It is a closed figure. (c) It is an open figure.
(d) It is a closed figure. (d) It is a closed figure.
2. We know that a simple closed figure does not intersect itself.

(a) As the figure does not intersect, so it is a simple closed figure.
(b) As the figure intersects itself, so it is not a simple closed figure.
(c) As the figure intersects itself, so it is not a simple closed figure.
(d) As the figure does not intersect, so it is a simple closed figure.
(e) As the figure does not intersect, so it is a simple closed figure.

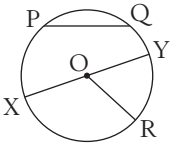
3. A polygon is formed by line segments only.
   (a) This shape is formed by curved lines, so it is not a polygon.
   (b) This shape is formed by line segments, so it is a polygon.
   (c) This shape is formed by line segments, so it is a polygon.
   (d) This shape is formed by line segments, so it is a polygon.
   (e) This shape is formed by curved lines, so it is not a polygon.
4. A polygon is formed by line segments only.
   (a) This polygon has three sides, so it is a triangle.
   (b) This polygon has four sides, so it is a quadrilateral.
   (c) This polygon has seven sides, so it is a heptagon.
   (d) This polygon has five sides, so it is a pentagon.
   (e) This polygon has eight sides, so it is an octagon.
   (f) This polygon has ten sides, so it is a decagon.
   (g) This polygon has six sides, so it is a hexagon.
   (h) This polygon has nine sides, so it is a nonagon.
5. The complete table is shown below.

Shape	Name	Number of sides	Number of vertices	Are all sides equal?	Number of pairs of equal sides
	Triangle	3	3	no	nil
	Square	4	4	yes	two
	Rectangle	4	4	no	two

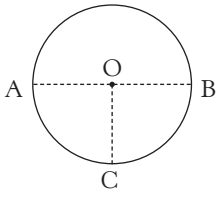
6. (a) The given shape has three sides: PQ, QR and PR. It has three vertices: P, Q and R.
   (b) The given shape has four sides: LM, MN, NO and OL. It has four vertices: L, M, N and O. It has two diagonals: LN and MO.
   (c) The given shape has four sides: RS, ST, TU and UR. It has four vertices: R, S, T and U. It has two diagonals: RT and SU.

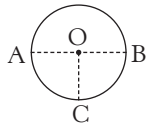
Exercise 7.4

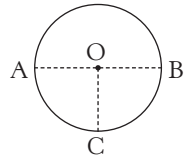
1. In the given figure of the circle,
   (a) centre = O (b)radii = OX, OY and OR
   (c) diameter = XY (d)chords = PQ and XY



2. Diameter of a circle is twice the radius.
   (a) diameter = 2 × radius = 2 × 16 cm = 32 cm.
   (b) diameter = 2 × radius = 2 × 14 cm = 28 cm.
   (c) diameter = 2 × radius = 2 × 18 cm = 36 cm.

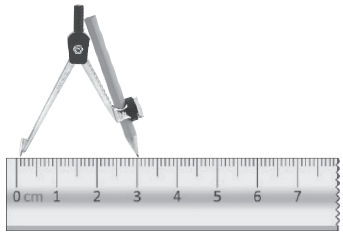
3. Radius is half of the diameter.
   (a) radius = diameter ÷ 2 = 14 cm ÷ 2 = 7 cm.
   (b) radius = diameter ÷ 2 = 18 cm ÷ 2 = 9 cm.
   (c) radius = diameter ÷ 2 = 20 cm ÷ 2 = 10 cm.
4. In each of the given figures, AB is the diameter and OC is the radius.
   (a) 

   (b) 

   (c) 

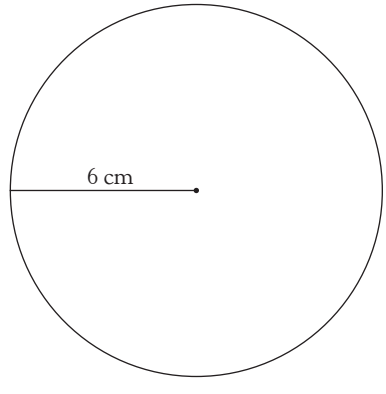
5. Radius is half of the diameter.
   (a) To draw the required circle of radius 3 cm, follow these steps.
   - Fix a sharpened pencil in the compass.
   - Place the metal point of the compass at 0 mark on the ruler.
   - Stretch the other arm of compass to 3 cm mark.
   - Place the metal point of the compass on paper.
   - Move the pencil arm around by holding the upper end of compass firmly.

   The figure so obtained is the required circle of radius 3 cm.



   (b) To draw the required circle of radius 6 cm, follow these steps.
   - Fix a sharpened pencil in the compass.
   - Place the metal point of the compass at 0 mark on the ruler.
   - Stretch the other arm of compass to 6 cm mark.
   - Place the metal point of the compass on paper.
   - Move the pencil arm around by holding the upper end of compass firmly.

   The figure so obtained is the required circle of radius 6 cm.



   (c) Similar work to be done.
6. There are six circles in the given design.

Exercise 7.5

1. Identifying the views of the given solids, we find:
   (a) Chair: top view, front view, side view from the left to right
   (b) Cup: top view, front view, side view from the left to right
2. Nets that can be folded to make cubes are: (a),(b), (c),(d), (e),(f), (g) and (i).

3. Nets that can be folded to make cuboids are: (b), (c) and (f).

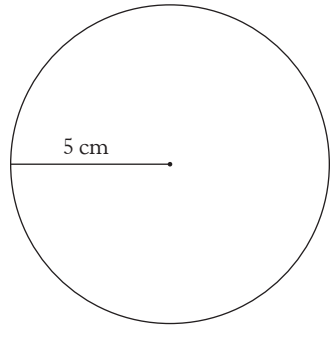
Revision Exercise

1. Count the number of line segments in the following figures. Also name them.
   (a) twelve line segments: AB, AC,AF, BD, BG, EF, EH, FG, GH, CE, CD, DH, EH
   (b) nine line segments: PS, ST, PT, QR, QU, RU, PQ, RU, TU
   (c) eighteen line segments: AB, BC,CD, DE, EF, AF, GL, LK, KJ, IJ, DI, HI, GH, AL, FK, EJ, CH, BG,
2. State whether the following pairs of lines are parallel or intersecting.
   (a) Intersecting lines (b) Intersecting lines (c) Parallel lines (d) Intersecting lines
3. Draw a line segment of the following lengths.
   (a) 3.5 cm (b) 2.8 cm (c) 9.4 cm (d) 8.5 cm

4.The angles in the given figure are: $\angle ABC$, $\angle BCD$, $\angle CDE$

5. (a) Three triangles are: ΔABC, ΔABD and ΔADC
   (b) Seven angles are: $\angle ABC$, $\angle ADB$, $\angle ADC$, $\angle ACB$, $\angle BAD$, $\angle BAC$ and $\angle CAB$.
   (c) Six line segments are: AB, AD, AC, BC, BD and CD.
   (d) Two triangles with common angle D are ΔADB and ΔADC.
6. From the given figure:
   (a) two pairs of opposite sides are: AB, CD and AD, BC.
   (b) two pairs of opposite angles are: $\angle A$, $\angle C$ and $\angle B$, $\angle D$.
   (c) two pairs of adjacent sides are: AB, BC and BC, CD.
   (d) two pairs of adjacent angles are: $\angle A$, $\angle B$ and $\angle B$, $\angle C$.
7. From the given figure of circle:
   (a) the centre is O. (b) three radii are: OA, OB and OC.
   (c) a diameter is AC. (b) a chord is DE or AC.
8. (a) To draw the required circle, follow these steps.
   - Fix a sharpened pencil in the compass.
   - Place the metal point of the compass at 0 mark on the ruler.
   - Stretch the other arm of the compass to 5 cm mark.
   - Place the metal point of the compass on the paper.
   - Holding the upper end of compass firmly, move the pencil arm around carefully.

   The figure so obtained is the required circle of radius 5 cm.



Similar work to be done with (b) and (c).

HOTS (Creative Thinking and Reasoning)

1. To draw the required line segment, follow these steps.
   - Place the ruler on the paper and mark a point against 0 mark.
   - Holding the ruler with one hand, move the pencil from the point the 0 mark to the 10 cm mark.
   - Remove the ruler and name the line segment as AB.
   - Fix a sharpened pencil in the compass and place the metal point of the compass at 0 mark on the ruler.
   - Stretch the other arm of the compass to 3.4 cm mark of the ruler.

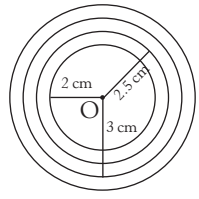
- Without disturbing the opening of the compass, place its metal end at A of the line segment AB and draw an arc cutting the line segment AB. Mark this point as C. Thus, the AC is of 3.4 cm.
- Similarly, C as centre and radius 4.5 cm, draw another arc cutting the line segment AB at D. So, CD is of 4.5 cm.

Measuring using the ruler, we find that DB = 2.1 cm.

Now, AC + CD + DB = 3.4 cm + 4.5 cm + 2.1 cm = 10 cm = AB.

2. To draw the required circles, follow these steps:
   - Place the metal point of the compass at 0 mark on the ruler.
   - Stretch the other arm of the compass to 2 cm mark.
   - Place the metal point of the compass on the paper.
   - Holding the upper end of compass firmly, move the pencil arm around carefully. The figure so obtained is the circle of radius 2 cm. Mark the centre of the circle as O.
   - Similarly, with O as centre and radii 2.5 cm, 3 cm and 3.5 cm, draw circles.

   The figure so obtained is shown alongside.



Case-based Questions

1. There are two line segments in symbol (i).
2. The symbols in (ii) and (v) have been created using rays.
3. The geometrical shape depicted by symbol (iii) is a line.
4. The students will measure it themselves. Both the line segments are equal in length.
5. The rays drawn in symbol (v) are vertical.

Mental Maths

A. 1. A **point** has position but no length.
2. A ray has **infinite** length.
3. A **line segment** has two endpoints.
4. Two circles can intersect each other at **two** point(s).
5. A **square** is a quadrilateral whose all sides are equal.
6. A rectangle is a quadrilateral whose opposite sides are **equal**.
7. A circle has **infinite** radii and all radii are equal.
8. Each face of the cube is a **square**.
9. A **diameter** is a line segment whose endpoints are on the circle.
10. A triangle has **three** sides **three** corners and **three** angles.

B. 1. If radius of a circle is 4.3 cm, then the diameter = 4.3 cm × 2 = 8.6 cm. Hence, the given statement is true.
2. In ∠ABC, the angle forms at the point B. Hence, the given statement is false.
3. If CB is radius of a circle such that point C lies in the centre, then the point B lies on the circle. Hence, the given statement is false.
4. All squares are rectangles. Hence, the given statement is true.
5. All rectangles are quadrilaterals. Hence, the given statement is true.
6. The diagonals of a square are of equal length. Hence, the given statement is false.
7. A rectangle can have two diagonals only. Hence, the given statement is false.
8. The curved boundary of a circle is called circumference. Hence, the given statement is true.

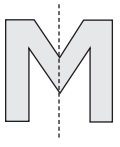
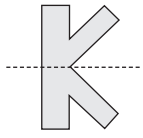
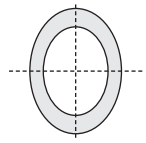
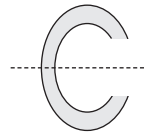
B. 1. The common point where two lines intersect each other is called the point of intersection. Hence, the correct option is (d).

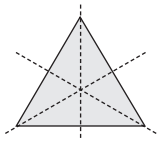
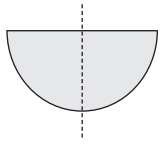
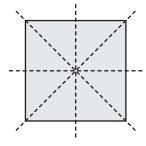
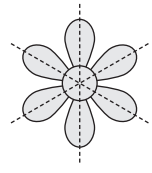
2. A line segment is fixed at two ends. Hence, the correct option is (a).
3. Through the same initial point, infinite number of rays can be drawn. Hence, the correct option is (d).
4. A circle can be drawn if we know its radius or diameter. Hence, the correct option is (d).
5. A hexagon has six vertices. Hence, the correct option is (c).

Chapter 8. Symmetry and Patterns

Exercise 8.1

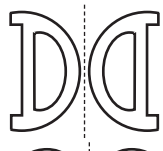
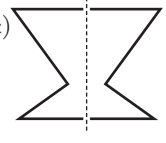
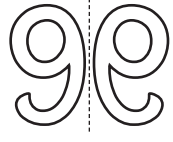
1. Figures shown in (a), (b), (g) and (h) can be divided into two equal parts. Hence, these are symmetrical figures.
2. The dotted line in each figure is its line of symmetry.

(a) 
(b) 
(c) 
(d) 

(e) 
(f) 
(g) 
(h) 

Exercise 8.2

1. The complete reflection of each given figure is given below.

(a) 
(b) 
(c) 
(d) 

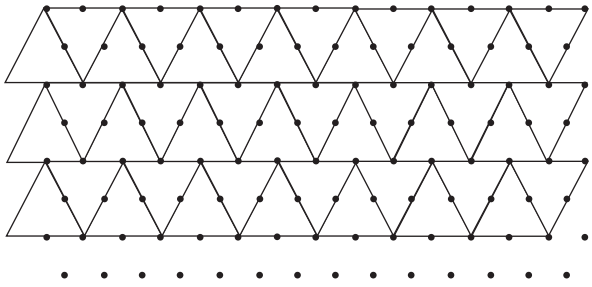
2. Observing the given figures, we find that.
   (a) the figures are mirror images of each other.
   (b) the figures are not mirror images of each other.
   (c) the figures are mirror images of each other.
   (d) the figures are mirror images of each other.
   (e) the figures are mirror images of each other.
   (f) the figures are not mirror images of each other.
   (g) the figures are mirror images of each other.
   (h) the figures are mirror images of each other.

Exercise 8.3

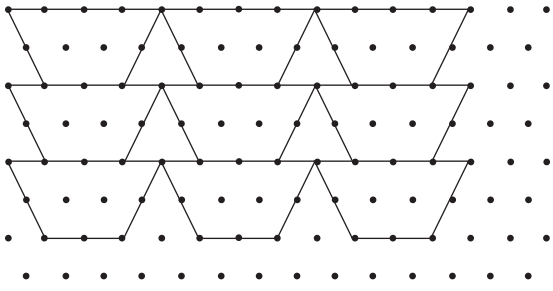
1. Observing the figures, we find that shapes in (a), (c), (d), (e) and (f) neither have gaps nor they are overlapped. Hence, they are tessellated.

2. The complete patterns are given below.

(a)



(b)



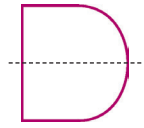
3. The students will do it themselves.

Exercise 8.4

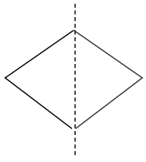
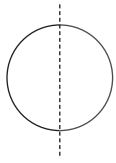
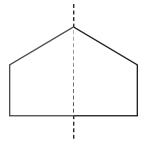
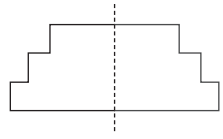
1. Using the given table, the message for each is written below.
   (a) 7 15 15 4 2 15 25 → GO OD BOY
   (b) 8 1 16 16 25 14 5 23 25 5 1 18 → HAPPY NEW YEAR
2. Write the following words in code word using the given table (above).
   (a) WELL DONE → 23 5 12 12 4 15 14 5
   (b) AMITABH BACHCHAN → 1 13 9 20 1 2 8 2 1 3 8 3 8 1 14
   (c) MAHATMA GANDHI → 13 1 8 1 20 13 1 7 1 14 4 8 9
3. Complete the following patterns.
   (a) A-26, B-25, C-24, D-23, E-22, F-21, G-20, H-19, I-18
   (b) B-2, D-4, F-6, H-8, 1-10, L-12, N-14, P-16, R-18
4. Using the given table, the messages in code words are written below.
   (a) HAPPY BIRTHDAY TO YOU → 19 26 11 11 25 18 9 7 19 23 26 2
   (b) MERRY CHRISTMAS → 14 22 9 9 24 19 9 19 8 7 14 26 8
   (c) PLANT TREES SAVE EARTH
   → 11 15 26 13 7 7 9 22 22 8 26 5 22 22 26 9 7 6
5. Using the given table, the messages are written below.
   (a) 7 26 16 22 24 26 9 22 TAKE CARE
   (b) 20 12 12 23 25 2 22 GOOD BYE
   (c) 7 19 26 13 16 2 12 6 THANK YOU
6. The required message is given below
   TLLW NRMW TLLW URMW → GOOD MIND GOOD FIND

Revision Exercise

1. Shapes in (a), (c), (f) and (g) are symmetrical.

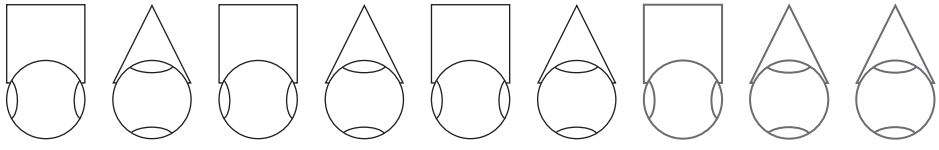
(a)  (c)  (f)  (g) 

2. Complete figures are given below.

(a)  (c)  (f)  (g) 

3. Shapes in (a) and (b) are tessellated because there is no overlapping or gap in them.
4. Shapes in (a) and (b) are tessellated because there is no overlapping or gap in them.

