

MATH 6

EXERCISE 1.1

1. Solve according to Example 4 and take help of the Answer Sheet.
2. Take help of Example 2 and 4 and the Answer Sheet.
3. (a), (b) solve according to the method given in Example 5.

(c) $370420418 = 30,00,00,000 + 7,00,00,000 + 0 + 4,00,000 + 20,000 + 0 + 400 + 10 + 8$ (*Indian System*)

$370420418 = 300,000,000 + 7,00,00,000 + 0 + 400,000 + 20,000 + 0 + 400 + 10 + 8$ (*International System*)
4. Solve according to Example 7.
5. Solve according to Example 7.
6. We have three digits. To make a 7-digit number, we need 4 more digits. So we repeat some digits.

The greatest number (repeat the greatest digit 9 here) = 99,99,973

The smallest number (repeat the smallest digit 3 here) = 33,33,379
7. We have four digits. To make a 7-digit number we need three more digits. So we repeat some digits.

The greatest number (repeat the greatest digit 6 here) = 66,66,510

The smallest number (repeat the smallest digit after the second smallest digit) = 10,00,056
8. Solve according to Example 10.
9. Solve according to Example 6.
10. (a) $25,734 = 20,000 + 5,000 + 700 + 30 + 4$
 (b) $14,15,305 = 10,00,000 + 4,00,000 + 10,000 + 5000 + 300 + 0 + 5$
 (c) $4,19,37,930 = 4,00,00,000 + 10,00,000 + 9,00,000 + 30,000 + 7000 + 900 + 30 + 0$
 (d) $46,57,68,901 = 40,00,00,000 + 6,00,00,000 + 50,00,000 + 7,00,000 + 60,000 + 8000 + 900 + 0 + 1$
11. Take help of the Answer Sheet.
12. Solve according to Example 3 and take help of the Answer Sheet.

EXERCISE 1.2

1. Solve according to Example 12.

(f) We can arrange the digits in a place value chart. First three digits are the same. But fourth digits are unequal.

H-	M	T-	M	M	H-	Th	T-	Th	Th	H	T	O
3		0	5	0		4		8	1	5	6	
3		0	5	1		4		8	1	5	6	

The fourth digit $0 < 1$.

So, 305048 ~~156~~05148 156

Note : Solve (a) to (e) as (f).

2. (a) Arrange the digits in a place value chart.

C	T-	L	L	T-	Th	Th	H	T	O
2	6	3		2	5	1	0	9	
2	6	5		3	2	1	0	9	
2	5	3		5	2	1	0	9	

↓
Same → $5 < 6$

So, 2, 3, ~~2~~, 59 ~~10~~ the smallest number.

C	T-	L	L	T-	Th	Th	H	T	O
2	6	3		2	5	1	0	9	
2	6	5		3	2	1	0	9	

↓ ↓
same same → $5 > 3$

So, 2,65, 2, 39 ~~10~~ the greatest number.

Note : Solve (b), (c), (d) as (a).

- Solve according to Example 13.
- Arrange the numbers from the smallest to the greatest.
- Arrange the numbers from the greatest to the smallest.
- Add 1 to each number.
- Subtract 1 from each number.

EXERCISE 1.3

- Solve according to Example 14.
- 48×12 litres = $48 \times 12 \times 1000$ millilitres
= 576000 ml
- 1 kilometre = 1000 metre
= 1000×100 centimetre
= 1,00, 000
- and 5 : Add the numbers.

6. We add the two profits. Then subtract the loss from this sum.

$$\text{Profit in the first year} = ₹ 5,44,30,057$$

$$\text{Profit in the second year} = + ₹ 2,34,50,798$$

$$\text{Total profit} = ₹ 7,78,80,855$$

$$\text{Loss in the third year} = - ₹ 98,35,807$$

$$\text{He has been left with} = ₹ 6,80,45,048$$

7. Subtract.

8. Number of days in a leap year = 366

$$\text{Annual sale of milk} = 366 \times 3654 \text{ litres}$$

$$\begin{array}{r} 3654 \\ \times 366 \\ \hline 21924 \\ 21924 \\ 10962 \\ \hline 1337364 \end{array}$$

$$\text{Annual sale of milk} = 13,37,364 \text{ litre}$$

9. Multiply. 10. Divide. 11. Divide. 12. Divide.

13. Divide. 14. Subtract.

15. $40 \text{ m} = 40 \times 100 \text{ cm} = 4000 \text{ cm}$, $2 \text{ m } 15 \text{ cm} = 215 \text{ cm}$. Divide.

16. She walks both ways \rightarrow twice the distance = $2 \times (1 \text{ km } 575 \text{ m})$.

$$\text{Distance covered in 6 days} = 6 \times 2 \times (1 \text{ km } 575 \text{ m})$$

17. $9 \text{ l} = 9 \times 1000 \text{ ml} = 9000 \text{ ml}$

$$\text{Number of glasses, each of } 225 \text{ ml capacity, filled } \frac{9000}{225} = 40$$

18. $5000 \text{ kg} = 5000 \times 1000 \text{ g}$; $11 \text{ kg } 500 \text{ g} = 11,500 \text{ g}$; divide.

EXERCISE 1.4

1. 3, 5 and 6; Solve according to Example 24.

2. (e) If you round a given number to the nearest tens, you get 2700, guess it :

We get one ten after rounding anyone of the numbers off 5 to 14.

Following the above fact we get 2700 after rounding anyone of the numbers :

$$2700 - 5 = 2695 \text{ to } 2700 + 4 = 2704.$$

Solve (a) to (d) accordingly.

4. (e) If you round a given number to the nearest hundreds, you get 10,000, guess it :

We get one hundred after rounding anyone of the numbers off 50 to 149.

Following the above fact we get 10,000 after rounding anyone of the numbers : $10,000 - 50 = 9950$ to $10,000 + 49 = 10,049$.

7. Solve according to Example 25.
 8. Solve according to Example 27.
 9. Solve according to Example 29.
 10. Solve according to Example 31.