(a)

(b) 

(c) Difference between two consecutive numbers is 12: 12 24 36 48 60 72 **84 96 108**.

(d) Difference between two consecutive numbers is 1111: 1234 2345 3456 4567 5678 6789 7900

(e) The next number is 1111 less than the just previous number: 9876 8765 7654 6543 **5432 4321 3210.**

(f) The next number is 909 more than the just previous number: 1928 2837 3746 4655 **5564 6473 7382.1**

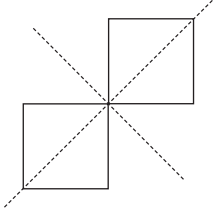
5. The message of the given code is: ALL IN ALL
6. The code for the given words is:

(a) ZTZRM ZMW ZTZRM (b) ZH CVOO ZH (c) SZEV Z TYYW GRNV

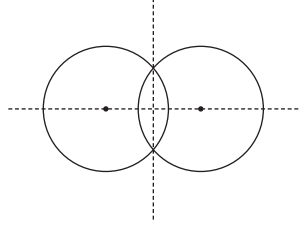
7. The students will do it themselves.

HOTS (Creative Thinking and Reasoning)

1. (a) It has two lines of symmetry.



(b) It has two lines of symmetry.

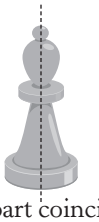


2. The letters of English alphabet having one line of symmetry are: A, B, C, D, E, K, M, T, U, V, W and Y.
3. Three letters of English alphabet having two lines of symmetry are: H, I and X.

Case-based Questions

1. Knight has no line of symmetry.

2. King, queen, bishop, rook and pawn have one line symmetry.
3. Bishop has one line symmetry, which has been drawn in alongside figure.
4. Queen has vertical line symmetry.



Mental Maths

A. 1. The object which can be divided into two equal parts such that one part coincide with the other are called **symmetrical** objects.
2. The line about which a figure is symmetrical is called **the line of symmetry**.
3. A circle has **infinite** lines of symmetry.
4. Letter D has **one** line(s) of symmetry.
5. Reflection of 'AMBULANCE' is ƎƆИAJUBMA.

B. 1. We have the series 0, 6, 24, 78, 240, ...
Here, $6 - 0 = 6$, $6 \times 3 = 18 + 6 = 24$, $18 \times 3 = 54 + 24 = 78$, $54 \times 3 = 162 + 78 = 240$. Similarly, $162 \times 3 = 486 + 240 = 726$. Hence, the correct option is (b).
2. The letter Q has no line of symmetry. Hence, the correct option is (b).
3. The given figure has five lines of symmetry. Hence, the correct option is (d).
4. A triangle with two sides equal is an isosceles triangle which has one line of symmetry. Hence, the correct option is (a).
5. The option (b) has the reflected shape. Hence, the correct option is (b).

Chapter 9. Measurement

Exercise 9.1

1. The students will do it themselves.
2. By actual measurement, we find that:
   (a) Line segment is about 4 cm.
   (b) Line segment is about $4\frac{1}{2}$ cm.
   (c) Line segment is about 3 cm.
   (d) Line segment is about 2 cm.
   (e) Line segment is about $3\frac{1}{2}$ cm.
3. (a) 1 kilometre= **10** hectometres
   (b) 1 **cm**= 100 millimetres
   (c) 1 hectometre= **1000** decimetres
   (d) 1 decimetre = $\frac{\mathbf{1}}{\mathbf{10}}$ centimetres
   (e) 1 **hectometre** = 10 decametres
   (f) 1 centimetre = **100** millimetres
   (g) 1 kilometre = 1000 **metres**
   (h) 1 metre = **1000** millimetres
   (i) **1** kilometre= 10 hectometres

Exercise 9.2

1. We know that 1 km = 1,000 m.
   (a) $8 \text{ km} = 8 \times 1{,}000 \text{ m} = 8{,}000 \text{ m}$.
   (b) $6 \text{ km } 4 \text{ m} = 6 \text{ km} + 4 \text{ m} = (6 \times 1{,}000) \text{ m} + 4 \text{ m} = 6{,}000 \text{ m} + 4 \text{ m} = 6{,}004 \text{ m}$.
   (c) $8 \text{ km } 9 \text{ m} = 8 \text{ km} + 9 \text{ m} = (8 \times 1{,}000) \text{ m} + 9 \text{ m} = 8{,}000 \text{ m} + 9 \text{ m} = 8{,}009 \text{ m}$.
   (d) $7 \text{ km} = 7 \times 1{,}000 \text{ m} = 7{,}000 \text{ m}$.
   (e) $4 \text{ km } 2 \text{ m} = 4 \text{ km} + 2 \text{ m} = (4 \times 1{,}000) \text{ m} + 2 \text{ m} = 4{,}000 \text{ m} + 2 \text{ m} = 4{,}002 \text{ m}$.
   (f) $6 \text{ km } 5 \text{ m} = 6 \text{ km} + 5 \text{ m} = (6 \times 1{,}000) \text{ m} + 5 \text{ m} = 6{,}000 \text{ m} + 5 \text{ m} = 6{,}005 \text{ m}$.
   (g) $7 \text{ km} = 8 \times 1{,}000 \text{ m} = 7{,}000 \text{ m}$.
   (h) $9 \text{ km } 3 \text{ m} = 9 \text{ km} + 3 \text{ m} = (9 \times 1{,}000) \text{ m} + 3 \text{ m} = 9{,}000 \text{ m} + 3 \text{ m} = 9{,}003 \text{ m}$.

2. We know that 1 km = 1,000 m and 1 m = 100 cm.
   (a) 6 m = 6 × 100 cm = 600 cm.
   (b) 3 m 24 cm = 3 m + 24 cm = (3 × 100) cm + 24 cm = 300 m + 24 cm = 324 cm.
   (c) 16 m 8 cm = 16 m + 8 cm = (16 × 100) cm + 8 cm = 1,600 m + 8 cm = 1,608 cm.
   (d) 44 m = 44 × 100 cm = 4,400 cm.
   (e) 9 km = 9 × 1,000 m = 9,000 m = 9,000 × 100 cm = 9,00,000 cm
   (f) 4 km 14 cm = 4 km + 14 cm = 4 × 1,000 m + 14 cm = 4,000 m + 14 cm
   = 4,000 × 100 cm + 14 cm= 4,00,000 cm + 14 cm = 4,00,014 cm
   (g) 4 km 8 m 9 cm = 4 km + 8 m + 9 cm = 4 × 1,000 m + 8 × 100 cm + 9 cm
   = 4,000 m + 800 m + 9 cm = 4,809 cm.
   (h) 46 km = 46 × 1,000 m = 46,000 × 100 cm = 46,00,000 cm.
3. We know that 1 m = 100 cm and 1 cm = 10 mm.
   (a) 3 cm = 3 × 10 mm = 30 mm.
   (b) 7 cm 4 mm = 3 cm + 4 mm = 7 × 10 mm + 4 mm = 70 mm + 4 mm = 74 mm.
   (c) 16 cm 9 mm = 16 cm + 9 mm = 16 × 10 mm + 9 mm = 160 mm + 9 mm = 169 mm.
   (d) 4 cm 2 mm = 4 cm + 2 mm = 4 × 10 mm + 2 mm = 40 mm + 2 mm = 402 mm.
   (e) 8 km = 8 × 1,000 m = 8,000 m = 8,000 × 100 cm = 8,00,000 cm = 8,00,000 × 10 mm = 8,000,000 mm.
   (f) 6 km 8 mm = 6 km + 8 mm = 6 × 1,000 m + 8 mm = 6,000 m + 8 mm = 6,000 × 100 cm + 8 mm = 6,00,000 cm + 8 mm = 6,00,000 × 10 mm + 8 mm = 6,000,008 mm.
   (g) 19 m = 18 × 100 cm = 1,900 cm = 1900 × 10 mm = 19,000 mm.
   (h) 21 m 4 mm = 21 m + 4 mm = 21 × 100 cm + 4 mm = 2,100 cm + 4 mm
   = 2,100 × 10 mm + 4 mm = 21,000 mm + 4 mm = 21,004 mm.
4. We know that 10 mm = 1 cm. So, to convert mm to cm, we divide mm by 10.
   (a) 40 mm = 40 ÷ 10 = 4 mm.
   (b) 48 mm = 40 mm + 8 mm = 4 cm + 8 mm = 4 cm 8 mm
   (c) 96 mm = 90 mm + 6 mm = 9 cm + 6 mm = 9 cm 6 mm
   (d) 100 mm = 100 ÷ 10 = 10 cm
   (e) 140 mm = 140 ÷ 10 = 14 cm.
   (f) 495 mm = 495 ÷ 10 = 49 cm 5 mm.
   (g) 320 mm = 320 ÷ 10 = 32 cm 0 mm = 32 cm.
   (h) 600 mm = 600 ÷ 10 = 60 cm + 0 mm = 60 cm.
5. We know that 100 cm = 1 m. So, to convert cm to m, we divide mm by 100.
   (a) 300 cm = 300 ÷ 100 = 3 m.
   (b) 844 cm = 844 ÷ 100 = 8 m 44 cm.
   (c) 1,000 cm = 1,000 ÷ 100 = 10 m.
   (d) 960 cm = 960 ÷ 100 = 9 m 60 cm.
   (e) 1,403 cm = 1,403 ÷ 100 = 14 m 3 cm.
   (f) 405 cm = 405 ÷ 100 = 4 m 4 cm
   (g) 400 cm = 400 ÷ 100 = 4 m.
   (h) 1240 cm = 1240 ÷ 100 = 12 m 40 cm
6. We know that 1,000 m = 1 km. So, to convert m to km, we divide m by 1,000.
   (a) 6,000 m = 9,000 ÷ 1,000 = 9 km.
   (b) 4,093 m = 4,000 m + 93 m = (4,000 ÷ 1,000) km + 93 m = 4 km 93 m.
   (c) 4,460 m = 4,000 m + 460 m = (4,000 ÷ 1,000) km + 460 m = 4 km 460 m.
   (d) 9,650 m = 9,000 m + 650 m = (9,000 ÷ 1,000) km + 650 m = 9 km 650 m.

(e) 5,005 m = 5,000 m + 5 m = (5,000 ÷ 1,000) km + 5 m = 5 km 5 m.

(f) 14,000 m = 14,000 m ÷ 1,000 = 14 km.

(g) 7,007 m = 7,000 m + 7 m = (7,000 ÷ 1,000) km + 7 m = 7 km 7 m.

(h) 1,140 m = 1,000 m + 140 m = (1,000 ÷ 1,000) km + 140 m = 1 km 140 m.

7. To convert mm to m, we first convert mm to cm by dividing by 10, and then cm to m by dividing by 100. Simply, we divide mm by 1000 to mm to m.

(a) 3000 mm = 3000 ÷ 10 = 300 cm = 300 ÷ 100 = 3 m.

(b) 2008 mm = 2000 mm + 8 mm = (2,000 ÷ 1,000) m + 8 mm = 2 m + 8 mm = 2 m 8 mm.

(c) 1450 mm = 1000 mm + 450 mm = (1,000 ÷ 1,000) m + 450 mm = 1 m + 450 mm
= 1 m 450 mm.

(d) 6000 mm = 6000 mm ÷ 1,000 = 6 m.

(e) 8040 mm = 8000 mm + 40 mm = (8,000 ÷ 1,000) m + 40 mm = 8 m + 40 mm = 8 m 40 mm.

(f) 6900 mm = 9000 mm + 900 mm = (6,000 ÷ 1,000) m + 900 mm = 6 m + 900 mm
= 6 m 900 mm.

(g) 1200 mm = 1000 mm + 200 mm = (1,000 ÷ 1,000) m + 200 mm = 1 m + 200 mm = 1 m 200 mm.

(h) 7040 mm = 7000 mm + 40 mm = (7,000 ÷ 1,000) m + 40 mm = 7 m + 40 mm = 7 m 40 mm.

8. Let us convert as required.

(a) 7,00,000 cm ÷ 100 m = 7,000 m ÷ 1,000 = 7 km.

(b) 9,00,042 cm = 9,00,000 cm + 42 cm = (9,00,000 ÷ 100) m + 42 cm = 9,000 m +42 cm
= (9000 ÷ 1000) km + 42 cm = 9 km 42 cm.

(c) 80,00,000 mm = 80,00,000 mm ÷ 1,000 = 8,000 m ÷ 1,000 = 8 km.

(d) 40,00,002 mm = 40,00,000 mm + 2 mm
= (40,00,000 mm ÷ 1,000) m + 2 mm
= 4,000 m + 2 mm = (4,000 ÷ 1,000) km + 2 mm = 4 km 2 mm.

Exercise 9.3

1. Adding:

(a)

km	m
24	433
+ 17	058
41	491

(b)

m	cm
944	26
+160	82
1105	08

(c)

km	m	cm
14	945	28
+ 28	148	22
40	093	50

(d)

m	cm	mm
42	28	7
16	22	3
+ 21	18	4
79	69	4

2. Writing in columns and adding:

(a)

km	m
15	405
+ 29	144
44	549

(b)

km	m	cm
8	296	14
+ 72	0	22
80	296	36

(c)

m	cm	mm
22	15	8
16	29	6
+ 7	12	4
45	57	8

(d)

km	m	cm
120	86	88
12	124	15
+220	90	92
352	301	95

3. Subtracting.

(a)

km	m
93	022
– 24	842
68	180

(b)

m	cm
426	33
– 244	96
181	37

(c)

km	m	cm
86	008	11
– 15	468	96

(d)

m	cm	mm
86	16	4
– 12	07	9

4. Writing in columns and subtracting.

(a)

km	m
92	42
– 14	421
77	611

(b)

km	m	cm
78	000	60
– 18	120	22
60	780	38

(c)

m	cm	mm
86	8	4
– 16	26	5
69	82	9

(d)

km	m	cm
90	065	10
– 32	204	20
57	861	90

5. Subtracting.
   (a) Distance of city D from city B = 93 km 20 m – 42 km 57 m = 50 km 963 m.
   (b) Distance of city E from city F = 88 km 55 m – 24 km 900 m =
   (c) Distance between city B from city C = 42 km 57 m – 26 km 375 m = 15 km 682 m
   (d) The cities in ascending order of distances from city A are: C, E, B, F and D

Exercise 9.4

1. The students will do it themselves by collecting objects of their choice.
2. Fill in the blanks.
   (a) 1 hectogram = 1 × 100 g = 100 g × 10 = **1000** decigrams
   (b) 1 gram = **1000** milligrams
   (c) 1 kilogram = 1 × 1000 g = 1000 g × 1000 = **1000000** milligrams.
   (d) 1 kilogram = 1 × 100 = **100** decagrams.
   (e) 1 decigram = 1 × 100 = **100** milligrams.
   (f) 1 **hectogram** = 10 decagrams
3. Converting into grams:
   (a) 16 kg = 16 × 1,000 g = 16,000 g.
   (b) 24 kg = 24 × 1,000 g = 24,000 g.
   (c) 28 kg 300 g = 28 kg + 300 g = 28 × 1,000 g + 300 g = 28,000 g + 300 g = 28,300 g.
   (d) 40 kg 235 g = 40 kg + 235 g = 40 × 1,000 g + 235 g = 40,000 g + 235 g = 40,235 g.
   (e) 95 kg 149 g = 95 kg + 49 g = 95 × 1,000 g + 149 g = 95,000 g + 149 g = 95,149 g.

   Similar work to be done for (f), (g) and (h).
4. Converting into milligrams:
   (a) 16 g 36 mg = 16 g + 36 mg = 16 × 1,000 mg + 36 mg = 16,000 mg + 36 mg = 16,036 mg.
   (b) 25 g = 25 × 1,000 mg = 25,000 mg.
   (c) 95 g = 95 × 1,000 mg = 95,000 mg.
   (d) 275 g = 275 × 1,000 mg = 275,000 mg.
   (e) 20 g 10 mg = 20 g + 10 mg = 20 × 1,000 mg + 10 mg = 20,000 mg + 10 mg = 20,010 mg.

(f) 18 g 9 mg = 18 g + 9 mg = 18 × 1,000 mg + 9 mg = 18,000 mg + 9 mg = 18,009 mg.

(g) 30 g 500 mg = 30 g + 500 mg = 30 × 1,000 mg + 500 mg = 30,000 mg + 500 mg = 30,500 mg.

(h) Similar work to be done.

5. Converting into kilograms and grams:

(a) 8245 g = 8,000 g + 245 g = 8 kg + 245 g = 8 kg 245 g.

(b) 9640 g = 9,000 g + 640 g = 9 kg + 640 g = 9 kg 640 g.

(c) 11050 g = 11,000 g + 50 g = 11 kg + 50 g = 11 kg 50 g.

(d) 64936 g = 64,000 g + 936 g = 64 kg + 936 g = 64 kg 936 g.

Similar work to be done for (e), (f), (g) and (h).

6. Converting into grams and milligrams:

(a) 9400 mg = 9,000 mg + 400 mg = 9 g + 400 mg = 9 g 400 mg.

(b) 8010 mg = 8,000 mg + 10 mg = 8 g + 10 mg = 8 g 10 mg.

(c) 6420 mg = 6,000 mg + 400 mg = 6 g + 420 mg = 6 g 420 mg.

(d) 15845 mg = 15,000 mg + 845 mg = 15 g + 845 mg = 15 g 845 mg.

Similar work to be done for (e), (f), (g) and (h).

Exercise 9.5

1. Adding:

(a)

	kg	g
	27	846
+	56	976
	84	822

(b)

	g	mg
	849	496
–	32	276
	871	772

(c)

	kg	g	mg
	18	245	964
+	22	436	376
	40	682	340

(d)

	kg	g	mg
	26	024	960
	76	375	240
+	15	009	170
	117	409	370

(e)

	kg	g	mg
	18	497	245
	24	184	375
+	14	254	340
	56	935	960

(f)

	kg	g	mg
	26	126	245
	18	240	145
+	55	360	240
	99	726	630

2. Subtracting:

(a)

	kg	g
	49	900
–	14	875
	35	025

(b)

	g	mg
	45	765
–	21	893
	23	872

(c)

	kg	g	mg
	55	026	849
–	11	876	095
	43	150	754

3. Writing in columns and adding:

(a)

	kg	g
	48	204
	935	115
+	45	020
	1028	339

(b)

	kg	g
	525	215
	142	204
+	65	020
	732	439

(c)

	kg	g
	200	045
	300	088
+	95	080
	595	213

4. Writing in columns and subtracting:

(a)

	kg	g
	95	160
–	72	355
	22	805

(b)

	kg	g
	600	115
–	495	000
	105	115

(c)

	kg	g
	800	400
–	272	000
	528	400

5.

(a) Weight of a truck = 920 kg 875 g
Weight of a bicycle = 60 kg 300 g
Total weight of the truck and the bicycle = 920 kg 875 g + 60 kg 300 g

(b) Weight of a car = 465 kg 600 g
Weight of a helicopter = 870 kg 495 g
Weight of a bicycle = 60 kg 300 g
Total weight of the three vehicles = 465 kg 600 g +870 kg 495 g + 60 kg 300 g

(c) Weight of the heavies vehicle, plane = 11080 kg 000 g
Weight of the lightest vehicle, bicycle = 60 kg 300 g
Difference between their weights = 11080 kg 000 g – 60 kg 300 g

(d) Weight of the plane = 11080 kg 000 g
Weight of the helicopter = 870 kg 495 g
Difference between their weights = 11080 kg 000 g – 870 kg 495 g
Hence, the plane is heavier than by helicopter by

(e) Weight of the truck = 920 kg 875 g
Weight of the helicopter = 870 kg 495 g
Total weight of the truck and the helicopter = 920 kg 875 g + 870 kg 495 g
Hence, the total weight of the truck is

Exercise 9.6

1. The students will do it themselves by collecting the containers of their choice.
2. (a) 1 kilolitre = **100** decalitres
   (b) 1 decilitre = **100** millilitres
   (c) 1 hectolitre = **10** decalitres
   (d) 1 **decilitre** = 10 centilitres
   (e) 1 decalitre = 1,000 **centilitres**
   (f) 1 litre = 1,000 **millilitres**
   (g) 1 hectolitre = **10,000** centilitres
3. We know that 1 kL = 1,000 L.

(a) 14 kL = 14 × 1,000 L = 14,000 L.

(b) 28 kL = 28 × 1,000 L = 28,000 L.

(c) 26 kL 350 L = 26 kL + 350 L = 26 × 1,000 L+ 350 L = 26,000 L + 350 L = 26,350 L.

(d) 42 kL 150 L = 42 kL + 150 L = 42 × 1,000 L+ 150 L = 42,000 L + 1550 L= 42,150 L

(e) 225 kL = 225 kL × 1,000 L = 225,000 L.

Similar work to be done for (f), (g) and (h).

4. We know that 1 L = 1,000 mL.

(a) 21 L = 21 × 1,000 mL = 21000 mL (b) 45 L = 45 × 1,000 mL = 45,000 mL

(c) 72 L = 72 × 1,000 mL = 72,000 mL (d) 60 L = 60 × 1,000 mL = 60,000 mL

(e) 46 L 250 mL = 46 L + 250 mL = 46 × 1,000 mL + 250 mL = 46,000 mL + 250 mL = 46,250 mL.

(f) 65 L 500 mL = 65 L + 500 mL = 65 × 1,000 mL + 500 mL = 65,000 mL + 500 mL = 65,500 mL.

Similar work to be done for (g) and (h).

5. To convert litres into kilolitres and litres, divide the number of litres by 1,000.

(a) 8,000 L = 8,000 L ÷ 1,000 = 8 kL (b) 26,000 L= 26,000 L ÷ 1,000 = 26 kL

Similar work to be done (c), (d) and (e).

(f) 72,350 L = 72,000 L + 350 L = 72,000 ÷ 1,000 kL + 350 L = 72 kL + 350 mL = 72 L 350 mL.

(g) 42,950 L = 42,000 L + 950 L = 42,000 ÷ 1,000 kL + 950 L = 42 kL + 950 mL = 42 L 950 mL.

(h) 93,360 L = 93,000 L + 360 L = 93,000 ÷ 1,000 kL + 360 L = 93 kL + 360 mL = 93 L 360 mL.

6. To convert millilitres into millilitres and litres, divide the number of litres by 1,000.

(a) 26,000 mL = 26,000 mL ÷ 1,000 = 26 L. (b) 93,000 mL = 93,000 mL ÷ 1,000 = 93 L.

(c) 65,000 mL = 65,000 mL ÷ 1,000 = 265L. (d) 84,000 ml = 84,000 mL ÷ 1000 = 84 L.

(e) 21,900 mL = 21,000 mL + 900 mL = 21,000 mL ÷ 1,000 + 900 mL = 21 L + 900 mL = 21 L 900 mL.

Similar work to be done (f), (g) and (h).

Exercise 9.7

1. Adding:

(a)

	L	mL
	1 1	2 1
	12	595
	22	375
+	16	240
	51	210

(b)

	L	mL
	26	248
	90	845
+	26	115
	143	208

(c)

	L	mL
	16	900
	85	596
+	13	248
	115	744

2. Adding:

(a)

	kL	L	mL
	72	340	275
+	81	845	976
	154	186	251

(b)

	kL	L	mL
	26	560	245
+	31	738	932
	58	299	177

(c)

	L	mL
	48	765
+	26	245
	75	010

3. Subtraction:

(a)

	kL	L	mL
	15	245	930
–	8	488	148
	6	757	782

(b)

	kL	L	mL
	24	975	248
–	16	160	895
	6	814	353

(c)

	kL	L	mL
	95	450	188
–	25	945	244
	69	504	944

4. Arranging in columns and adding:

(a)

	kL	L	mL
	45	424	575
	48	321	550
+	0	750	221
	94	496	246

(b)

	kL	L	mL
	95	172	160
	65	405	205
+	472	210	705
	632	788	070

(c)

	L	mL
	95	275
	125	205
+	75	395
	295	875

5. Arranging in columns and subtracting:

(a)

	kL	L	mL
	220	409	495
–		795	785
	219	613	710

(b)

	L	mL
	400	750
–	300	250
	100	500

(c)

	L	mL
	360	495
–	85	85
	275	410

(d)

	kL	L	mL
	12	220	100
–	0	995	755
	11	224	345

6. (a) Total quantity of diesel = 140 *l* 250 ml + 70 *l* 750 ml + 80 *l* 400 ml =

(b) Quantity of paint in a barrel = 16 *l* 775 ml
More quantity of paint Amisha poured = 11 *l* 220 ml
Total quantity of paint in the barrel = 16 *l* 775 ml + 11 *l* 220 ml =
Quantity of paint used = 18 *l* 125 ml
Quantity of paint remained in the barrel = total quantity of paint – quantity of paint used

Revision Exercise

1. (a) 4368 cm = 4300 cm + 68 cm = 43 m 68 cm
(b) 8 km 350 m = 8 km + 350 m = 8 × 1,000 m + 350 m = 8,000 m + 350 m = 8,350 m.
(c) 160 L 9 mL = 160 L + 9 mL = 160 × 1,000 mL + 9 mL = 1,60,000 mL + 9 mL = 1,60,009 mL
(d) 18 kg = 18 × 1,000 g = 18,000 g
(e) 4375 mL = 4000 mL + 375 mL = 4 L + 375 mL = 4 L 375 mL.
(f) 15095 cm = 15000 cm + 95 cm = (15000 ÷ 100) m + 95 cm = 150 m 95 cm.

2. Find the sum of the following.

(a)

	kL	L
	405	056
	72	135
+	28	001
	505	192

(b)

	m	cm	mm
	1		
	86	58	04
	26	68	04
+	81	0	05
	194	26	13

(c)

	km	m	cm
	160	150	16
	185	195	00
+	215	165	42
	560	510	58

(d)

	kg	g	mg
	00	957	85
	00	000	520
+	10	000	000
	10	957	605

3. Subtract the following.

(a)

	kg	g
	25	000
–	10	509
	14	491

(b)

	m	cm	mm
	15	00	00
–	8	15	04
	6	84	96

(c)

	m	cm	mm
	2	00	00
–	0	28	04
	1	71	96

(d)

	L	mL
	18	017
–	8	208
	9	809

(a) 10 kg 509 g from 25 kg
(b) 8 m 15 cm 4 mm from 15 m
(c) 28 cm 4 mm from 2 m
(d) 8 *l* 208 ml from 18 *l* 17 ml

4. Solve the following word problems.

(a) Distance travelled by train = 804 km
Distance travelled by bus = 205 km 500 m
Distance travelled by these two modes = 804 km + 205 km 500 m = 1009 km 500 m.
Total distance Arun has to travel = 1504 km
Distance travelled by car = 1504 km – 1009 km 500 m = 494 km 500 m.

(b) Quantity of point given to Vikram = 2 L 500 mL
Quantity of point given to Parul = 1 L 400 mL
Quantity of point given to Vikram = 800 mL
Quantity of point given to these three = 2 L 500 mL + 1 L 400 mL + 800 mL = 4 L 700 mL
Quantity of point left = 5 L – 4 L 700 mL = 300 mL

(c) Quantity of potatoes bought by Lalita = 5 kg 750 g
Quantity of onions bought by Lalita = 2 kg 500 g
Quantity of peas bought by Lalita = 1 kg 250 g
Quantity of tomatoes bought by Lalita = 500 g
Total weight of vegetables bought by Lalita = 5 kg 750 g + 2 kg 500 g + 1 kg 250 g + 500 g
= 10 kg.

HOTS *(Creative Thinking and Reasoning)*

1. Quantity of potatoes bought by Amit = 4 kg 350 g

Quantity of onions bought by Amit = 4 kg 350 g – 2 kg 405 g [2405 g = 2 kg 405 g]
= 1 kg 945 g

Total weight of potatoes and onions = 4 kg 350 g + 1 kg 945 g = 6 kg 295 g.

2. Total quantity of milk in Jiya's container = 6 L 775 mL + 1 L 120 mL = 7 L 895 mL
Quantity of milk in used the first = 2 L 120 mL
Quantity of milk left in the container = 7 L 895 mL – 2 L 120 mL = 5 L 775 mL
Quantity of milk left in the container at the end of the second day = 1 L 560 mL
Quantity of milk used the second day = 5 L 775 mL – 1 L 560 mL = 4 L 215 mL
Hence, Jaya used 4 L 215 mL milk the second day.

3. Length of ribbon used by Razia on Friday = 12 m 20 cm
Length of ribbon used by Razia on Thursday = 12 m 20 cm – 5 m 50 cm = 6 m 70 cm.
Length of ribbon used by Razia on Saturday = 12 m 20 cm + 1 m 25 cm = 13 m 45 cm
Total length of ribbon used by Razia in these three days = 12 m 20 cm + 6 m 70 cm + 13 m 45 cm
= 32 m 35 cm.

Case-based Questions

1. Distance thrown in Discuss throw = 2650 cm = 2650 cm ÷ 100 = 26 m 50 cm.
Distance thrown in Javelin throw = 3040 cm = 3040 cm ÷ 100 = 30 m 40 cm.

2. Distance thrown in Shot-put throw = 32 m 20 cm = 32 m + 20 cm = 32 cm × 100 + 20 cm = 3200 cm + 20 cm = 3220 cm.
Distance thrown in Hammar throw = 24 m 40 cm = 24 m + 40 cm = 24 cm × 100 + 40 cm = 2400 cm + 40 cm = 2440 cm.

3. 32 m 20 cm = 3220 cm and 24 m 40 cm = 2440 cm.
Thus, the given distances in ascending order are: 2440 cm, 2650 cm, 3040 cm, 3220 cm

4. Distance thrown in Shot-put throw = 32 m 20 cm
Distance thrown in Javelin throw = 30 m 40 cm
Total distance thrown in these two events = 32 m 20 cm + 30 m 40 cm = 62 m 60 cm.

5. Distance thrown in Discuss throw = 26 m 50 cm
Distance thrown in Hammar throw = 24 m 40 cm
Difference between these two distances = 26 m 50 cm – 24 m 40 cm = 2 m 10 cm.

Mental Maths

A. 1. Standard unit of measuring length is **metre** (**m**).
2. **Kilogram** (**kg**) is the standard unit of measuring weight.
3. Litre is the standard unit of **capacity**.
4. 500 millilitres make $\frac{1}{2}$ litre.
5. 1 m = **100** cm = **1,000** mm.

B. 1. 16 km= 16 × 1,000 = **16,000** m. 2. 81 m = 81 × 1000 = **81,000** mm.
3. 250 g 8 mg = 250 × 1,000 + 8 mg = 2,50,000 mg + 8 mg = **2,50,008** mg.
4. 20 g 40 mg = 20 × 1,000 + 40 mg = 20,000 + 40 mg = **20,040** mg
5. 28 cm 5 mm = 28 × 10 mm + 5 mm = 280 mm + 5 mm = 285 mm
6. 35 L = 35 × 1,000 mL = 35,000 mL

7. 300 kL = 300 × 1,000 L = 300000 L
8. 8 kL 10 L= 8 × 1,000 L + 10 L = 8010 L.
9. 5426 ml = 5 L 426 mL
10. 522 dm = **52** m **2** dm

Chapter 10. Perimeter and Area

Exercise 10.1

1. (a) Perimeter of the given figure = 4 cm + 5 cm + 2 cm + 3 cm + 6 cm + 8 cm = 28 cm.
   (b) Perimeter of the given figure = 2 cm + 2 cm + 3 cm + 2 cm + 2 cm + 8 cm + 2 cm + 2 cm + 3 cm + 2 cm + 2 cm + 8 cm = 36 cm.
   (c) Perimeter of the given figure = 3 cm + 3 cm + 3 cm + 2 cm + 3 cm + 2 cm + 4 cm + 2 cm + 6 cm + 9 cm = 37 cm.
2. (a) Perimeter of the triangle = 8 cm + 6 cm + 4 cm = 18 cm.
   (b) Perimeter of the triangle = 9 cm + 6 cm + 4 cm = 19 cm.
   (c) Perimeter of the triangle = 5 cm + 8 cm + 10 cm = 23 cm.
   (d) Perimeter of the triangle = 16 m + 17 m + 6 m = 39 m.
   (e) Perimeter of the triangle = 7 m + 7 m + 7 m = 21 m.
   (f) Perimeter of the triangle = 5 m + 5 m + 4 m = 14 m.
3. (a) Perimeter of the rectangle = 2 (Length + Breadth) = 2 (8 cm + 4 cm) = 2 × 12 cm = 24 cm.
   (b) Perimeter of the rectangle = 2 (Length + Breadth) = 2 (10 cm + 8 cm) = 2 × 18 cm = 36 cm.
   (c) Perimeter of the rectangle = 2 (Length + Breadth) = 2 (14 cm + 8 cm) = 2 × 22 cm = 44 cm.
   (d) Perimeter of the rectangle = 2 (Length + Breadth) = 2 (12 m + 9 m) = 2 × 21 m = 42 m.
4. (a) Perimeter of the square = 4 × Side = 4 × 6 cm = 24 cm.
   (b) Perimeter of the square = 4 × Side = 4 × 8 cm = 32 cm.
   (c) Perimeter of the square = 4 × Side = 4 × 15 cm = 60 cm.
   (d) Perimeter of the square = 4 × Side = 4 × 20 m = 80 m.
   (e) Perimeter of the square = 4 × Side = 4 × 25 m = 100 m. 25 m
5. Find the missing value of side of following shapes.
   (a) Perimeter of the rectangle = 56 cm [Given]
   2 (Length + Breadth) = 56 cm
   Length + Breadth = 56 cm × 2 = 28 cm
   16 cm + Breadth = 28 cm
   Breadth = 28 cm – 16 cm = 12 cm.
   (b) Perimeter of the square = 24 cm [Given]
   4 × Side = 24 cm
   Side = 24 cm ÷ 4 = 6 cm
   (c) Perimeter of triangle ABC = 26 cm
   8 cm + BC + 8 cm = 26 cm
   BC = 26 cm – 16 cm = 10 cm.
6. (a) Wall is rectangular in shape.
   Perimeter of the wall = 2 (Length + Breadth) = 2 (12 m + 7 m) = 2 × 19 m = 38 m.