EXERCISE 1.5

1. (a) $57 \times 8 = (50 + 7) \times 8$
 $= 50 \times 8 + 7 \times 8$
 $= 400 + 56$
 $= 456$
- (b) $117 \times 9 = (100 + 10 + 7) \times 9$
 $= 100 \times 9 + 10 \times 9 + 7 \times 9$
 $= 900 + 90 + 63$
 $= 1,053$
- (c) $19 \times 106 = (10 + 9) \times (100 + 6)$
 $= (10 + 9) \times 100 + (10 + 9) \times 6$
 $= 10 \times 100 + 9 \times 100 + 10 \times 6 + 9 \times 6$
 $= 1000 + 900 + 60 + 54$
 $= 2,014$
- (d) $18 \times 245 = 18 \times (200 + 40 + 5)$
 $= 18 \times 200 + 18 \times 40 + 18 \times 5$
 $= 3600 + 720 + 90$
 $= 4410$

2. to 7 : Take help of the Answer Sheet.

MCQ

1. The number 6 in the numeral 124396702 is at the thousands place. So, the place value of 6 in the numeral = $6 + 1000 = 6000$
2. The greatest 5-digit number = 99999
 The smallest 5-digit number = 10000
 Number of all 5-digit numbers = $99999 - 10000 + 1$

EXERCISE 2.3

- 1, 7 and 8 : Take help of the Answer Sheet.
3. Solve according to Example 5
4. Solve according to Example 7 and 8
5. Solve according to Example 6
6. (a) $65 \times 54 = 65 \times (50 + 4)$

Expanding 54 according to the place values of digits.

$$\begin{aligned}
 &= 65 \times 50 + 65 \times 4 \\
 &= \underline{3250} + 260 \\
 &= 3510
 \end{aligned}$$

The method is expressed stepwise as follows :

$$\begin{array}{r}
 \underline{65} \\
 \times 54 \\
 \hline
 260 \quad \text{Multiplying 65 by 4 ones.} \\
 3250 \quad \text{Multiplying 65 by 5 tens.} \\
 \hline
 3510 \quad \text{Adding the two products.}
 \end{array}$$

(b) and (c) : Solve according to (a).

9. Solve according to example 11.
10. Divide 10,000 by 35 to get quotient 285 and remainder 25.
To divide the sum exactly we need $35 - 25 = 10$ more to be added to 10,000
11. Dividing 10,000 by 45 we get quotient 222 and remainder 10. To divide the difference exactly we subtract 10 from 10,000.
12. Number of students in each class = 25
Fees paid by each student = ₹ 812
Number of classes in a school = 40
So, the total fees collection in a month = $25 \times 40 \times 812$
= ₹ 812000

EXERCISE 2.4

1. $20 = 10 \times 2$; $20 = 5 \times 4$; show two rectangles of 10 dots by 2 dots and 5 dots by 4 dots.
2. Triangle of dots : 6 dots + 5 dots + 4 dots + 3 dots + 2 dots + 1 dot
($21 = 6 + 5 + 4 + 3 + 2 + 1$)
Rectangle of dots : 7 dots by 3 dots ($21 = 7 \times 3$)
3. Square : 4 dots by 4 dots ($16 = 4 \times 4$); Rectangle : 8 dots by 2 dots ($16 = 8 \times 2$)

4. In the first column, numbers have a sequence of decreasing by 1 each time 9; 98; 987 and the fourth line also comes in this sequence 9876.

In the second column 9 goes in all the four lines.

In the third column, fourth line, 4 follows the decreasing numbers 7, 6, 5 in the first three lines.

In the fourth column, first line has two $(1 + 1)$ eights, second line has three $(2 + 1)$ eights, third line has four $(3 + 1)$ eights, so the fourth line should have $(4 + 1) =$ five eights.

$$\text{Thus, } 9876 \times 9 + 4 = 88888$$

5. and 6. Take help of the Answer Sheet.

7. (a) to (i) : put $9 = 10 - 1$; $99 = 100 - 1$; $999 = 1000 - 1$

$$(j) 86 \times \frac{10}{2}$$

$$(k) 236 \times \frac{100}{4}$$

$$(l) 224 \times \frac{1000}{4}$$

MCQ

1. to 6 and 8 : Take help of the Answer Sheet.

7. $(2167 \div 2167) - (4987 \div 4987)$

$$= 1 - 1$$

$$= 0$$

EXERCISE 3.1

1. Take help of the Answer Sheet.

2. (a) to (l) and (n) Solve according to Example 1 and 2.

$$(m) 2 - [2 - \{2 - (2 - \overline{2 - 2})\}]$$

$$= 2 - [2 - \{2 - (2 - 0)\}]$$

$$= 2 - [2 - \{2 - 2\}]$$

$$= 2 - [2 - 0]$$

$$= 2 - 2 = 0$$

$$(o) 100 + [50 + \{250 \div 25 - (32 - 24 \div 6) \div 7\}]$$

$$= 100 + [50 + \{250 \div 25 - (32 - 4) \div 7\}]$$

$$= 100 + [50 + \{250 \div 25 - 28 \div 7\}]$$

$$= 100 + [50 + \{10 - 4\}]$$

$$= 100 + [50 + 6]$$

$$= 100 + 56 = 156$$

EXERCISE 3.2

1. to 5, 8 and 10 : Take help of the Answer Sheet.

6. Even numbers have 0, 2, 4, 6 or 8 at their ones place.
 Even numbers between 80 and 100 does not include 80 and 100.
 Even numbers between 80 and 100 are
 82, 84, 86, 88, 90, 92, 94, 96, 98
7. First five multiples of 200 are
 $200 \times 1, 200 \times 2, 200 \times 3, 200 \times 4, 200 \times 5$
 $= 200, 400, 600, 800, 1000$
9. (a) The greatest number of two digits = 99. But 99 is odd.
 The greatest even number of two digits = $99 - 1 = 98$
- (b) The smallest number of three digits = 100. It is even also.
 The smallest even number of three digits = 100

EXERCISE 3.3

Take help of the Answer Sheet.

EXERCISE 3.4

1. **2 and 4 to 5** : Solve according to Example 11 to 13.
3. (a) Smallest 4 digit number = 1000
 It has 0 at ones place so it is divisible by 2.
- (b) Smallest 4-digit number = 1000
 The sum of its digits = $1 + 0 + 0 + 0 = 1$
 To make it divisible by 3, we add 2 at ones place.
 Smallest 4-digit number divisible by 3 = $1000 + 2 = 1002$
- (c) Smallest 4-digit number = 1000
 It has 0 at ones place so it is divisible by 5.
- (d) Smallest 4-digit number = 1000
 It has 0 at ones place so it is divisible by 2.
 But the sum of its digits = $1 + 0 + 0 + 0 = 1$ so it is not divisible by 3.
 The next number divisible by 2 = 1002 whose sum of digits is
 $1 + 0 + 0 + 2 = 3$ so it is also divisible by 3.
- (e) Smallest 4-digit number = 1000
 It has 0 at ones place so it is divisible by 5.
 But the sum of its digits = $1 + 0 + 0 + 0 = 1$ so it is not divisible by 3.
 The next number divisible by 5 = 1005 whose sum of digits is
 $1 + 0 + 0 + 5 = 6$ so it is also divisible by 3.