(b) Blackboard is rectangular in shape.

Length of the wooden strip required = Perimeter of the blackboard

= 2 (Length + Breadth)

= 2 (3 m + 2 m) = 2 × 5 m = 10 m.

(c) Distance covered by Reetu in one round = Perimeter of the square park

= 4 × Side

= 4 × 30 m = 120 m.

(d) Raghav has a square garden of side 40 m. He wants to fence the garden. What is the length of barbed wire he would need?

Length of barbed wire required = Perimeter of the square garden

= 4 × Side

= 4 × 40 m = 160 m.

Hence, the length of the barbed wire that Raghav would need is 160 m.

(e) Breadth of the rectangular towel = 160 cm [Given]

Length of the rectangular towel = 40 cm more than breadth= 40 cm + 160 cm = 200 cm

Perimeter of the towel = 2 (Length + Breadth)

= 2 (200 cm + 160 cm) = 2 × 360 cm = 720 cm.

Exercise 10.2

The students will do it themselves.

Exercise 10.3

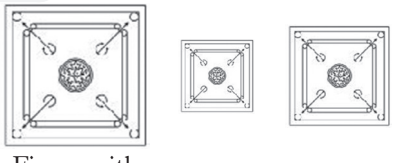
1. (a) 

Figure with greatest area

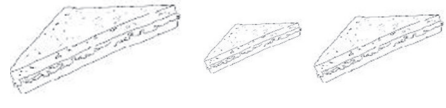
(b) 

Figure with greatest area

2. (a) Number of shaded squares = 9

Side of each square = 1 cm

Area of 1 square = 1 cm × 1 cm = 1 sq cm

Area of shaded region = 9 sq cm.

(a) Number of shaded squares = 10

Side of each square = 1 cm

Area of 1 square = 1 cm × 1 cm = 1 sq cm

Area of shaded region = 10 sq cm.

3. (a) Area of the rectangle = Length × Breadth = 5 cm × 4 cm = 20 sq cm.

(b) Area of the rectangle = Length × Breadth = 8 cm × 4 cm = 32 sq cm.

(c) Area of the rectangle = Length × Breadth = 6 cm × 3 cm = 18 sq cm.

(d) Area of the rectangle = Length × Breadth = 15 cm × 8 cm = 120 sq cm.

(e) Area of the rectangle = Length × Breadth = 18 cm × 14 cm = 216 sq cm.

(f) Area of the rectangle = Length × Breadth = 14 m × 10 m = 140 sq m.

4. (a) Area of the square = Side × Side = 6 cm × 6 cm = 36 sq cm.

(b) Area of the square = Side × Side = 8 cm × 8 cm = 64 sq cm.

(c) Area of the square = Side × Side = 14 cm × 14 cm = 196 sq cm.

(d) Area of the square = Side × Side = 18 cm × 18 cm = 324 sq cm.

(e) Area of the square = Side × Side = 5 m × 5 m = 25 sq m.

(f) Area of the square = Side × Side = 12 m × 12 m = 144 sq m.

(g) Area of the square = Side × Side = 22 m × 22 m = 484 sq m.

(h) Area of the square = Side × Side = 30 m × 30 m = 900 sq m.

5. (a) Given: Length of the plot of land = 25 m and its breadth = 20 m

Area of plot of land = Length × Breadth = 25 m × 20 m = 500 sq m.

(b) Given: side of the square park = 120 m

Area of the square park = Side × Side = 120 m × 120 m = 14,400 sq m.

(c) Given: Length of the rectangular towel = 310 cm and its breadth = 140 cm

Area of the rectangular towel = Length × Breadth = 310 cm × 140 cm = 43,400 sq cm.

(d) Length of the garden = 24 m and its breadth = 24 m

It means, the garden is square in shape.

Area of the garden = 24 m × 24 m = 576 sq m.

Exercise 10.4

1. Observing the given figures:

(a) Number of full shaded squares = 4

Number of exact half shaded squares = 4

Number of more than half shaded squares = 4

Thus, area of shaded region = $4 + \frac{4}{2} + 4 = 4 + 2 + 4 = 10$ sq. cm.

(b) Number of full shaded squares = 2

Number of exact half shaded squares = 0

Number of more than half shaded squares = 6

Thus, area of shaded region = 2 + 0 + 6 = 8 sq. cm.

(c) Number of full shaded squares = 5

Number of exact half shaded squares = 1

Number of more than half shaded squares = 2

Thus, area of shaded region = $5 + \frac{1}{2} + 2 = 7\frac{1}{2}$ sq. cm.

1. Observing the given figures:

(a) Number of full shaded squares = 0

Number of exact half shaded squares = 3

Number of more than half shaded squares = 8

Thus, area of shaded region = $0 + \frac{3}{2} + 8 = 0 + 1\frac{1}{2} + 8 = 9\frac{1}{2}$ sq. cm.

(b) Number of full shaded squares = 8

Number of exact half shaded squares = 2

Number of more than half shaded squares = 3

Thus, area of shaded region = $8 + \frac{2}{2} + 3 = 8 + 1 + 3 = 12$ sq. cm.

(c) Number of full shaded squares = 0

Number of exact half shaded squares = 2

Number of more than half shaded squares = 7

Thus, area of shaded region = $0 + \frac{2}{2} + 7 = 0 + 1 + 7 = 8$ sq. cm.

Revision Exercise

1. (a) Perimeter of the given figure = 2 cm + 6 cm + 7 cm + 2 cm + 5 cm + 4 cm = 26 cm.

   (b) Perimeter of the given figure = 7 m + 6 m + 4 m + 2 m + 3 m + 5 m = 27 m.

   (c) Perimeter of the given figure = 4 cm + 1 cm + 6 cm + 5 cm + 4 cm + 10 cm + 10 cm + 3 cm + 4 cm + 10 cm = 57 cm.

2. (a) Perimeter of the given figure = 1 cm + 1 cm + 2 cm + 4 cm + 3 cm + 1 cm + 2 cm + 2 cm = 16 cm.

   (b) Perimeter of the given figure = 1 cm + 4 cm + 4 cm + 4 cm + 1 cm + 2 cm + 2 cm + 2 cm = 20 cm.

   (c) Perimeter of the given figure = 1 cm + 4 cm + 4 cm + 1 cm + 1 cm + 1 cm + 1 cm + 1 cm + 1 cm + 1 cm = 16 cm.

   (d) Perimeter of the given figure = 1 cm + 3 cm + 1 cm + 1 cm + 2 cm + 1 cm + 1 cm + 3 cm + 1 cm + 1 cm + 2 cm + 1 cm = 18 cm.

5. Observing the given figures:

   (a) **Fig 1**

   Number of full shaded squares = 9

   Number of exact half shaded squares = 0

   Number of more than half shaded squares = 0

   Thus, area of shaded region = 9 + 0 + 0 = 9 sq. cm.

   Fig 2

   Number of full shaded squares = 10

   Number of exact half shaded squares = 0

   Number of more than half shaded squares = 0

   Thus, area of shaded region = 10 + 0 + 0 = 10 sq. cm.

   Hence, Fig 2 has bigger area.

   (b) **Fig 1**

   Number of full shaded squares = 1

   Number of exact half shaded squares = 2

   Number of more than half shaded squares = 2

   Thus, area of shaded region = $1 + \frac{2}{2} + 2 = 1 + 1 + 2 = 4$ sq. cm.

   Fig 2

   Number of full shaded squares = 1

   Number of exact half shaded squares = 2

   Number of more than half shaded squares = 4

   Thus, area of shaded region = $1 + \frac{2}{2} + 4 = 1 + 1 + 4 = 6$ sq. cm.

Hence, Fig 2 has bigger area.

HOTS (Creative Thinking and Reasoning)

1. Find the area of shaded regions in the given figures.

   (a) Length of the bigger rectangle = 25 cm and its breadth = 20 cm

   Area of the bigger rectangle = Length × Breadth = 25 cm × 20 cm = 500 sq cm

   Length of the smaller rectangle = 15 cm and its breadth = 10 cm

   Area of the smaller rectangle = Length × Breadth = 15 cm × 10 cm = 150 sq cm.

   Area of the shaded region = Area of the bigger rectangle – Area of the smaller rectangle

   = 500 sq cm – 150 sq cm = 350 sq cm.

   (b) Side of the bigger square = 15 cm

   Area of the bigger square = Side × Side = 15 cm × 15 cm = 225 sq cm

   Side of the smaller square = 15 cm – 2 cm = 13 cm

   Area of the smaller square = Side × Side = 13 cm × 13 cm = 169 sq cm

   Area of the shaded region = Area of the bigger square – Area of the smaller square

   = 225 sq cm – 169 sq cm = 56 sq cm.

2. Length of Saloni's garden = 16 m and its breadth = 13 m

   Length of barbed wire required for fencing = perimeter of the garden

   = 2(Length + Breadth) = 2(16 m + 13 m) = 2 × 29 m = 58 m

   Now, cost of 1 m barbed wire = ₹ 35

   Cost of 58 m barbed wire = ₹ (58 × 35) = ₹ 2,030.

   Hence, the cost of the barbed wire is ₹ 2030.

3. The side of a square plot of land is 20 m. Find the cost of levelling the plot if the rate is ₹ 5 per sq. metres.

   Side length of the square plot of land = 20 m

   Area of this plot of land = Side × Side = 20 m × 20 m = 400 sq m

   Cost of levelling 1 sq m of plot of land = ₹ 5

   Cost of levelling 400 sq m of plot of land = ₹ (400 × 5) = ₹ 2,000.

   Hence, the cost of levelling the plot of land is ₹ 2,000.

Case-based Questions

1. Perimeter of stamp A = 2(6 + 3) = 2 × 9 = 18 units.

   Perimeter of stamp B = 2(4 + 2) = 2 × 6 = 12 units.

   Perimeter of stamp C = 2(3 + 2) = 2 × 5 = 10 units.

   Perimeter of stamp D = 2(5 + 3) = 2 × 8 = 16 units.

   Perimeter of stamp E = 2(2 + 2) = 2 × 4 = 8 units.

   Perimeter of stamp F = 2(4 + 3) = 2 × 7 = 14 units.

2. Are of stamp A = 6 × 3 = 18 sq units.

   Area of stamp B = 4 × 2 = 8 sq units.

   Area of stamp C = 3 × 2 = 6 sq units.

   Area of stamp D = 5 × 3 = 15 sq units.

Area of stamp E = 2 × 2 = 4 sq units.

Area of stamp F = 4 × 3 = 12 sq units.

3. Stamp A has the greatest perimeter.
4. Sum of areas of all the stamps drawn by Navya = 18 + 8 + 6 + 15 + 4 + 12 = 63 sq units.
5. Perimeter of the largest stamp = 18 units

   Perimeter of the smallest stamp = 8 units

   Difference between these perimeters = 18 units – 8 units = 10 units.

Mental Maths

A. 1. **Perimeter** is the sum of lengths of all the sides of a closed figure.

2. Perimeter of a square = **4** × side
3. Perimeter of a rectangle = 2 (**length** + **breadth**)
4. **Area** is the amount of surface enclosed by a plane figure.
5. Area of a **rectangle** = length × breadth
6. Area of a square = **side** × side

B. 1. Perimeter of rectangle = 2 (16 cm + 10 cm) = 52 cm

Area of rectangle = 16 cm × 10 cm = 160 sq cm

2. Perimeter of rectangle = 2 (12 cm + 8 cm) = 40 cm

Area of rectangle = 12 cm × 8 cm = 96 sq cm

3. Perimeter of square = 4 × 9 cm = 36 cm

Area of square = 9 cm × 9 cm = 81 sq cm

4. Perimeter of square = 4 × 14 cm = 56 cm

Area of square = 14 cm × 14 cm = 196 sq cm

5. Perimeter of the figure = (10 + 6 + 8 + 6 + 18 + 12) cm = 60 cm

Area of rectangle = (10 cm × 6 cm) + (18 cm × 6 cm) = 60 sq cm + 108 sq cm 168 sq cm.

Hence, 1. (c), (ii); 2. (e), (iv); 3. (b), (i); 4. (a), (v); 5. (d), (iii)

C. 1. Area of a rectangle = length × breadth. Hence, the correct option is (c).

2. Area of a rectangle = 8 cm × 3 cm = 24 sq cm. Hence, the correct option is (b).
3. Perimeter of a rectangle = 2 (18 cm + 14 cm) = 64 cm. Hence, the correct option is (a).
4. Area of square = side × side = 6 cm × 6 cm = 36 sq cm. Its side = 6 cm. Hence, the correct option is (b).
5. Area of square = side × side = 4 cm × 4 cm = 16 sq cm. Its side = 4 cm and its perimeter = 4 × 4 cm = 16. Hence, the correct option is (c).
6. Area of a square = **side** × side

Test Your Knowledge–3

(Chapters 7-10)

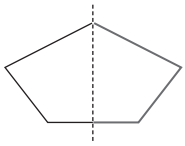
1. (a) The distance from the centre of a circle to a point on its boundary is called the radius of the circle.

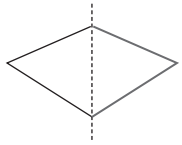
   (b) A pentagon has 5 vertices and 5 sides.

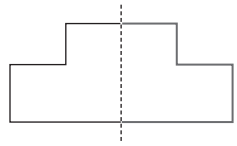
   (c) The lines that never meet are parallel lines.

   (d) The minimum three line segments can be used to form a closed figure.

2. Complete the figure below by drawing its reflection over the vertical line.

(a) 

(b) 

(c) 

3. Fill in the blanks.

(a) 16 m = **1,600** cm (b) 300 cm = **3** m (c) 4,000 m = **4** km

(d) 3 kg = **3000** g (e) 450 g = **4,50,000** mg (f) 6,000 mL = **6** L

4. (a)

	kg	**g**
	365	210
	55	060
+	00	900
	421	170

(b)

	m	**cm**
	40	20
	15	24
+	22	18
	77	62

(c)

	L	**mL**
	325	275
	126	320
+	000	850
	452	445

5. (a)

	kg	**g**
	75	000
+	18	410
	56	590

(b)

	kg	**g**
	400	000
+	205	208
	194	792

(c)

	L	**mL**
	8	000
+	0	325
	7	675

(d)

	m	**cm**
	200	00
+	150	35
	49	65

6. (a) The perimeter of the given figure = 4 m + 6 m + 10 m + 10 m + 4 m + 6 m + 10 m + 10 m = 60 m.

(b) The perimeter of the given figure = 40 m + 20 m + 20 m + 32 m + 30 m + 28 m + 30 m + 80 m = 280 m.

(c) The perimeter of the given figure = 10 cm + 5 cm + 7 cm + 5 cm + 9 cm + 15 cm = 51 m.

7. The perimeter of a rectangle = 100 cm

or 2(Length + Breadth) = 100 cm

or Length + Breadth = 50 cm

or 30 cm + Breadth = 50 cm

or Breadth = 50 cm – 30 cm = 20 cm.

Hence, the breadth of the rectangle is 20 cm.

8. The perimeter of a rectangle = 2(Length + Breadth) = 2(120 m + 80 m) = 2 × 200 m = 400 m.

Cost of fencing 1 m of the park = ₹ 10

Cost of fencing 400 m of the park = ₹ 10 × 400 = ₹ 4,000.