EXERCISE 3.5

- Solve according to the factor trees shown above the exercise page of the text book.
- Solve according to Example 14.
- $10000 = 2 \times 2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 5$
- $9999 = 3 \times 3 \times 11 \times 101$
- In (a), 10 is not prime. In (b), all factors are prime. In (c), 6 is not prime. In (d), all factors are prime.
- to 8. Take help of the Answer Sheet.

EXERCISE 3.6

- (a) All factors of $12 = 1, 2, 3, 4, 6, 12$
All factors of $18 = 1, 2, 3, 6, 9, 18$
Common factors of 12 and 18 = 1, 2, 3, 6
Solve **(b), (c) and (d)** accordingly.
- Solve according to Example 15.
- (a) First we divide all the three numbers by any factor (divisor) common to all of them. If there are still any common factors, again divide the quotients by them. Keep dividing until there is no common factor for all three of them.

2	16, 24, 28
2	8, 12, 14
	4, 6, 7

$$\begin{aligned} \text{HCF} &= \text{Product of common factors (divisors)} \\ &= 2 \times 2 = 4 \end{aligned}$$

- (b) to (d)** : Solve according to (a).
- Solve according to Example 16.
 - First we subtract the remainder 5 from each of the given numbers

$$221 - 5 = 216$$

$$377 - 5 = 372$$

$$425 - 5 = 420$$

The greatest common divisor of 216, 372 and 420 is their HCF

2	216, 372, 420
2	108, 186, 210
3	54, 93, 105

$$\text{HCF of } 216; 372 \text{ and } 420 = 2 \times 2 \times 3 = 12$$

The greatest common divisor of 216, 372 and 420 = 12

- Solve according to Example 17.

7. 7 m 20 cm = 720 cm and 5 m 20 cm = 520 cm.

First we find the HCF of 720 and 520.

2	720
2	360
2	180
2	90
5	45
3	9
3	3
	1

2	520
2	260
2	130
5	65
13	13
	1

$$\text{HCF of 720 and 520} = 2 \times 2 \times 2 \times 5 = 40$$

So the greatest length of the side of square tiles = 40 cm.

8. Solve according to Solution 7.

EXERCISE 3.7

1. Solve according to Example 18 and 19.
2. **to 9 and 12** : Solve according to Example 21.
10. **and 11** : Solve according to Example 20.
13. Solve according to Example 18 (Find the HCF of the numerator and denominator in each case.)

EXERCISE 3.8

1. Solve according to Example 22.
2. Solve according to Example 23.
3. Find HCF and LCM in each case.
4. **and 6** : Solve according to Example 24.
5. First we find the LCM of 26, 35 and 42.

$$\text{LCM of 26, 35 and 42} = 2 \times 7 \times 13 \times 5 \times 3 = 2730$$

$$\text{Greatest 4-digit number} = 9999$$

Divide 9999 by 2730 to find multiple of 2730 nearest to 9999

$$2730 \overline{) 9999} \quad (3$$

$$\begin{array}{r} 8190 \\ \hline 1809 \end{array}$$

$$\begin{array}{r|l} 2 & 26, 35, 42 \\ 7 & 13, 35, 21 \\ \hline & 13, 5, 3 \end{array}$$

The number nearest to 9999 but less than 9999 (greatest of 4-digits) which is exactly divisible by 2730, that is, by 26, 35 and 42.

$$= 1809 \text{ less than } 9999 = 8190$$

7. and 8 : Solve according to Example 25.

9. 10 and 11 : Solve according to Example 27.

MCQ

1. 3, 5 and 7. Take help of the Answer Sheet.

$$2. \begin{array}{r|l} 2 & 6 \\ \hline 3 & 3 \\ \hline & 1 \end{array} \qquad \begin{array}{r|l} 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

H.C.F. of 6 and 9 = 3.

4. Only option (d) 24 is not a common factor of 84 and 72.

6. 9) 7020 (780

$$\begin{array}{r} 63 \\ \hline 72 \\ \hline 72 \\ \hline \times \\ \hline \end{array}$$

4) 7020 (1755

$$\begin{array}{r} 4 \\ \hline 30 \\ \hline 28 \\ \hline 22 \\ \hline 20 \\ \hline 20 \\ \hline 20 \\ \hline \times \\ \hline \end{array}$$

5) 7020 (1404

$$\begin{array}{r} 5 \\ \hline 20 \\ \hline 20 \\ \hline 20 \\ \hline 20 \\ \hline \times \\ \hline \end{array}$$

8) 7020 (877

$$\begin{array}{r} 64 \\ \hline 62 \\ \hline 56 \\ \hline 60 \\ \hline 56 \\ \hline 4 \\ \hline \end{array}$$

So, 7020 is not divisible by 8.

$$\begin{aligned} 8. \text{ Other number} &= (\text{H.C.F.} \times \text{L.C.M.}) \div \text{one number} \\ &= (5 \times 315) \div 35 \\ &= 1575 \div 35 \\ &= 45 \end{aligned}$$

EXERCISE 4.1 TO 4.4

Take help of the Answer Sheet.

MCQ

Take help of the Answer Sheet.

EXERCISE 5.1 TO 5.5

Take help of the Answer Sheet.

MCQ

Take help of the Answer Sheet.

EXERCISE 6.1

1. to 14 : Take help of the Answer Sheet.

EXERCISE 6.2

1. to 6 and 9 : Take help of the Answer Sheet.

7. Highest point of the mountain = + 6611 m high

Lowest point of the mine = 1233 m deep below sea level

$$= -1233 \text{ m high}$$

$$\text{Vertical distance} = 6611 - (-1233) = 6611 + 1233 = 7844 \text{ m}$$

8. Distance of the railway station from his house

$$= -700 \text{ m} + 300 \text{ m} = -400 \text{ m}$$

minus shows the direction south.

10. We know that 1 km = 1000 m

base = 900 m below sea level

So, Higher tip level = 1000 - 900

$$= 100 \text{ m.}$$

EXERCISE 6.3

1. to 3 : Solve according to Example 13 to 16.

4. Subtract 1 from each :

$$(a) 1 - 1 = 0 \quad (b) 0 - 1 = -1 \quad (c) -3 - 1 = -4 \quad (d) -10 - 1 = -11$$

$$5. (a) \text{ Blank} = -7 - 12 = -19 \quad (b) \text{ Blank} = -4 - 0 = -4$$

$$(c) \text{ Blank} = -54 - (-58) = 4 \quad (d) \square = -23 + 20 = -3$$

$$6. (c) -6 - (-18) - (-3) = -6 + 18 + 3 = -6 + 21 = 15$$

$$(d) 28 - |(-3) - 12| = 28 - |-15| = 28 - 15 = 13$$

7. to 12 : Add and subtract keeping the signs in mind.

MCQ

1. to 4. Take help of the Answer Sheet.

5. to 8. Add and subtract keeping the sign in mind.

EXERCISE 7.1 AND 7.2

Take help of the Answer sheet.

EXERCISE 7.3

- 1. and 2 :** Solve according to Example 7.
- Solve according to Example 9.
- Solve according to Example 8.
- 5. and 9 :** Solve according to Example 11.
- Solve according to Example 6.
- 7. and 8 :** Solve according to Example 9 and 8.

EXERCISE 7.4

- 1. 3 and 7 :** Solve according to Example 13.
- Make equivalent fractions.
- 4. and 5 :** Solve according to Example 14 and 15.
- Solve according to Example 16.
- Part of book read by Monika = $\frac{50}{100} = \frac{1}{2}$

$$\text{Part of book read by Sonia} = \frac{1}{4}$$

$$\frac{1}{4} < \frac{1}{2} \quad \text{so, Sonia read less.}$$

(When the numerators are the same, the fraction having smaller denominator is greater.)

- Numerator is the same. So the fraction $\frac{3}{8}$ having smaller denominator is greater than the fraction $\frac{3}{10}$.

Thus Ravi exercised for a longer time.

$$10. \text{ Fraction of first class students in class A} = \frac{25}{30} = \frac{5}{6}$$

$$\text{Fraction of first class students in class B} = \frac{20}{25} = \frac{4}{5}$$

By the rule of cross product, in $\frac{5}{6}$ and $\frac{4}{5}$

$$5 \times 5 = 25$$

$$4 \times 6 = 24$$

$$25 > 24$$

$$\text{so } \frac{5}{6} > \frac{4}{5}$$

There is more fraction of first class students in class A.

EXERCISE 7.5

1. Solve according to Example 17.

2. (a) to (j) : Solve according to Example 19.

$$(m) 1\frac{1}{8} + 2\frac{1}{10} = 1 + \frac{1}{8} + 2\frac{1}{10} = 1 + 2 + \frac{1}{8} + \frac{1}{10} = 3 + \frac{1}{8} + \frac{1}{10}$$

LCM of denominators 8 and 10 = 40

$$40 \div 8 = 5 \quad \left| \quad \frac{1}{8} = \frac{1 \times 5}{8 \times 5} = \frac{5}{40}$$

$$40 \div 10 = 4 \quad \left| \quad \frac{1}{10} = \frac{1 \times 4}{10 \times 4} = \frac{4}{40}$$

$$3 + \frac{1}{8} + \frac{1}{10} = 3 + \frac{5}{40} + \frac{4}{40} = 3 + \frac{5+4}{40} = 3 + \frac{9}{40} = 3\frac{9}{40}$$

Solve 2 (n) and (o) accordingly.

$$3. \text{ Total fraction of book John read on two days} = \frac{2}{5} + \frac{1}{5} = \frac{2+1}{5} = \frac{3}{5}$$

$$4. \text{ Total fraction of savings spent by Julie} = \frac{3}{8} + \frac{1}{4}$$

$$= \frac{3}{8} + \frac{1 \times 2}{4 \times 2} = \frac{3}{8} + \frac{2}{8} = \frac{3+2}{8} = \frac{5}{8}$$

$$5. \text{ Total fraction of hour Meena jogged} = \frac{1}{8} + \frac{1}{10} = \frac{1 \times 5}{8 \times 5} + \frac{1 \times 4}{10 \times 4}$$

$$= \frac{5}{40} + \frac{4}{40} = \frac{5+4}{40} = \frac{9}{40}$$

EXERCISE 7.6

1. 2 (a) to (e) : Solve according to Example 21.

2. (f) to (l) : Solve according to Example 22.

(m) to (o) : Solve according to Example 23 and 24.

3. Fraction of oranges left in the basket

$$1 - \frac{3}{5} = \frac{1}{1} - \frac{3}{5} = \frac{1 \times 5}{1 \times 5} - \frac{3}{5} = \frac{5}{5} - \frac{3}{5} = \frac{5-3}{5} = \frac{2}{5}$$

$$4. \text{ Mona still has to revise} = 1 - \left(\frac{3}{5} + \frac{1}{3} \right) \text{ of the book}$$

$$= \frac{1}{1} - \frac{3}{5} - \frac{1}{3}$$

LCM of 5 and 3 = $5 \times 3 = 15$

$$\begin{aligned}
 &= \frac{1}{1} - \frac{3}{5} - \frac{1}{3} = \frac{1 \times 15}{1 \times 15} - \frac{3 \times 3}{5 \times 3} - \frac{1 \times 5}{3 \times 5} \\
 &= \frac{15}{15} - \frac{9}{15} - \frac{5}{15} = \frac{15-9-5}{15} \\
 &= \frac{15-14}{15} = \frac{1}{15}
 \end{aligned}$$

5. Distance walked by Nalini = $\frac{9}{10}$ km - $\frac{3}{5}$ km

$$\begin{aligned}
 &= \frac{9}{10} - \frac{3 \times 2}{5 \times 2} = \frac{9}{10} - \frac{6}{10} = \frac{9-6}{10} = \frac{3}{10} \text{ km}
 \end{aligned}$$

6. Groundnuts left with Shashi

$$\begin{aligned}
 &= \frac{3}{4} \text{ kg} - \frac{1}{8} \text{ kg} = \frac{3 \times 2}{4 \times 2} - \frac{1}{8} = \frac{6}{8} - \frac{1}{8} = \frac{5}{8} \text{ kg}
 \end{aligned}$$

MCQ

1. and 3. Take help of the Answer Sheet.