9. The perimeter of the square garden = 4 × Side = 4 × 9 m = 36 m.

10. Length of cloth Sunanda bought from first shop = 122 m 60 cm

Length of cloth Sunanda bought from second shop = 162 m 55 cm

Length of cloth Sunanda bought from third shop = 55 m 20 cm

Total length of cloth she bought = 339 m 35 cm

	m	**cm**
	122	60
	161	55
+	55	20
	339	35

of cloth from one shop, 162 m 55 cm of cloth from a second shop and 55 m 20 cm from a third shop. What is the total length of cloth she bought?

Exercise 11.1

1. Observing the digital watches and clocks, we find: (a) – (ii), (b) – (iv), (c) – (i), (d) – (iii).
2. Reading the clocks, we find the time shown by them as given below.
   (a) 3 : 26 (b) 11 : 12 (c) 8 : 58 (d) 9 : 14
3. The hands of each clock have been drawn to show the given time.

(a) 
8 : 42

(b) 
6 : 49

(c) 
16 minutes to 7

(d) 
22 minutes past 6

Exercise 11.2

1. Reading the clocks, we find the time shown by them as given below.
   (a) 5 : 30 : 15 (b) 10 : 08 : 44 (a) 9 : 45 : 25 (a) 8 : 10 : 24
3. The second hand of each clock has been drawn to show the given time.

(a) 
9 : 20 : 15

(b) 
9 : 18 : 26

(c) 
6 : 30 : 55

(d) 
12 : 16 : 18

Exercise 11.3

1. We know that 1 hour = 60 minutes.
   (a) 9 h = 9 × 60 min = 540 min. (b)15 hours = 15 × 60 min = 900 min.
   (c) 18 h 24 min = 18 h + 24 min = 18 × 60 min + 24 min = 1080 min + 24 min = 1104 min.
   (d) 10 h 32 min = 10 h + 32 min = 10 × 60 min + 32 min = 600 min + 32 min = 632 min.
   (e) 26 h 55 min = 26 h + 55 min = 26 × 60 min + 55 min = 1560 min + 55 min = 1615 min.
2. We know that 1 minute = 60 seconds. In short, we write it as 1 min = 60 s.
   (a) 40 min = 40 × 60 s = 2400 s. (b) 65 min = 65 × 60 s = 3900 s.
   (c) 68 min = 68 × 60 s = 4080 s.
   (d) 15 min 20 s = 15 min + 20 s = 15 × 60 s + 20 s = 920 s.
   (e) 25 min 45 s = 15 min + 20 s = 15 × 60 s + 20 s = 920 s.
   (f) 72 min = 72 × 60 s = 4320 s.
3. To convert minutes into hours and minutes, divide the number of minutes by 60. Write the quotient as hours and the remainder as minutes.
   (a) Dividing 480 minutes by 60: (b) Dividing 360 minutes by 60:

$$\begin{array}{r|l} & 8 \\ 60 & 480 \\ & -480 \\ \hline & 00 \end{array}$$

Hence, 480 min = 8 h.

(c) Dividing 720 minutes by 60:

$$\begin{array}{r|l} & 10 \\ 60 & 720 \\ & -60 \\ \hline & 120 \\ & -120 \\ \hline & 00 \end{array}$$

Hence, 720 min = 10 h.

(e) Dividing 750 minutes by 60:

$$\begin{array}{r|l} & 12 \\ 60 & 750 \\ & -60 \\ \hline & 150 \\ & -120 \\ \hline & 30 \end{array}$$

Hence, 750 min = 12 h 30 min.

$$\begin{array}{r|l} & 6 \\ 60 & 360 \\ & -360 \\ \hline & 00 \end{array}$$

Hence, 360 min = 6 h.

(d) Dividing 925 minutes by 60: 925 minutes

$$\begin{array}{r|l} & 15 \\ 60 & 925 \\ & -60 \\ \hline & 325 \\ & -300 \\ \hline & 25 \end{array}$$

Hence, 925 min = 15 h 25 min.

(f) Dividing 940 minutes by 60:

$$\begin{array}{r|l} & 15 \\ 60 & 940 \\ & -60 \\ \hline & 340 \\ & -300 \\ \hline & 40 \end{array}$$

Hence, 940 min = 15 h 40 min.

4. To convert minutes into minutes and seconds, divide the number of seconds by 60. Write the quotient as minutes and the remainder as seconds.

(a) Dividing 280 minutes by 60:

$$\begin{array}{r|l} & 4 \\ 60 & 280 \\ & -240 \\ \hline & 40 \end{array}$$

Hence, 280 min = 4 min 40 s.

(c) Dividing 940 minutes by 60:

$$\begin{array}{r|l} & 15 \\ 60 & 940 \\ & -60 \\ \hline & 340 \\ & -300 \\ \hline & 40 \end{array}$$

Hence, 940 min = 15 min 40 s.

(e) Dividing 272 minutes by 60:

$$\begin{array}{r|l} & 4 \\ 60 & 272 \\ & -240 \\ \hline & 32 \end{array}$$

(b) Dividing 600 minutes by 60:

$$\begin{array}{r|l} & 6 \\ 60 & 600 \\ & -600 \\ \hline & 00 \end{array}$$

Hence, 600 min = 6 min.

(d) Dividing 595 minutes by 60:

$$\begin{array}{r|l} & 15 \\ 60 & 940 \\ & -60 \\ \hline & 340 \\ & -300 \\ \hline & 40 \end{array}$$

Hence, 940 min = 15 min 40 s.

(f) Dividing 375 minutes by 60:

$$\begin{array}{r|l} & 6 \\ 60 & 375 \\ & -360 \\ \hline & 15 \end{array}$$

Hence, 272 min = 4 min 32 s.

Hence, 375 min = 6 min 15 s.

Exercise 11.4

1. (a) 7 : 40 a.m. (b) 8 : 10 p.m. (c) 6 : 00 a.m. (d) 7 : 09 p.m.
   (e) 10 : 15 p.m. (f) 3 : 15 p.m. (g) 4 : 15 p.m. (h) 9 : 45 a.m.
2. To convert time from 12 midnight to 12 : 59 a.m. into 24-hour clock, subtract 12 hours from the given number of time and replace a.m. by hours. To convert time from 1 : 00 a.m. to 12 : 59 p.m. into 24-hour clock, write the same time replacing a.m. or p.m. by hours. To convert time from 1 : 00 p.m. to 11 : 59 p.m. into 24-hour clock, add 12 hours to the given number of time and replace p.m. by hours.
   (a) 7 : 15 a.m. = 07 15 hours
   (b) 12 : 26 p.m. = 12 26 hours
   (c) 7 : 55 p.m. = 7 : 55 + 12 : 00 = 19 55 hours
   (d) 11 : 45 a.m. = 11 45 hours
   (e) 5 : 50 p.m. = 5 : 50 + 12 : 00 = 17 50 hours
   (f) 4 : 34 p.m. = 4 : 34 + 12 : 00 = 16 34 hours
   (g) 12 midnight = 12 : 00 – 12 : 00 = 00 00 hours. We can also write it as 24 00 hours.
   (h) 12 noon= 12 : 00 – 12 : 00 = 00 00 hours.
   (i) 2 : 30 a.m.= 02 30 hours.
3. Convert into 12-hour clock time.
   (a) 04 00 hours = 4 : 00 a.m. (b) 1020 hours = 10 : 20 a.m.
   (c) 13 35 hours = 13 35 – 12 : 00 = 1 : 35 p.m.
   (d) 17 30 hours = 17 30 – 12 : 00 = 5 : 30 p.m.
   (e) 20 20 hours = 20 20 – 12 : 00 = 8 : 20 p.m.
   (f) 09 09 hours = 9 : 09 a.m.
   (g) 12 05 hours = 12 : 05 a.m.
   (h) 22 00 hours = 22 00 – 12 : 00 = 10 : 00 p.m.
   (i) 17 27 hours = 17 27 – 12 : 00 = 5 : 27 p.m.

Exercise 11.5

1. Write in columns and add. If the sum exceeds 60, subtract 60 and carry 1 to the just left column.

(a)

	h	min
	1 1	
	18	32
+	48	48
	67	20

80 min
= 60 min + 20 min
= 1 h + 20 min

(b)

	h	min
	1	
	16	14
+	37	32
	53	46

(c)

	h	min
	1	
	20	34
+	35	49
	56	23

83 min
= 60 min + 23 min
= 1 h + 23 min

(d)

	h	min	s
	1 1	1 1	1
	14	35	56
+	66	46	28
	81	22	24

84 s
= 60 s + 24 s
= 1 min + 24 s
Same for min.

(e)

	h	min
	1	
	7	22
	6	15
+	8	42
	22	19

(f)

	h	min	s
	11		**1**
	22	31	24
	16	42	18
+	15	11	14
	54	24	56

2. Write in columns and subtract. If the minuend is less than subtrahend, borrow 1 from the just left column.

(a)

	min	s
	9	**65**
	~~10~~	~~05~~
–	8	32
	1	33

(b)

	h	s
	22	28
–	14	26
	08	02

(c)

	min	s
	15	**60**
	~~16~~	~~00~~
–	9	10
	6	50

(d)

	min	s
	23	**60**
	~~24~~	~~00~~
–	18	25
	05	35

(e)

	h	min	s
	15	**25**	**75**
	~~11~~	~~26~~	~~15~~
–	9	14	24
	6	50	

(f)

	h	min	s
	34	**60**	**60**
	~~35~~	~~00~~	~~00~~
–	16	28	15
	18	32	45

Exercise 11.6

(a) As Lalit reached the function early, so we will subtract 25 minutes from the function starting time.

9 : 15 p.m. – 25 min = 8 : 50 p.m.

Hence, Lalit reached the function at 8 : 50 p.m.

	h	min
	8	**75**
	~~9~~	~~15~~
–	0	25
	8	50

(b) Here,to find the duration of movie, we subtract starting time for the ending time.

6 : 00 p.m. – 3 : 20 p.m.

= 2 : 40 hours

	h	min
	5	**60**
	~~6~~	~~00~~
–	3	20
	2	40

(c) 11 p.m. $\xrightarrow[1\text{ h}]{}$ 12 p.m.(midnight) $\xrightarrow[2\text{ h}]{}$ 2 a.m

Now, duration = 1 h + 2 h = 3 h

Hence, there are 3 hours between 11 p.m. and 2 a.m.

(d) Ashoka went for net practice at 3 : 30 p.m.

He came back at 5 : 20 p.m.

Duration of net practice = 17 : 20 hours – 15 : 30 hours = 1 h 50 min

	h	min
	4	**80**
	~~5~~	~~20~~
–	3	30
	1	50

(e) Time of the flight it took off from New Delhi = 03 45 hours

Time of the flight it landed in London = 21 34 hours

Duration of time of flight = 21 34 hours – 03 45 hours

= 17 h 49 min.

Hence, the flight took 17 h 49 min to reach London.

	h	min
	20	**94**
	21	34
–	03	45
	17	49

(f) Mehndi show started at 7 : 30 p.m.

Duration of show = 2 h 30 min.

7 : 30 p.m. $\xrightarrow[2\text{ h}]{}$ 9 : 30 p.m. $\xrightarrow[30\text{ min}]{}$ 10 p.m.

Hence, the Mehndi show got over at 10 p.m.

(g) The train left from Darbhanga Junction at 8 : 00 a.m.

Duration of time = 4 h 45 min

8 : 00 a.m. $\xrightarrow[4\text{ h}]{}$ 12 : 00 noon $\xrightarrow[45\text{ min}]{}$ 12 : 45 p.m.

Hence, the train reached Patna at 12 : 45 p.m.

(h) Mother started cooking at 9 : 10 p.m. It took her 1 hour 20 minutes to cook the food. At what time did she finish cooking?

Mother started cooking at 9 : 10 p.m.

Duration of time for cooking = 1 h 20 min

9 : 10 p.m. $\xrightarrow[1\text{ h}]{}$ 10 : 10 p.m. $\xrightarrow[20\text{ min}]{}$ 10 : 30 p.m.

Hence, mother finished cooking at 10 : 30 p.m.

(i) The drawing competition got over at 2 : 45 p.m.

Duration of the drawing competition = 1 h 30 min

2 : 45 p.m. $\xrightarrow[-1\text{ h}]{}$ 1 : 45 p.m. $\xrightarrow[-30\text{ min}]{}$ 1 : 15 p.m.

Hence, the drawing competition started at 1 : 15 p.m.

Exercise 11.7

1. We know that a year is a leap year, if it is completely divisible by 4.
   (a) 1996 ÷ 4 = 499, so it is a leap year.
   (b) 2010 ÷ 4 = 502½, so it is not a leap year.
   (c) 2000÷ 4 = 500, so it is a leap year.
   (d) 1992 ÷ 4 = 498, so it is a leap year.
   (e) 2008÷ 4 = 502, so it is a leap year.
   (f) 1970 ÷ 4 = 492½, so it is not a leap year.
   (g) 1978 ÷ 4 = 494½, so it is not a leap year.
   (h) 2012 ÷ 4 = 503, so it is a leap year.
   (i) 1902 ÷ 4 = 475½, so it is not a leap year.
   (j) 1952 ÷ 4 = 488, so it is a leap year.
   (k) 2003 ÷ 4 = 500¾, so it is not a leap year.
   (l) 2004 ÷ 4 = 501, so it is a leap year.
2. Writing in the short form:
   (a) 4th June 2012 → **04.06.2012**
   (b) 8th May 2015 → **08.05.2015**
   (c) 15th August 1947 → **15.08.1947**
   (d) 8th September 2010 → **08.09.2010**
   (e) 29th February 2012 → **29.02.2012**
   (f) 6th November 2003 → **06.11.2003**
3. (a) Year 2004 is a leap yeas, so it has February of 29 days.

   Number of days in February = 29 – 28 = 1

   Number of days in March = 15

   Total number of days = 15 + 1 = 16 days.

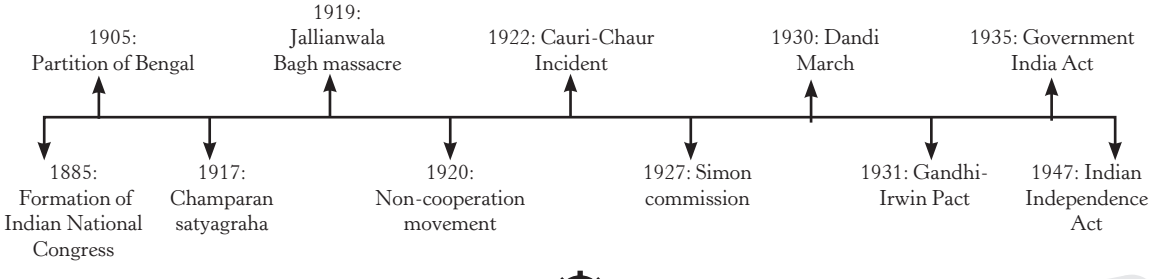
(b) Number of days in August = 31 – 15 = 16
Number of days in November = 28
Total number of days = 16 + 28 = 44 days.

4. Number of days the school remained close in December = 31 – 24 = 7
Number of days the school remained close in January = 5
Total number of days the school remained close = 7 + 5 = 12 days.
Hence, the duration of winter vacation is 12 days.
5. Number of days in April = 30 – 26 = 4
Number of days in May = 11
Total number of days = 4 + 11 = 15 days.
Hence, the courier took 15 days to reach its destination.
6. Number of days in December = 31 – 15 = 16
Number of days in January = 26
Total number of days = 16 + 26 = 42 days.
Hence, Mr Lalit remained out of Delhi for 42 days.
7. Rajeev went to his native town on 18th June.
Duration of time = 24 days
18th June $\xrightarrow{+ 12 \text{ days}}$ 30th June $\xrightarrow{+ 12 \text{ days}}$ 12th July
Hence, Rajeev will return on 13th July.
8. Number of days in December = 14
Remaining days = 35 – 14 = 21 days
Number of days in November = 30 – 20 = 10 days.
Hence, the date of Anuj's birthday is 10th November.
9. Number of days in February = 29 – 18 = 11
Number of days in March = 31
Number of days in April = 18
Total number of days = 11 + 31 + 18 = 60 days.
Hence, there 60 days between 19th February 2012 and 18th April 2012

Exercise 11.8

1. The students will do it themselves.
2. The students will do it themselves.
3. The time line given below shows the important events of Indian Freedom movement.

Revision Exercise



2. (a) Time 4 hours after 9 : 45 a.m. = 09 45 hours + 04 00 hours = 13 : 45 hours = 1 : 45 p.m.
   (b) Time 3 hours before 2 : 20 p.m. = 14 20 hours – 03 00 hours = 11 20 hours = 11 : 20 a.m.
   (c) 45 minutes after 11 : 30 p.m. = 23 30 hours – 00 45 hours = 22 45 hours = 10 : 45 p.m.
   (d) 55 minutes before 2 : 10 a.m. = 02 10 hours – 00 55 hours = 01 15 hours = 1 : 15 a.m.