2. Solve according to Example 7.

4. $\frac{53}{4} =$

4) 53 (13

$$\begin{array}{r}
 4 \\
 \hline
 13 \\
 12 \\
 \hline
 1
 \end{array}
 \qquad
 = 13 \frac{1}{4}$$

5. Let $\frac{1}{5} = \frac{a}{b}$ and $\frac{1}{6} = \frac{c}{d}$ to lie between $\frac{1}{5}$ and $\frac{1}{6} = \frac{a+c}{b+d}$

$$\begin{aligned}
 &= \frac{1+1}{5+6} = \frac{2}{11}
 \end{aligned}$$

6. Solve according to Example 18.

7. $\square = x$ So, $x - \frac{8}{21} = \frac{8}{21} \Rightarrow x = \frac{8}{21} + \frac{8}{21} \Rightarrow \frac{8+8}{21} = \frac{16}{21}$

8. Solve according to Example 18.

EXERCISE 8.1

1. (a) to (e) : Take help of the Answer Sheet.

2. (a) to (d) : Solve according to Example 5.

(e), (f), (k) and (l) : Solve according to Example 3.

$$(g) \frac{3}{5} = \frac{3 \times 2}{5 \times 2} = \frac{6}{10} = 0.6$$

$$(h) \frac{12}{5} = \frac{12 \times 2}{5 \times 2} = \frac{24}{10} = 2.4$$

$$(i) 3\frac{1}{2} = 3 + \frac{1}{2} = 3 + \frac{1 \times 5}{2 \times 5} = 3\frac{5}{10} = 3.5$$

$$(j) \frac{3}{2} = \frac{3 \times 5}{2 \times 5} = \frac{15}{10} = 1.5$$

$$3. (a) 0.8 = \frac{8}{10} = \frac{8 \div 2}{10 \div 2} = \frac{4}{5}$$

$$(b) 3.5 = 3 + .5 = 3 + \frac{5}{10} = 3 + \frac{5 \div 5}{10 \div 5} = 3 + \frac{1}{2} = 3\frac{1}{2}$$

$$(c) 2.8 = 2 + .8 = 2 + \frac{8}{10} = 2 + \frac{8 \div 2}{10 \div 2} = 2 + \frac{4}{5} = 2\frac{4}{5}$$

$$(d) 8.4 = 8 + .4 = 8 + \frac{4}{10} = 8 + \frac{4 \div 2}{10 \div 2} = 8 + \frac{2}{5} = 8\frac{2}{5}$$

$$(e) 21.2 = 21 + .2 = 21 + \frac{2}{10} = 21 + \frac{2 \div 2}{10 \div 2} = 21 + \frac{1}{5} = 21\frac{1}{5}$$

4. Solve according to Example 2.

5. Solve according to Example 1.

6. Take help of the Answer Sheet.

7. (a) shade 5 boxes (b) shade 8 boxes

8. (a) Total parts = 10

Shaded parts = 7

$$\text{Decimal fraction} = \frac{7}{10} = 0.7$$

(b) Total parts = 10

Shaded parts = 4

$$\text{Decimal fraction} = \frac{4}{10} = 0.4$$

EXERCISE 8.2

1. 3. and 7. Take help of the Answer Sheet.

2. Solve according to Example 9.

4. Solve according to Example 8.

5. Solve according to topic 'Expanded Form of Decimal Fractions' on page 131 of the text book.

6. Solve according to Example 11.

$$8. (a) 0.25 = \frac{25}{100} = \frac{25 \div 25}{100 \div 25} = \frac{1}{4}$$

$$(b) 0.24 = \frac{24}{100} = \frac{24 \div 4}{100 \div 4} = \frac{6}{25}$$

$$(c) 0.75 = \frac{75}{100} = \frac{75 \div 25}{100 \div 25} = \frac{3}{4}$$

$$(d) 0.04 = \frac{4}{100} = \frac{4 \div 4}{100 \div 4} = \frac{1}{25}$$

$$(e) 0.84 = \frac{84}{100} = \frac{84 \div 4}{100 \div 4} = \frac{21}{25}$$

$$(f) 0.005 = \frac{5}{1000} = \frac{5 \div 5}{1000 \div 5} = \frac{1}{200}$$

$$(g) 0.125 = \frac{125}{1000} = \frac{125 \div 125}{1000 \div 125} = \frac{1}{8}$$

$$(h) 0.025 = \frac{25}{1000} = \frac{25 \div 25}{1000 \div 25} = \frac{1}{40}$$

$$(i) 0.075 = \frac{75}{1000} = \frac{75 \div 25}{1000 \div 25} = \frac{3}{40}$$

$$(j) 10.012 = 10 + .012 = 10 + \frac{12}{1000} = 10 + \frac{12 \div 4}{1000 \div 4} = 10 + \frac{3}{250} = 10 \frac{3}{250}$$

9. Solve according to Example 12.

10. Solve according to Example 14.

EXERCISE 8.3

1. Solve according to Example 15.

2. **and 3** : Solve according to Example 16.

$$4. \frac{1}{2} = \frac{1 \times 5}{2 \times 5} = \frac{5}{10} = 0.5$$

Now, solve according to Example 15.

EXERCISE 8.4

Solve according to the Rules and Examples on page 135 and 136 of the text book. Also take help of the Answer Sheet.

1. To convert mm to cm, divide by 10 :

$$(a) 5 \text{ mm} = \frac{5}{10} \text{ cm} = 0.5 \text{ cm}$$

$$(b) 20 \text{ mm} = \frac{20}{10} \text{ cm} = 2 \text{ cm}$$

$$(c) 92 \text{ mm} = \frac{92}{10} = 9.2 \text{ cm}$$

$$(d) 153 \text{ mm} = \frac{153}{10} = 15.3 \text{ cm}$$

$$(e) 8 \text{ cm } 7 \text{ mm} = 8.7 \text{ cm}$$

2. To convert cm to m, divide by 100 :

$$(a) 7 \text{ cm} = \frac{7}{100} \text{ m} = 0.07 \text{ m}$$

$$(b) 23 \text{ cm} = \frac{23}{100} \text{ m} = 0.23 \text{ m}$$

$$(c) 247 \text{ cm} = \frac{247}{100} \text{ m} = 2.47 \text{ m}$$

$$(d) 2 \text{ m } 7 \text{ cm} = \frac{207}{100} \text{ cm} = 2.07 \text{ cm}$$

$$(e) 3 \text{ m } 46 \text{ cm} = \frac{346}{100} \text{ cm} = 3.46 \text{ cm}$$

3. To convert m to km, divide by 1000 :

$$(a) 9 \text{ m} = \frac{9}{1000} \text{ km} = 0.009 \text{ km}$$

$$(b) 77 \text{ m} = 0.077 \text{ km}$$

$$(c) 334 \text{ m} = 0.334 \text{ km}$$

$$(d) 20 \text{ km } 5 \text{ m} = 20 \text{ km} + \frac{5}{1000} \text{ km} = 20.005 \text{ km}$$

$$(e) 20 \text{ km } 47 \text{ m} = 20 \text{ km} + \frac{47}{1000} \text{ km} = 20.047 \text{ km}$$

4. To convert g to kg divide by 1000 :

$$(a) 3 \text{ g} = \frac{3}{1000} \text{ kg} = 0.003 \text{ kg}$$

$$(b) 100 \text{ g} = \frac{100}{1000} \text{ kg} = \frac{1}{10} \text{ kg} = 0.1 \text{ kg}$$

$$(c) 2860 \text{ g} = \frac{2860}{1000} \text{ kg} = 2.86 \text{ kg}$$

$$(d) 5 \text{ kg } 5 \text{ g} = \frac{5005}{1000} \text{ kg} = 5.005 \text{ kg}$$

$$(e) 15 \text{ kg } 50 \text{ g} = \frac{15050}{1000} \text{ kg} = 15.05 \text{ kg}$$

5. To convert ml to l divide by 1000 :

$$(a) 7 \text{ ml} = \frac{7}{1000} \text{ l} = 0.007 \text{ l}$$

$$(b) 70 \text{ ml} = \frac{70}{1000} \text{ l} = \frac{7}{100} \text{ l} = 0.07 \text{ l}$$

$$(c) 1230 \text{ ml} = \frac{1230}{1000} \text{ l} = \frac{123}{100} \text{ l} = 1.23 \text{ l}$$

$$(d) 2 \text{ l } 700 \text{ ml} = \frac{2700}{1000} = 2.7 \text{ l}$$

$$(e) 5 \text{ l } 70 \text{ ml} = \frac{5070}{1000} = 5.07 \text{ l}$$

$$6. (a) 2.4 \text{ cm} = 2 \text{ cm} + .4 \text{ cm} = 2 \text{ cm} + .4 \times 10 \text{ mm} = 2 \text{ cm } 4 \text{ mm}$$

$$(b) 7.45 \text{ cm} = 7 \text{ m} + .45 \text{ m} = 7 \text{ m} + .45 \times 100 \text{ cm} = 7 \text{ m } 45 \text{ cm}$$

$$(c) 7.04 \text{ km} = 7 \text{ km} + .04 \text{ km} = 7 \text{ km} + .04 \times 1000 \text{ m} = 7 \text{ km } 40 \text{ m}$$

$$(d) 15.038 \text{ l} = 15 \text{ l} + .038 \text{ l} = 15 \text{ l} + .038 \times 1000 \text{ ml} = 15 \text{ l } 38 \text{ ml}$$

$$(e) 13.07 \text{ m} = 13 \text{ m} + .07 \text{ m} = 13 \text{ m} + .07 \times 100 \text{ cm} = 13 \text{ m } 7 \text{ cm}$$

EXERCISE 8.5

1. Solve according to Example 17

2. **4 and 5** : Solve according to Example 18

6. **to 10** : Solve according to Example 19

$$3. \text{ Weight of apples} = 2 \text{ kg } 90 \text{ g} = 2 \text{ kg} + \frac{90}{1000} \text{ g} = 2.090 \text{ kg}$$

$$\text{Weight of grapes} = 1 \text{ kg } 60 \text{ g} = 1 \text{ kg} + \frac{60}{1000} \text{ g} = 1.060 \text{ kg}$$

$$\text{Weight of mangoes} = 2 \text{ kg } 350 \text{ g} = 2 \text{ kg} + \frac{350}{1000} \text{ kg} = 2.350 \text{ kg}$$

$$\text{Total weight of fruits} = 2.090 + 1.060 + 2.350 = 5.500 \text{ kg}$$

$$11. \quad 2 \text{ m } 5 \text{ cm} = 2 \text{ m} + \frac{5}{100} \text{ m} = 2.05 \text{ m}$$

$$\text{Length of one piece} = 4.35 \text{ m}$$

$$\text{Length of another piece} = + 2.05 \text{ m}$$

$$\text{Total length of two pieces} = 6.40 \text{ m}$$

$$\text{Total length of the ribbon} = 10 \text{ m} = 10.00 \text{ m}$$

$$\text{Total length of two pieces} = - 6.40 \text{ m}$$

$$\text{Length of the remaining part} = \underline{\underline{3.60 \text{ m}}}$$

MCQ

- 1. and 2.** Solve according to Example 5.
- Solve according to Example 13.
- 4. to 8.** Take help of the Answer Sheet.

EXERCISE 9.1 TO 9.4

Solve according to the suitable examples and take help of the Answer Sheet.

MCQ

- 1. to 5.** Take help of the Answer Sheet.

EXERCISE 10.1

- Sum up the given lengths in each figure.
- 2. and 3 :** Use the formula perimeter = 2 (length + breadth)
- (a) Perimeter of the triangle = 10 cm + 12 cm + 15 cm = 37 cm
(b) Perimeter of the isosceles triangle = 9 cm + 9 cm + 8 cm = 26 cm
(c) Perimeter of the equilateral triangle = 3 × 13 cm = 39 cm
- Perimeter of the regular hexagon = 6 × 5 cm = 30 cm
- Side of the square = $\frac{\text{Perimeter}}{4} = \frac{36 \text{ m}}{4} = 9 \text{ m}$
- Length of the lace = perimeter = 2 × (length + breadth)
- (a) Length of side = $\frac{48 \text{ cm}}{4} = 12 \text{ cm}$
(b) Length of side = $\frac{48 \text{ cm}}{3} = 16 \text{ cm}$