3. (a) 08 40 hours = 8 : 40 a.m.
   (b) 00 55 hours + 12 00 hours = 12 : 55 a.m.
   (c) 12 45 hours = 12 : 45 p.m.
   (d) 03 05 hours = 3 : 05 a.m.
   (e) 18 40 hours = 18 40 – 12 00 = 6 : 40 p.m.
   (f) 16 00 hours = 16 00 – 12 00 = 4 : 00 p.m.
   (g) 00 25 hours + 12 00 hours = 12 : 25 a.m.
   (h) 11 55 hours = 11 : 55 a.m.

4. (a) Putting A = 0 in 20A6, we get 2006, which is not divisible by 4. Putting A = 1 in 20A6, we get 2016, which is divisible by 4. Hence, the minimum value of A is 1.
   (b) Putting B = 0 in 182B, we get 1820, which is divisible by 4. Hence, the minimum value of B is 0.
   (c) Putting C = 0 in 159C, we get 1590, which is not divisible by 4. Putting C = 2 in 159C, we get 1592, which is not divisible by 4. Hence, the minimum value of C is 2.
   (d) Putting D = 0 in 20D0, we get 2000, which is divisible by 4. Hence, the minimum value of D is 0.

5. Convert the following into hours and minutes.
   (c) Dividing 95 minutes by 60:

$$\begin{array}{r|l} & 1 \\ \hline 60 & 90 \\ & -60 \\ \hline & 30 \end{array}$$

   Hence, 95 min = 1 h 30 min.

   (d) Dividing 925 minutes by 60: 925 minutes

$$\begin{array}{r|l} & 2 \\ \hline 60 & 135 \\ & -120 \\ \hline & 15 \end{array}$$

   Hence, 135 min = 2 h 15 min.

   Similar work to be done for (c) and (d).

6. Convert the following into minutes and seconds.
   (a) Dividing 472 seconds by 60:

$$\begin{array}{r|l} & 7 \\ \hline 60 & 472 \\ & -420 \\ \hline & 50 \end{array}$$

   Hence, 472 s = 7 min.

   (b) Dividing 900 seconds by 60:

$$\begin{array}{r|l} & 15 \\ \hline 60 & 900 \\ & -60 \\ \hline & 300 \\ & -300 \\ \hline & 00 \end{array}$$

   Hence, 900 s = 15 min.

   Similar work to be done for (c) and (d).

7. Add the following.

(a)

	h	min	s
	11		**1**
	18	42	35
+	26	25	15
	45	07	50

(b)

	h	min	s
	11	**11**	
	26	18	54
+	15	45	34
	42	04	28

8. Subtract the following.

(a)

	h	min
	11	**80**
	~~12~~	~~20~~
–	9	34
	2	46

(b)

	min	s
	49	**60**
	~~50~~	~~00~~
–	24	42
	25	18

(c)

	h	min
	11	**80**
	~~12~~	~~20~~
–	9	34
	2	46

(d)

	h	min
		60
	~~1~~	~~00~~
–	0	17
	0	43

9. Here, we have to find the time 3 hours 20 minute after 5 : 00 p.m.
   5 : 00 p.m. + 3 h 20 min = 8 : 20 p.m.
   Hence, Lalita returned at 8 : 20 p.m.
10. Starting time of the T-20 match = 8 : 05 a.m.
    Ending time of the T-20 match = 12 : 20 a.m.
    Time duration of the match = 12 : 20 hours – 08 : 05 hours = 04 15 hours.
    Hence, the T-20 match was played for 4 h 15 min.
11. Starting time of the Cricket Test Match = 9 : 15 a.m.
    Duration time of the match = 6 h 38 min
    Ending time of the Cricket Test Match = 09 15 hours + 06 38 hours = 15 53 hours = 3 : 53 p.m.
    Hence the Cricket Test Match got over at 3 : 53 p.m.

***HOT* (Critical Thinking and Reasoning)**

Number of days in August = 31 – 6 = 25 days
Number of days in year 2004 = 25 + 30 + 31 + 30 + 31 = 147 days
Number of days in year 2005 = 365 days [2006 is not a leap year.]
Number of days in year 2006 = 31 + 28 + 31 + 30 + 31 + 10 = 161 days
Total number of days from 6th August to 10th June 2006 = 147 days + 365 days + 161 days = 673 days.
Hence, Saket is older than Saransh by 673 days.

***Case-based* Question**

1. Duration of eclipse 1: 11 h 15 min – 10 h 00 min = 1 h 15 min
   Duration of eclipse 2: 12 h 55 min – 11 h 22 min = 1 h 33 min
   Duration of eclipse 3: 4 h 58 min – 4 h 30 min = 28 min
   Duration of eclipse 4: 5 h 21 min – 3 h 47 min = 1 h 34 min
2. Eclipse 4 is the longest duration eclipse.
3. Eclipse 3 is the shortest duration eclipse.
4. The duration of Eclipse 2 in minutes = 1 h 33 min = 60 min + 33 min = 93 min.
5. Number of days in August = 31 – 21 = 10 days

Number of days in September = 30 days

Number of days in October = 9 days

Total number of days = 10 + 30 + 9 = 49.

Mental Maths

A. 1. Time between 12 noon and 12 mid-night is denoted by _____.

2. _____ is used to denote the time between 12 mid-night and 12 noon.

3. To convert _____ into hours, we multiply it by 24.

4. To convert hours into _____, we multiply hours by 60.

5. To convert minutes into seconds, we multiply minutes by _____.

B. 1. In the 24-hour clock, the first two digits on the left show hours. Hence, the correct option is (a).

2. 0000 hours is same as midnight. Hence, the correct option is (b).

3. 5 hours 30 minutes and 4 hours 40 minutes = 10 hours 10 minutes. Hence, the correct option is (c).

4. 9 : 30 p.m. is written as 21 30 hours in 24-hour clock: Hence, the correct option is (d).

5. There are 60 × 60 = 3600 seconds in 1 hour. Hence, the correct option is (c).

6. 8 hours have 8 × 60 = 480 minutes. Hence, the correct option is (b).

7. A leap year has 52 weeks and 2 days. Hence, the correct option is (a).

8. After every 7 days, the same day is repeated. Hence, the correct option is (b)

Chapter 12. Money

Exercise 12.1

1. (a) Amount of 4 notes of ₹ 1000 each = ₹ 1000 × 4 = ₹ 4000

Amount of 3 notes of ₹ 500 each = ₹ 500 × 3 = ₹ 1500

Amount of 8 notes of ₹ 100 each = ₹ 100 × 8 = ₹ 800

Amount of 6 notes of ₹ 10 each = ₹ 10 × 6 = ₹ 60

Total amount = ₹ 4000 + ₹ 1500 + ₹ 800 + ₹ 60 = ₹ 6360.

(b) Amount of 3 notes of ₹ 500 each = ₹ 500 × 3 = ₹ 1500

Amount of 4 notes of ₹ 100 each = ₹ 100 × 4 = ₹ 400

Amount of 5 notes of ₹ 10 each = ₹ 10 × 5 = ₹ 50

Amount of 4 coins of 50 paise each = 50 p × 4 = ₹ 2.

Total amount = ₹ 1500 + ₹ 400 + ₹ 50 + ₹ 2 = ₹ 1952.

(c) Amount of 40 notes of ₹ 1000 each = ₹ 1000 × 40 = ₹ 40000

Amount of 30 notes of ₹ 500 each = ₹ 500 × 30 = ₹ 15000

Amount of 80 notes of ₹ 20 each = ₹ 20 × 80 = ₹ 1600

Amount of 55 notes of ₹ 10 each = ₹ 10 × 55 = ₹ 550.

Total amount = ₹ 40000 + ₹ 15000 + ₹ 1600 + ₹ 550 = ₹ 57150.

(d) Amount of 120 notes of ₹ 500 each = ₹ 500 × 120 = ₹ 60000

Amount of 60 notes of ₹ 100 each = ₹ 100 × 60 = ₹ 6000

Amount of 30 notes of ₹ 50 each = ₹ 50 × 30 = ₹ 1500

Amount of 144 notes of ₹ 5 each = ₹ 5 × 144 = ₹ 720.
Total amount = ₹ 60000 + ₹ 6000 + ₹ 1500 + ₹ 720 = ₹ 68220.

(e) Amount of 93 notes of ₹ 50 each = ₹ 50 × 93 = ₹ 4650
Amount of 160 notes of ₹ 20 each = ₹ 20 × 160 = ₹ 3200
Amount of 95 notes of ₹ 10 each = ₹ 10 × 95 = ₹ 950
Amount of 44 coins of 50 paise each = 50 p × 44 = ₹ 22.
Total amount = ₹ 4650 + ₹ 3200 + ₹ 950 + ₹ 22 = ₹ 8822.

2. (a) Amount of 4 notes of ₹ 1000 each = ₹ 1000 × 4 = ₹ 4000
Amount of 5 notes of ₹ 500 each = ₹ 500 × 5 = ₹ 2500
Amount of 3 notes of ₹ 100 each = ₹ 100 × 3 = ₹ 300
Total amount = ₹ 4000 + ₹ 2500 + ₹ 300 = ₹ 6800.
Hence, Reeta has ₹ 6800.

(b) Amount of 16 notes of ₹ 100 each = ₹ 100 × 16 = ₹ 1600
Amount of 4 notes of ₹ 500 each = ₹ 500 × 4 = ₹ 2000
Amount of 2 notes of ₹ 100 each = ₹ 100 × 2 = ₹ 200
Total amount = ₹ 1600 + ₹ 2000 + ₹ 200 = ₹ 3800.
Hence, the cost of the mobile is ₹ 6800.

(c) **For Raja**
Amount of 17 notes of ₹ 1000 each = ₹ 1000 × 17 = ₹ 17000
Amount of 5 notes of ₹ 500 each = ₹ 500 × 5 = ₹ 2500
Amount of 22 notes of ₹ 100 each = ₹ 100 × 22 = ₹ 2200
Total amount = ₹ 17000 + ₹ 2500 + ₹ 2200 = ₹ 21700.
Thus, Raja has ₹ 21700.

For Ravi
Amount of 12 notes of ₹ 1000 each = ₹ 1000 × 12 = ₹ 12000
Amount of 12 notes of ₹ 500 each = ₹ 500 × 12 = ₹ 6000
Amount of 44 notes of ₹ 50 each = ₹ 50 × 44 = ₹ 2200
Total amount = ₹ 12000 + ₹ 6000 + ₹ 2200 = ₹ 20200.
Thus, Ravi has ₹ 20200.
As ₹ 21700 > ₹ 20200, so Raja has more money than Ravi.
Difference between their amounts of money = ₹ 21700 – ₹ 20200 = ₹ 1500.
Hence, Raja has more money than Ravi by ₹ 1500.

Exercise 12.2

1. (a)

	₹	p
	11	
	44	84
+	85	94
	130	78

(b)

	₹	p
	1	
	75	75
+	33	33
	109	08

(c)

	₹	p
	1	
	140	95
+	260	25
	400	10

(d)

	₹	p
	111	**1**
	355	35
+	495	75
	851	10

(e)

₹	p
	1
472	36
+ 225	45
697	81

(f)

₹	p
1 1	1
244	96
+ 160	78
405	74

(g)

₹	p
111	1
135	48
497	35
+ 145	44
778	27

(h)

₹	p
11	1
48	75
401	11
+ 228	65
678	51

2. (a)

₹	p
984	100
~~995~~	~~00~~
– 115	42
879	58

(b)

₹	p
404	120
~~405~~	~~20~~
– 115	75
289	45

(c)

₹	p
720	105
~~721~~	~~05~~
– 225	80
495	25

(d)

₹	p
1109	112
~~1110~~	~~12~~
– 409	30
710	80

(e)

₹	p
899	100
~~900~~	~~00~~
– 35	33
864	67

(f)

₹	p
95	
~~955~~	~~15~~
– 892	00
63	15

(g)

₹	p
875	45
– 405	21
470	24

(h)

₹	p
484	99
– 321	97
163	02

Similar work to be done for (i) and (j).

3. (a) Rekha bought cards for ₹ 360.80
Money left with Rekha = ₹ 795.20
Amount of money Rakha had = ₹ 360.80 + ₹ 795.20 = ₹ 1156.00.
Hence, Rekha had + ₹ 1156.00.

₹	p
360	80
+ 795	20
1156	00

(b) Amount of money Lalit has = ₹ 1525.45
Amount of money Rohit has = ₹ 933.55
Difference between their money = ₹ 1525.45 – ₹ 933.55 = ₹ 591.90.
Hence, Lalit has ₹ 591.90 more than Rohit.

(c) Amount of money Rehman put first in his account = ₹ 5000.00
Amount of money Rehman put more in his account = ₹ 7956.50
Total amount of money in Rehman's account = ₹ 5000.00 – ₹ 7956.50 = ₹ 12956.50.
Hence, Rehman put ₹ 12956.50 in his account.

(d) Mrs. Pathak bought rice for ₹ 750.50
She bought sugar for ₹ 105.60
She bought oil for ₹ 305.75
Total money she spent = ₹ 750.50 + ₹ 105.60 + ₹ 305.75 = ₹ 1161.85.
Hence, Mrs. Pathak spent ₹ 1161.85 in all.

(e)

Item	Cost
Burger	₹ 115.50
Pizza	₹ 220.80
Cold drinks	₹ 30.00
Tea	₹ 20.00
Toffees	₹ 35.75
Ice creams	₹ 65.50
Total	₹ 487.55

Radhika bought the items for = ₹ 487.55

Amount of money she has = ₹ 500.00

As ₹ 500.00 > ₹ 487.55, so Radhika has enough money for purchasing.

Amount of money left with her

= ₹ 500.00 – ₹ 487 55 = ₹ 12.45.

(f)

Items bought	Cost
Mixed fruit juice	₹ 55.00
Banana shake	₹ 30.00
Strawberry cake	₹ 235.00
Shirt	₹ 320.50
Total	₹ 640.50

Total money spent be Rani = ₹ 640.50

Money given by Rani to the shopkeeper = ₹ 1000.00

Amount of money that will be returned

= ₹ 1000.00 – ₹ 640.50 = ₹ 359.50.

Exercise 12.3

1. (a) $$\begin{array}{r} ₹\ 9.12 \\ \times 6 \\ \hline 54.72 \\ \hline \end{array}$$
(b) $$\begin{array}{r} ₹\ 81.42 \\ \times 9 \\ \hline 732.78 \\ \hline \end{array}$$
(c) $$\begin{array}{r} ₹\ 44.73 \\ \times 8 \\ \hline 357.84 \\ \hline \end{array}$$
(d) $$\begin{array}{r} ₹\ 212.40 \\ \times 9 \\ \hline 1911.60 \\ \hline \end{array}$$
(e) $$\begin{array}{r} ₹\ 472.60 \\ \times 12 \\ \hline 945.20 \\ 4726.00 \\ \hline 5671.20 \\ \hline \end{array}$$
(f) $$\begin{array}{r} ₹\ 936.00 \\ \times 18 \\ \hline 7488.00 \\ 9360.00 \\ \hline 16848.00 \\ \hline \end{array}$$
(g) $$\begin{array}{r} ₹\ 1436.00 \\ \times 112 \\ \hline 2872.00 \\ \hline 14360.00 \\ \hline 143600.00 \\ \hline 160832.00 \\ \hline \end{array}$$
(h) $$\begin{array}{r} ₹\ 736.96 \\ \times 243 \\ \hline 2210.88 \\ \hline 29478.40 \\ \hline 147392.00 \\ \hline 179081.28 \\ \hline \end{array}$$

Similar work to be done for (i).