$$(c) \text{ Length of side} = \frac{48 \text{ cm}}{6} = 8 \text{ cm}$$

$$\begin{aligned} 9. \text{ Length of fence} &= 4 \times \text{perimeter of the rectangular field} \\ &= 4 \times 2 \times (\text{length} + \text{breadth}) \\ &= 4 \times 2 \times (\text{length} + \text{breadth}) \\ &= 4 \times 2 \times (0.7 \text{ km} + 0.5 \text{ km}) \\ &= 4 \times 2 \times 1.2 \text{ km} = 9.6 \text{ km} \end{aligned}$$

$$\text{Length of wire needed} = 9.6 \text{ km}$$

$$\begin{aligned} 10. \text{ Distance covered by Pinky in one round} \\ &= \text{Perimeter of the square} \\ &= 4 \times \text{length of a side} \\ &= 4 \times 85 \text{ m} = 340 \text{ m} \end{aligned}$$

$$\begin{aligned} \text{Distance covered by Bob in one round} \\ &= \text{Perimeter of the rectangle} \\ &= 2 \times (\text{length} + \text{breadth}) \\ &= 2 \times (105 \text{ m} + 75 \text{ m}) \\ &= 2 \times 180 \text{ m} = 360 \text{ m} \end{aligned}$$

$$360 \text{ m} > 340 \text{ m}$$

$$\text{Difference} = 360 \text{ m} - 340 \text{ m} = 20 \text{ m}$$

So Bob covers more distance and by 20 m.

EXERCISE 10.2

Solve according to given examples. Also take help of the Answer Sheet.

EXERCISE 10.3

- Divide the figures into rectangles.
- (c) length = 2 m, breadth = 50 cm = 0.5 m

$$\begin{aligned} \text{Area of the rectangle} &= \text{length} \times \text{breadth} \\ &= 2 \text{ m} \times 0.5 \text{ m} = 1 \text{ m sq.} \end{aligned}$$
- Use the formula, area of the square = side \times side
- Solve according to Example 3.
- and 8** : Solve according to Example 11.
- $2 \times (\text{length} + \text{breadth}) = \text{Perimeter}$

$$2 \times (\text{length} + 20 \text{ m}) = 100 \text{ m}$$

$$\text{length} + 20 \text{ m} = 100 \text{ m} \div 2 = 50 \text{ m}$$

$$\text{length} = 50 \text{ m} - 20 \text{ m} = 30 \text{ m}$$

$$\text{Area of the rectangular field} = 50 \text{ m} \times 20 \text{ m} = 600 \text{ m sq.}$$

7. Solve according to Q. 6 above.

$$\begin{aligned} 9. \text{ Area of the floor} &= \text{length} \times \text{breadth} \\ &= 9.1 \text{ m} \times 6.6 \text{ m} \\ &= 9.1 \times 100 \text{ cm} \times 6.6 \times 100 \text{ cm} \\ &= 910 \text{ cm} \times 660 \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{Length of carpet required} &= \frac{910 \text{ cm} \times 660 \text{ cm}}{70 \text{ cm}} \\ &= 8580 \text{ cm} = 85.80 \text{ m} \end{aligned}$$

$$\text{Cost of the carpet} = ₹ 20 \times 85.80 = ₹ 1716$$

10. Area of one tile = $10 \text{ cm} \times 8 \text{ cm}$

$$\begin{aligned} \text{Area of the floor} &= 20 \text{ m} \times 16 \text{ m} \\ &= 20 \times 100 \text{ cm} \times 16 \times 100 \text{ cm} \end{aligned}$$

$$\text{Number of tiles} = \frac{20 \times 100 \times 16 \times 100}{10 \times 8} = 40,000$$

$$\text{Cost} = 40000 \times \frac{1150}{100} = ₹ 4,60,000$$

MCQ

1. Area of rectangle = 650 cm^2 , $b = 13 \text{ cm}$

$$l = \frac{\text{Area}}{b} = \frac{650}{13} = 50 \text{ cm}$$

$$\begin{aligned} \text{Perimeter of rectangle} &= 2(l+b) \\ &= 2(50+13) \\ &= 126 \end{aligned}$$

2. Solve according to Example 4.

$$3. \text{ Side of square} = \frac{\text{Perimeter}}{4} = \frac{60}{4} = 15$$

$$4. w = 10 \text{ cm}, l = 2 \times 10 \text{ cm} = 20 \text{ cm}$$

$$\text{Area} = w \times l = 10 \times 20 = 200 \text{ cm}^2$$

5. and 6. Take help of the Answer Sheet.

7. and 8. Solve according to Example 9.

EXERCISE 11.1

1. Solve according to Example 1.

2. to 4 : Solve according to Example 2.

5. Solve according to Example 4.

6. We do not know Sarah's or Raja's age exactly in constant fixed numbers. It may have any value.

(a) Let Raja's age be x years. x is a variable.

$$\text{Sarah's age} = \text{Raja's age} + 4 \text{ years} = (x + 4) \text{ years}$$

(b) Let Sarah's age be y years. y is a variable.

$$\text{Raja's age} = \text{Sarah's age} - 4 \text{ years} = (y - 4) \text{ years}$$

7. and 8 : Take help of the Answer Sheet.

EXERCISE 11.2

1. Perimeter of an equilateral triangle = Sum of the lengths of its three equal sides

$$= 3 \times l = 3l$$

2. Perimeter of a regular pentagon = Sum of the lengths of its five equal sides

$$= 5 \times l = 5l$$

3. A cube has 12 edges.

$$\text{Total length of all the edges of a cube} = 12 \times l = 12l$$

4. Diameter of a circle = twice its radius

$$d = 2 \times r = 2r$$

5. Area of a rectangle = length \times breadth

$$a = l \times b = lb$$

EXERCISE 11.3

1. 2 and 5 : Take help of the Answer Sheet.

3. We add, subtract, multiply and divide y and 7, only one number operation one time.

$$y + 7, y - 7, 7 - y, 7y, \frac{y}{7}, \frac{7}{y}$$

[$7 + y = y + 7$ so we did not write $7 + y$]

4. We do only two different number operations one time.

$$3x + 10, 10x + 3, 3x - 10, 10x - 3, \frac{x}{3} + 10, \frac{x}{10} + 3, \frac{x}{3} - 10, \frac{x}{10} - 3, \frac{3}{x} + 10, \frac{10}{x} + 3,$$

$$\frac{3}{x} - 10, \frac{10}{x} - 3$$

We may include the expressions doing one number operation one time.