2. (a) $$\begin{array}{r|l} & 162.80 \\ \hline 5 & 814.00 \\ & -5 \\ \hline & 31 \\ & -30 \\ \hline & 14 \\ & -10 \\ \hline & 40 \\ & -40 \\ \hline & 0 \end{array}$$
₹ 814 ÷ 5 = ₹ 162.80

(b) $$\begin{array}{r|l} & 245.00 \\ \hline 3 & 735.00 \\ & -6 \\ \hline & 13 \\ & -12 \\ \hline & 15 \\ & -15 \\ \hline & 0 \end{array}$$
₹ 735 ÷ 3 = ₹ 245.00

(c) $$\begin{array}{r|l} & 1605.00 \\ \hline 6 & 9630.00 \\ & -6 \\ \hline & 36 \\ & -36 \\ \hline & 00 \\ & -00 \\ \hline & 30 \\ & -30 \\ \hline & 0 \end{array}$$
₹ 9630 ÷ 6 = ₹ 1605.00

(d)
$$\begin{array}{r|l} 15 & 480.60 \\ -45 & \\ \hline 30 & \\ -30 & \\ \hline 00 & \\ -00 & \\ \hline 60 & \\ -60 & \\ \hline 0 & \end{array}$$

(e)
$$\begin{array}{r|l} 12 & 9876.00 \\ -96 & \\ \hline 027 & \\ -024 & \\ \hline 36 & \\ -36 & \\ \hline 0 & \end{array}$$

(f)
$$\begin{array}{r|l} 42 & 84.00 \\ -84 & \\ \hline 0 & \end{array}$$

	₹	p
	1525	45
+	933	55
	591	90

(g)
$$\begin{array}{r|l} 23 & 684.94 \\ -46 & \\ \hline 224 & \\ -207 & \\ \hline 179 & \\ -161 & \\ \hline 184 & \\ -184 & \\ \hline 0 & \end{array}$$

(e)
$$\begin{array}{r|l} 31 & 1588.75 \\ -155 & \\ \hline 38 & \\ -31 & \\ \hline 77 & \\ -62 & \\ \hline 155 & \\ -155 & \\ \hline 0 & \end{array}$$

(f)
$$\begin{array}{r|l} 12 & 1153.68 \\ -108 & \\ \hline 73 & \\ -72 & \\ \hline 16 & \\ -12 & \\ \hline 48 & \\ -48 & \\ \hline 0 & \end{array}$$

₹ 684.94 ÷ 23 = ₹ 29.78 ₹ 1588.75 ÷ 31 = ₹ 51.25 ₹ 1153.68 ÷ 12 = ₹ 96.14

3. (a) Cost of 1 water bottle = ₹ 135.75
Cost of 4 water bottles = ₹ 135.75 × 4 = ₹ 543.00
Hence, Rajeev paid ₹ 543.00.

(b) Cost of 1 pen = ₹ 48.50
Cost of 15 pens = ₹ 48.50 × 15 = ₹ 727.50.

(c) Cost of 1 ball = ₹ 75.50
Cost of 36 balls = ₹ 75.50 × 36 = ₹ 2718.00.
Hence, the price of the box of balls is ₹ 2718.00.

(d) Cost of 1 dozen bananas = ₹ 40.50
Cost of 13 dozen bananas = ₹ 40.50 × 13 = ₹ 526.50.

(e) Cost of 12 belts = ₹ 1902.00
Cost of 1 belt = ₹ 1902.00 ÷ 12 = ₹ 158.50.

(f) Cost of 16 sweaters = ₹ 11295.84
Cost of 1 sweater = ₹ 11295.84 ÷ 16 = ₹ 705.99.

(g) Cost of 1 box of crayons = ₹ 1012.50
Number of crayons packets in the box = 18
Cost of 1 packet of crayons = ₹ 1012.50 ÷ 18 = ₹ 56.25.

(h) Cost of 26 pairs of shoes = ₹ 20799.74
Cost of 1 pair of shoes = ₹ 20799.74 ÷ 26 = ₹ 799.99.

Revision Exercise

1. (a)

	₹	p
	66	78
	79	39
+	8	46
	154	63

(b)

	₹	p
	238	49
+	44	69
	283	18

(c)

	₹	p
	458	95
+	8	46
	467	41

(d)

	₹	p
	265	80
	84	90
+	755	40
	1106	10

Similar work to be done for (e) and (f).

2. (a)

	₹	p
	100	00
–	53	93
	46	07

(b)

	₹	p
	240	95
–	88	68
	152	27

(c)

	₹	p
	400	10
–	143	45
	256	65

(d)

	₹	p
	544	25
–	283	65
	260	60

Similar work to be done for (e) and (f).

3. (e)

$$\begin{array}{r} ₹\ 242.60 \\ \times 12 \\ \hline 485.20 \\ 2426.00 \\ \hline 2911.20 \\ \hline \end{array}$$

(f)

$$\begin{array}{r} ₹\ 943.45 \\ \times 24 \\ \hline 3773.80 \\ 18869.00 \\ \hline 22642.80 \\ \hline \end{array}$$

(g)

$$\begin{array}{r} ₹\ 382.00 \\ \times 18 \\ \hline 3056.00 \\ 3820.00 \\ \hline 6876.00 \\ \hline \end{array}$$

(h)

$$\begin{array}{r} ₹\ 661.84 \\ \times 16 \\ \hline 3971.04 \\ 6618.40 \\ \hline 10589.44 \\ \hline \end{array}$$

Similar work to be done for (e) and (f).

3. (a)

$$\begin{array}{r|l} & 29.78 \\ \hline 8 & 681.84 \\ & -46 \\ \hline & 224 \\ & -207 \\ \hline & 179 \\ & -161 \\ \hline & 184 \\ & -184 \\ \hline & 0 \end{array}$$

₹ 681.84 ÷ 8 = ₹ 29.78

(e)

$$\begin{array}{r|l} & 54.12 \\ \hline 9 & 487.08 \\ & -45 \\ \hline & 37 \\ & -36 \\ \hline & 10 \\ & -09 \\ \hline & 18 \\ & -18 \\ \hline & 0 \end{array}$$

₹ 487.08 ÷ 9 = ₹ 54.12

(f)

$$\begin{array}{r|l} & 5.23 \\ \hline 12 & 62.76 \\ & -60 \\ \hline & 27 \\ & -24 \\ \hline & 36 \\ & -36 \\ \hline & 0 \end{array}$$

₹ 62.76 ÷ 12 = ₹ 5.23

(d)

$$\begin{array}{r|l} & 50.00 \\ \hline 12 & 648.00 \\ & -60 \\ \hline & 48 \\ & -48 \\ \hline & 0 \end{array}$$

₹ 648.00 ÷ 12 = ₹ 50.00

(e)

$$\begin{array}{r|l} & 88.23 \\ \hline 55 & 4852.65 \\ & -440 \\ \hline & 452 \\ & -440 \\ \hline & 126 \\ & -110 \\ \hline & 165 \\ & -165 \\ \hline & 0 \end{array}$$

₹ 4852.65 ÷ 55 = ₹ 88.23

(f)

$$\begin{array}{r|l} & 142.23 \\ \hline 18 & 2560.14 \\ & -18 \\ \hline & 76 \\ & -72 \\ \hline & 40 \\ & -36 \\ \hline & 41 \\ & -36 \\ \hline & 54 \end{array}$$

₹ 2560.14 ÷ 18 = ₹ 142.23

5. (a) Money spent by Reena = ₹ 1500
Total money spent by Reena = ₹ 1444
Money she got back = ₹ 1500 – ₹ 1444 = ₹ 56.

Items	Cost
Exercise Books	₹ 412.50
Books	₹ 510.50
Water bottle	₹ 215.60
Bag	₹ 305.40
Total	1444.00

(b) Cost of apples = ₹ 75.50
Cost of grapes = ₹ 25.50
Cost of oranges = ₹ 90.00
Total money spent = ₹ 75.50 + ₹ 25.50 + ₹ 90.00 = ₹ 191.00.
Hence, the total amount Shalini has to pay to the fruitseller is ₹ 191.00.

(c) Cost of a bat = ₹ 345.50
Cost of a hockey stick = ₹ 218.75
As ₹ 345.50 > ₹ 218.75, so the bat costs more.
Difference between their costs = ₹ 345.50 – ₹ 218.75 = ₹ 126.75.
Hence, the bat costs more than the hockey stick by ₹ 126.75.

(d) Money Priya gave to the shopkeeper = ₹ 2000.00
Money spent by Priya = ₹ 1450.25
Difference = ₹ 2000.00 – ₹ 1450.25 = ₹ 549.75.
Hence, Priya got ₹ 549.75 back.

(e) The cost of 1 kg of rice = ₹ 72.25
The cost of 18 kg of rice = ₹ 72.25 × 18 = ₹ 1300.50.

(f) Monthly income of Mr. Puranchand, a farmer, is ₹ 7305.50. What is his annual income?
Monthly income of the farmer Mr. Puranchand = ₹ 7305.50
Annual income of Mr. Puranchand = ₹ 7305.50 × 12 = ₹ 87,666.

(g) The cost of 8 spoons = ₹ 228.00
The cost of 1 spoon = ₹ 228.00 ÷ 8 = ₹ 28.50.
Hence, the cost of each spoon is ₹ 28.50.

(h) The cost of 25 kg bag of sugar = ₹ 962.50
The cost of 1 kg of sugar = ₹ 962.50 ÷ 25 = ₹ 38.50.
Hence, the cost of 1 kg of sugar is ₹ 38.50.

HOT (Critical Thinking and Reasoning)

The complete table is given below.

Sunny Provision Store				
Bill No. 16		Paschim Vihar, Delhi		**Phone:** 2636xxxx
Name: Manas Sharma **Address:** Near Krishna Mandir				**Date:** 6th June, 23
S. No.	**Particulars**	**Quantity**	**Rae**	**Amount**
	Rice	8 kg	₹ 45/ kg	₹ 360
	Wheat flour	10 kg	₹ 28.50/ kg	₹ 285
	Arhar dal	3½ kg	₹ 72.50/ kg	₹ 253.75
	Tea	1½ kg	₹ 162/ kg	₹ 243
	Surf	2½ kg	₹ 70/ kg	₹ 175
	Oil	4 L	₹ 92.50/ kg	₹ 370
	Ghee	1¼ kg	₹ 305/ kg	₹ 381.25
			Total	₹ 2068

Case-based Questions

1. Cost of each ticket bought by Saket = ₹ 600 ÷ 5 = ₹ 120
   Cost of each ticket bought by Sanchit = ₹ 780 ÷ 6 = ₹ 130
2. Total amount spent on purchasing the tickets = ₹ 600 + ₹ 880 + ₹ 780 + ₹ 875 =
3. Cost of a ticket bought by Saransh = ₹ 880 ÷ 8 = ₹ 110
   Cost of a ticket bought by Naina = ₹ 875 = 7 = ₹ 125
   Hence, the ticket of Naina is costlier by ₹ 125 – ₹ 110 = ₹ 15.
4. Amounts spent by Saket = ₹ 600
   Amounts spent by Naina = ₹ 875
   Difference between these amounts = ₹ 875 – ₹ 600 = ₹ 275.
5. Cost of 3 tickets of Gallery A = ₹ 120 × 3 = ₹ 360
   Cost of 7 tickets of Gallery B = ₹ 110 × 7 = ₹ 770
   Total cost of these tickets = ₹ 360 + ₹ 770 = ₹ 1,130
   Hence, Golu spent ₹ 1130 in all.

Mental Maths

1. In short, rupees is written as ₹ and paise as **p**.
2. 34 rupees **65** paise = ₹ 34.65.
3. A **dot** separates the rupees from the paisa.
4. If 1 mobile costs ₹ 3450, then cost of 2 mobiles will be **₹ 6900**.
5. The sum of ₹ 234.65 and ₹ 166.35 is ₹ 401.00.

Exercise 13.1

1.

Number of children	Tally marks	Number of families
0	|||	3
1	𝍸 ||||	9
2	𝍸 𝍸 |	11
3	𝍸 |||	8
4	|||	3
5	|	1
Total		**35**

2.

Shoe size	Tally marks	Number of families
3	𝍸 |||	8
4	𝍸 ||||	9
5	𝍸 𝍸	10
6	𝍸 |	6
Total		**33**

(a) Shoes of size 5 were worn the most number of students.

(b) Shoes of size 6 were worn the most number of students.

(c) Shoes of size 5 were worn by10 students.

(d) Number of students who wear shoes of size less than 6 = 8 + 9 + 10 = 27 students.

(e) Number of students who wear shoes of size 4 = 9 students.
Number of students who wear shoes of size 3 = 8 students.
Number of students who wear shoes of size 4 more than size 3 = 9 – 8 = 1 student.
Hence, 1 student wear shoes of size 4 more than size 3.

3.

Animals	Tally marks	Number of animals
Elephant	𝍸 |	6
Lion	𝍸 ||	7
Deer	𝍸	5
Monkey	||||	4
Crane	||||	4
Crocodile	|||	3
Total		**29**

(a) There were 7 lions in the zoo.

(b) Number of elephants in the zoo = 6

Number of crocodiles in the zoo = 3

Number of elephants more than crocodiles = 6 – 3 = 3 elephants.

Hence, 3 elephants than crocodiles are there in the zoo.

(c) Lions are the most in number in the zoo.

(d) Crocodiles are the least in number in the zoo.

(e) Total number of animals in the zoo = 29

Exercise 13.2

1. Observing the pictograph, we find the answers of the given questions as follows.

(a) Number of bulbs sold on Friday = 10 × 8 + 4 = 84 bulbs.

(b) Number of bulbs sold on Sunday = 10 × 8 = 80 bulbs.

(c) The maximum number of bulbs were sold on Friday.

(d) The least number of bulbs were sold on Tuesday.

(e) Number of bulbs sold on Thursday = 64

Number of bulbs sold on Tuesday = 44

Number of more bulbs sold on Thursday than Tuesday = 64 – 44 = 20.

(f) Total number of bulbs sold in this week = 48 + 44 + 64 + 84 + 52 + 80 = 372 bulbs.

2. Observing the pictograph, we find the answers of the given questions as follows.

(a) Number of students who were absent on Wednesday = 3 × 2 + 1 = 7 students

(b) Number of students who were absent on Monday = 5 × 2 = 10 students.

(c) The most number of students were absent on Saturday.

(d) The least number of students were absent on Friday.

(e) Number of students who were absent on Saturday = 6 × 2 = 12

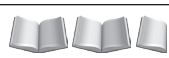
Number of students who were absent on Monday = 5 × 2 = 10

Hence, 2 more students were absent on Saturday than on Monday.

(f) Number of students were absent on Monday, Tuesday, and Wednesday = 10 + 4 + 7 = 21 students.

3. The pictograph for the given data is shown below.

Subject	Number of books
English	
Mathematics	
Hindi	
Science	
French	

Sanskrit	
SSt	
Bangla	
Key:  = 5 books,  = 10 books	

Exercise 13.3

1. Observing the bar graph, we find the answers of the given questions as follows.
   (a) Approximately 8 hours did Ananya spend on sleeping.
   (b) Time Ananya spent on eating and washing = ½ hour + ½ hour = 1 hour
   (c) Time Ananya spent on playing = 2½ hours

   Time she spent on watching TV = 2 hours

   More time she spent on playing than watching TV = 2½ hours – 2 hours = ½ hour
   (d) Time Ananya spent on playing = 4 hours

   Time she spent on studying in school = 6½ hours

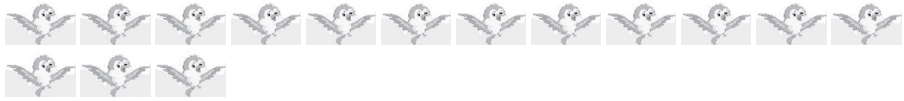
   Less time she spent on miscellaneous work than on studying in school = 6½ hours – 4 hours = 2½ hours
   (e) Time she spent on playing, on eating, on watching TV and on miscellaneous work = 2½ hours + ½ hour+ 2 hours+ 4 hours = 9 hours.
2. Observing the bar graph, we find the answers of the given questions as follows.
   (a) Tiger sleeps for an average of 16 hours per day.
   (b) Animals which sleep for more than 8 hours per day are:

   Squirrel —15 hours, rat —12½ hours, dog —10½ hours, tiger —16 hours,
   (c) On average, a rat sleeps 12½ hours a day.
   (d) The tiger sleeps the longest of all.
   (e) The horse sleeps the least of all.

Revision Exercise

1. The required pictograph is given below.

Pets	Number of animals
Dog	
Cat	
Fish	

Pets	Number of animals
Bird	
Goat	
Rabbit	

2. Observing the pictograph, we find the answers of the given questions as follows.
   (a) The shop was closed on Sunday.
   (b) The maximum number of balls were sold on Saturday.
   (c) The minimum number of balls were sold on Thursday.
   (d) The same number of balls were sold Tuesday and Friday.
   (e) The number of balls sold on Thursday = 6 × 10 = 60 balls.
   (f) The number of balls sold on Monday = 8 × 10 = 80 balls.
   The number of balls sold on Tuesday = 10 × 10 = 100 balls.
   The total number of balls sold on these two days = 80 + 100 = 180 balls.
3. Observing the pictograph, we find the answers of the given questions as follows.
   (a) The number of students in Grade 2 = 6 × 10 + 5 = 65 students
   (b) The number of students in Grade 5 = 5 × 10 = 50 students
   (c) The most number of students are in Grade 4.
   (d) The least number of students are in kindergarten.
   (e) The number of students in kindergarten = 4 × 10 = 40
   The number of students in Grade 1 = 6 × 10 = 60
   The number of students in Grade 2 = 6 × 10 + 5 = 65
   The number of students in Grade 3 = 6 × 10 + 5 = 65
   The number of students in Grade 4 = 7 × 10 + 5 = 75
   The number of students in Grade 5 = 5 × 10 = 50
   The total number of students at Blue Heaven School
   = 40 + 60 + 65 + 65 + 75 + 50 = 355 students.
4. Observing the bar graph, we find the answers of the given questions as follows.
   (a) Monday had the highest temperature.
   (b) Saturday had the 17° C temperature.
   (c) The temperature on Monday was 21°C.
   (d) How much higher was the highest temperature recorded on Wednesday than the temperature recorded on Friday?
   The temperature on Wednesday was 21°C.
   The temperature on Friday was 20°C.
   Difference in their temperatures = 21°C – 20°C = 1°C, which is the required temperature.

5. Observing the bar graph, we find the answers of the given questions as follows.
   (a) 20 students choose sandwich as their favourite breakfast food.
   (b) 14 students choose omelette.
   (c) Total number of students voted = 12 + 22 + 20 + 14 + 22 + 26 = 116 students.
   (d) The most popular breakfast among the group of students was upma.
   (e) The least popular breakfast among the group of students was aloo paratha.

***HOT** (Critical Thinking and Reasoning)*

Observing the bar graph, we find the answers of the given questions as follows.

(a) The number of chocolate ice cream sold by parlour A = 70
(b) Chocolate flavour of ice creams do people like the most in parlour B.
(c) The total number of chocolate ice creams sold by parlour A and B = 70 + 70 = 140.
(d) Parlour A sold 55 Vanila ice creams.
(e) The total number of Vanila ice creams sold by parlour A and parlour B = 55 + 50 = 105.
(f) People of parlour A like coconut flavour of ice creams the least.
(g) The total number of ice creams sold by parlour A = 30 + 55 + 70 + 35 + 10 = 200.
(h) The number of almond ice creams sold by parlour B = 40

***Case-based** Questions*

Observing the bar graph, we find the answers of the given questions as follows.

1. A symbol represents 10 saplings.
2. The students of class II planted 60 saplings.
3. The students of class III planted 70 saplings.
4. Class IV planted the maximum number of saplings.
5. Class I planted the minimum number of saplings.

Chapter 14. Decimals

Exercise 14.1

1. The given fractions in decimal form are:
   (a) 0.7 (b) 0.3 (c) 0.29 (d) 0.13 (e) 0.13 (f) 0.09
   (g) 0.44 (h) 0.55 (i) 0.066 (j) 0.123 (k) 0.06 (l) 0.005
2. The number names of the given decimals are:
   (a) zero point zero zero eight (b) zero point zero five (c) zero point zero zero three
   (d) zero point eight seven five (e) zero point two four (f) zero point four nine five
   (g) zero point seven (h) zero point one (i) zero point zero eight
   (j) zero point two one zero
3. (a) 0.3 (b) 0.29 (c) 0.7 (d) 0.659 (e) 0.279
4. The shaded part represents:
   (a) Fraction: $\frac{21}{100}$, decimal: 0.21 (b) Fraction: $\frac{55}{100}$, decimal: 0.55
   (c) Fraction: $\frac{35}{100}$, decimal: 0.35 (d) Fraction: $\frac{46}{100}$, decimal: 0.46

Exercise 14.2

1. (a) shaded part = 1 whole + 5 out of 10 parts = 1.5

   (b) shaded part = 2 wholes + 1 out of 10 parts = 2.1

2. The required decimal numbers are:

   (a) 5. 009 (b) 16.013 (c) 121.109 (d) 130.5 (e) 19.06 (f) 27.141

3. Converting the given decimals into fractions, we get:

   (a) $\frac{37}{10}$ (b) $\frac{429}{100}$ (c) $\frac{1296}{100}$ (d) $\frac{8375}{1000}$

   (e) $\frac{645}{100}$ (f) $\frac{8475}{100}$ (g) $\frac{25703}{1000}$ (h) $\frac{21482}{1000}$

4.

	Decimal	H (100)	T (10)	O (1)	Decimal point (.)	Tenths, $\frac{1}{10}$	Hundredths, $\frac{1}{100}$	Thousandths, $\frac{1}{1000}$
(a)	8.364			8	.	3	6	4
(b)	926.5	9	2	6	.	5		
(c)	403.201	4	0	3	.	2	0	1
(d)	813.245	8	1	3	.	2	4	5
(e)	122.14	1	2	2	.	1	4	
(f)	95.962		9	5	.	9	6	2
(g)	26.705		2	6	.	7	0	5
(h)	405.985	4	0	5	.	9	8	5

5. Writing the given decimal numbers in expanded form, we get:

   (a) $8 + \frac{2}{1000}$ (b) $20 + \frac{5}{100} + \frac{4}{1000}$

   (c) $100 + 10 + 3 + \frac{9}{10} + \frac{7}{1000}$ (d) $80 + \frac{2}{10} + \frac{7}{100} + \frac{5}{1000}$

   (e) $200 + 50 + 1 + \frac{4}{10}$ (f) $10 + 8 + \frac{2}{10} + \frac{3}{100} + \frac{1}{1000}$

   (g) $200 + 60 + 1 + \frac{7}{10} + \frac{6}{100}$ (h) $20 + 5 + \frac{2}{100} + \frac{4}{1000}$

6. Writing the short form of the given expanded form of decimals, we get:

   (a) 350.42 (b) 89.753 (c) 315.129 (d) 800.009 (e) 1400. 008 (f) 425.482

Exercise 14.3

1. (a) 8.5, 14.345 and 20.024 are unlike decimals because they do not have same number of decimal places.

   (b) 40.005, 8.370, 19.000 are like decimals because they have same number of decimal places.

   (c) 11.000, 3.241 and 18.640 are like decimals because they have same number of decimal places.

   (d) 12.734, 6.24, 11.01 are unlike decimals because they do not have same number of decimal places.

2. Converting the given unlike decimals into like decimals, we get:

   (a) 4.300, 2.750, 8.904

(b) 624.500, 849.000, 972.004

(c) 8.245, 13.440, 971.024, 10.500, 664.090

(d) 449.240, 53.070, 845.900, 330.600, 0.005

(e) 849.2700, 9677.5000, 39.7740, 69665.0000, 8.3264

Revision Exercise

1. (a) $\frac{4}{10}$ (b) $\frac{92}{100}$

2. The number names of the given decimals are:
   (a) twenty-eight point two four (b) zero point four four four (c) five point four nine nine
   (d) thirty-seven point zero zero five
   (e) zero point two four (f) zero point four nine five
   (g) zero point seven (h) zero point one (i) zero point zero eight

3.

	Decimal	H (100)	T (10)	O (1)	Decimal point (.)	Tenths, $\frac{1}{10}$	Hundredths, $\frac{1}{100}$	Thousandths, $\frac{1}{1000}$
(a)	5.4			5	.	4		
(b)	0.777			0	.	7	7	7
(c)	4.444			4	.	4	4	4
(d)	0.096			0	.	0	9	6

4. The given decimals in expanded form are:
   (a) $90 + 8 + \frac{2}{10} + \frac{4}{100}$ (b) $10 + 4 + \frac{4}{10} + \frac{3}{100} + \frac{6}{1000}$
   (c) $35.705\ 30 + 5 + \frac{7}{10} + \frac{5}{1000}$ (d) $800 + 40 + 2 + \frac{4}{10} + \frac{9}{100} + \frac{1}{1000}$

5. Converting the given decimals into fractions, we get:
   (a) $\frac{84264}{1000}$ (b) $\frac{5}{100}$ (c) $\frac{961}{1000}$ (d) $\frac{245623}{1000}$

6. Converting the given unlike decimals into like decimals, we get:
   (a) 20.450, 19.900, 104.200, 24.930 (b) 100.500, 41.736, 426.099 and 35.000

HOT (Critical Thinking and Reasoning)

Observing the bar graph, we find the answers of the given questions as follows.

(a) We have: 3.24 and 3.42. Tens place digits are same. Comparing the tenths place digits, we find $2 < 4$. Hence, 3.42 is greater than 3.24.

(b) We have: 12.14 and 12.10. Here, tens, ones and tenths place digits are same. Comparing the hundredths place digits, we find that $4 > 0$. Hence, 12.14 is greater than 12.10.

(c) We have: 493.5 and 493.02. Here, hundreds, tens and ones place digits are same. Comparing the tenths place digits, we find that $5 > 0$. Hence, 493.5 is greater than 493.02.

Case-based Questions

Observing the bar graph, we find the answers of the given questions as follows.

1. The maximum temperature of the city:

Ahmedabad = $\frac{382}{10}$ °C Amritsar = $\frac{374}{10}$ °C Chennai = $\frac{368}{10}$ °C

Delhi = $\frac{389}{10}$ °C Jaipur = $\frac{413}{10}$ °C

2. The minimum temperature of the city:

   Ahmedabad = twenty-nine point five °C Amritsar = twenty-six point six °C

   Chennai = twenty-seven point seven °C Delhi = twenty-eight point five °C

   Jaipur = twenty-nine point three °C

3. The city with the minimum temperature of twenty-eight point five degree Celsius is Delhi.
4. The hottest city is Jaipur.
5. The coldest city is Amritsar.

Test Your Knowledge–4

(Chapters 7-10)

1. (a) 4 hours 18 minutes = 258 minutes.

   (b) 26 days and 12 hours = 26 × 24 + 12 = 636 hours.

   (c) 738 hours = 30 days and 18 hours

2. Write the given time in hh : mm form :

   (a) 9 : 55 (b) 6 : 45 (c) 9 : 30 (d) 6 : 25

3. Rohit starts his studies at 6 : 45 p.m.

   He stops his studies at 8 : 50 p.m.

   Duration of study time = 20 : 50 hours – 18 : 45 hours = 2 : 05 hours = 2 h 5 min.

   Hence, Rohit spends 2 h 5 min in his study.

4. The given fractions in the decimal form are:

   (a) 0.8 (b) 1.2 (c) 0.18 (d) 2.65 (e) 0.305 (f) 2.648

5. (a) 17.66 $\geq$ 17.24 (b) 0.364 $\geq$ 0.346 (c) 0.897 $\geq$ 0.697 (d) 0.111 $\leq$ 0.123

6. Observing the given pictograph,we find the following answers.

   (a) Number of students who chose chowmein as their favourite food 5 × 10 = 50 students.

   (b) Number of students who chose chowmein = 50

   Number of students who chose burger = 2 × 10 = 20

   Difference = 50 – 20 = 30.

   Hence, 30 more students chose chicken than burger.

   (c) Number of students who chose pizza = 6 × 10 = 60

   Number of students who chose popcorn = 3 × 10 = 30

   Difference = 60 – 30 = 30.

   Hence, 30 less students chose popcorn than pizza.

   (d) Number of students who did not choose pizza as their favourite food = Total number of students – number of students who chose pizza = 220 – 60 - 160 students.

   (e) Number of students who were surveyed = 30 + 50 + 40 + 60 + 20 + 20 = 220 students.

7. Solve the following.

   (a) ₹ 172.50 + ₹ 60.30 + ₹ 55.90 = ₹ 288.70 (b) 4 h 12 min + 16 h 24 min = 20 h 36 min.

(c) 10 min 30 s + 30 min 45 s = 41 min 15 s (d) 15 h 18 min 20 s + 16 h 30 min 20 s

(e) ₹ 500 – ₹ 258.50 = ₹ 241.50

(f) 18 h 10 min 30 s – 6 h 40 min 55 s = 24 h 51 min 25 s.

(g) ₹ 12.20 × 8 = ₹ 97.60

8. Total money spent by Priya = Cost of (shoes + skirt + DVD) = ₹ 550 + ₹ 275. 50 + ₹ 60. 90 = ₹ 886.40.
9. (a) 100 vanilla flavour ice creams were sold on Monday.

(b) 70 – 60 = 10 more strawberry ice creams were sold than almond.

(c) Vanilla is the most favourite flavour.

(d) Mango is the least favourite flavour.

Model Test Paper–2

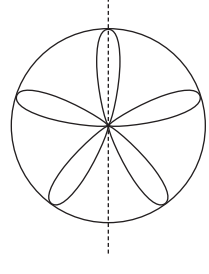
(Chapters 7-14)

1. (a) Perimeter of 1 shaded square = 4 × 1 cm = 4 cm.
   Number of shaded squares = 5
   The perimeter of shaded area = 4 cm × 5 = 20 cm.

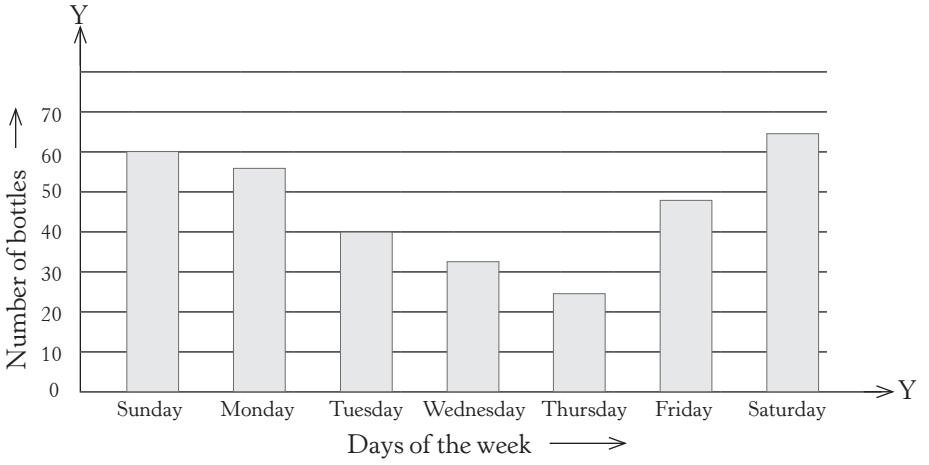
   (b) Perimeter of the shaded part = 1 cm + 6 cm + 6 cm + 1 cm + 5 cm + 5 cm = 24 cm.

   (c) Perimeter of the shaded part = 6 cm + 1 cm + 5 cm + 1 cm + 3 cm + 1 cm + 3 cm + 1 cm + 1 cm + 4 cm = 26 cm.
2. (a) Perimeter of the figure = 2 cm × 9 = 18 cm.(b) Perimeter of the figure = 6 × 4 cm = 24 cm.

   (c) Perimeter of the figure = (3 × 5 cm) + 3 cm + 15 cm + 3 cm = 15 cm + 15 cm + 6 cm = 36 cm.
3. Area of ABFG = 12 cm × 12 cm = 144 sq cm.
   Area of CDEF = 36 cm × 12 cm = 432 sq cm.
   Area of the figure = 144 sq cm + 432 sq cm = 576 sq cm.
4. (a) $0.36 = \frac{36}{100}$ (b) $0.05 = \frac{5}{100}$ (c) $0.364 = \frac{364}{1000}$ (d) $12.204 = 12\frac{204}{1000}$
5. Length of the remaining wire = 22 m 20 cm – 12 m 80 cm = 9 m 40 cm.
6. Weight of rice Arushi bought from one shop = 15 kg 350 g
   Weight of rice Arushi bought from another shop = 16 kg 200 g
   Total weight of rice she bought = 15 kg 350 g + 16 kg 200 g = 31 kg 550 g.
7. Quantity of milk the dairy had = 205 L 500 mL
   Quantity of milk sold = 75 L 200 mL
   Quantity of milk left in the dairy had
   = 205 L 500 mL – 75 L 200 mL = 130 L 300 mL.
8. Yes, the given figure has one line of symmetry, which has been drawn by dashed line.



9. The required bar graph is drawn below.



10. Narayan walks around a square park once and covers 800 m. What will be the area of this park?

Distance covered by Narayan = Parameter of the park = 800 m

Side of the park = Parameter ÷ 4 = 800 m ÷ 4 = 200 m

Area of the square park = side × side = 200 m × 200 m = 40000 sq m.

11. Draw hands on the clock faces to show the time.

(a)  (b)  (c)  (d) 

12. The given decimals in the ascending order are:

(a) 5.023, 5.032, 5.203, 5.320 (b) 8.034, 8.304, 8.403, 8.430

(c) 9.189, 9.819, 9.891, 9.901 (d) 0.3264, 3.264, 32.64, 326.4

13. Lalan leaves home for school at 7 : 50 a.m. and comes back after 6 hours 20 minutes. At what time does he come back?

Lalan leaves home for school at 7 : 50 a.m.

He comes back after 6 hours 20 minutes.

Time he comes back = 07 : 50 hours + 06 : 20 hours = 14 : 10 hours = 2 : 10 p.m.

Hence, Lalan comes back home at 2 : 10 p.m.

14. There are five squares are in the given picture.