6. Solve according to Example 9.

EXERCISE 11.4

1. and 2. : Take help of the Answer Sheet.

3. Length of the rectangular hall = 6 times its height

$$= 6 \times h = 6h \text{ metres}$$

Breadth of the rectangular hall = 15 metre less than the length

$$= \text{length} - 15 \text{ metres} = 6h - 15 \text{ metres}$$

4. Distance travelled by the train in 4 hours = $4 \times x \text{ km} = 4x \text{ km}$

Distance from Delhi to Dehradun

$$= \text{Distance travelled in 4 hours} + 30 \text{ km}$$

$$= 4x \text{ km} + 30 \text{ km} = (4x + 30) \text{ km}$$

5. (a) The number of dots is 12 times the number of rows.

(b) The number of marbles in the box is 4 times the number of marbles on the table.

(c) The cost of a pencil is twice the cost of an eraser.

6. Age in the future will be more.

So $(y + 4)$ indicates Peter's age in the future.

Age in the past was less.

So $(y - 4)$ indicates Peter's age in the past.

EXERCISE 11.5

1. (i) $5y = 35$, So $y = \frac{35}{5} = 7$ No
- (ii) $4p = 20$, So $p = \frac{20}{4} = 5$ Yes
- (iii) $a + 3 = 7$, So $a = 7 - 3 = 4$ No
- (iv) $b - 8 = 4$, So $b = 4 + 8 = 12$ Yes
2. Put several values for x and find if $x + 7 = 12$.
3. Put several values for z and find if $\frac{z}{4} = 3$.
4. Solve according to Example 12.
5. (a) to (g), : Solve according to Example 13.
- (h) $2x + 3 = 9 \quad \Rightarrow \quad 2x + 3 - 3 = 9 - 3$
- $$\Rightarrow 2x = 6 \quad \Rightarrow \quad \frac{2x}{2} = \frac{6}{2} \quad \Rightarrow \quad x = 3$$

MCQ

1. to 3. and 7. : Take help of the Answer Sheet.

4. Perimeter of a regular hexagon = Sum of the length of its six equal sides
 $= 6 \times l = 6l$

5. From the option

$$(a) 2m - 5 = -1 \Rightarrow 2m = -1 + 5 \Rightarrow m = \frac{4}{2} = 2$$

$$(b) 5m - 7 = 3 \Rightarrow 5m = 3 + 7 \Rightarrow m = \frac{10}{5} = 2$$

$$(c) 2m + 7 = 10 \Rightarrow 2m = 10 - 7 \Rightarrow m = \frac{3}{2}$$

$$(d) \frac{m}{2} - 3 = 2 \Rightarrow \frac{m}{2} = -2 + 3 \Rightarrow \frac{m}{2} = 1 \Rightarrow m = 1 \times 2 = 2$$

6. Radius of a circle = half of its diameter

$$r = \frac{1}{2} \times d = \frac{d}{2}$$

8. Let Rani's age is x years.

Mother's age = 3 times Rani's age + 5 years

$$= 3 \times x + 5 = (3x + 5) \text{ years}$$

EXERCISE 12.1

1. and 5 : Take help of the Answer sheet.

2. Solve according to example 1.

3. (a) 7 kg = 7000 gm

$$= \frac{7000}{700} = \frac{10}{1} = 10 : 1$$

- (c) 3 m 5 cm = 305 cm

$$= \frac{305}{350} = \frac{61}{70} = 61 : 70$$

- (d) 2 hr 50 min = 60 + 60 + 50 = 170 min.

$$= \frac{170}{48} = \frac{24}{85}$$

$$= 24 : 85$$

4. (a) $\frac{2 \times 2}{5 \times 2} = \frac{4}{10}$, $\frac{2 \times 3}{5 \times 3} = \frac{6}{15}$, $\frac{2 \times 4}{5 \times 4} = \frac{8}{20}$

- (b) $\frac{6 \times 2}{11 \times 2} = \frac{12}{22}$, $\frac{6 \times 3}{11 \times 3} = \frac{18}{33}$, $\frac{6 \times 4}{11 \times 4} = \frac{24}{44}$

- (b) ₹5 = 500 p

$$= \frac{75}{500} = \frac{3}{20} = 3 : 20$$

$$(c) \frac{3 \times 2}{7 \times 2} = \frac{6}{14}, \frac{3 \times 3}{7 \times 3} = \frac{9}{21}, \frac{3 \times 4}{7 \times 4} = \frac{12}{28}$$

$$(d) \frac{4 \times 2}{9 \times 2} = \frac{8}{18}, \frac{4 \times 3}{9 \times 3} = \frac{12}{27}, \frac{4 \times 4}{9 \times 4} = \frac{16}{36}$$

6. Number of days in one ordinary year = 365 days

Ratio of the number of holidays to the number of days in one ordinary year =
146 days : 365 days.

$$\frac{146 \text{ days}}{365 \text{ days}} = \frac{146 \div 73}{365 \div 73} = \frac{2}{5} = 2:5$$

7. Take help of the Answer Sheet.

8. (a) The games lost = 4, the games won = 8

$$= \frac{4}{8} = \frac{1}{2} = 1:2$$

(b) games lost = 4, games won = 8

games played = lost + won = 4 + 8 = 12

$$= \frac{8}{12} = \frac{4}{6} = \frac{2}{3} = 2:3$$

9. to 11 : Solve as question 8 above.

$$12. \text{ Copper : tin} = 3\frac{1}{2} \text{ g} : 2\frac{3}{4} \text{ g} = \frac{7}{2} : \frac{11}{4} = \frac{7 \times 2}{2 \times 2} : \frac{11}{4}$$

$$= \frac{14}{4} : \frac{11}{4} = 14 : 11$$

13. Solve according to Example 5.

14. and 15 : Solve according to Example 3.

EXERCISE 12.2

1. to 3 : Solve according to Example 7.

4. Solve according to Example 8.

(b) 200 ml : 2.5 litre = 200 ml : 2.5 × 1000 ml

$$= 200 \text{ ml} : 2500 \text{ ml} = \frac{200 \text{ ml}}{2500 \text{ ml}} = \frac{200 \div 100}{2500 \div 100}$$

$$= \frac{2}{25} = 2:25$$

$$\begin{aligned}\text{₹ } 40 : \text{₹ } 500 &= \frac{\text{₹ } 40}{\text{₹ } 500} = \frac{40 \div 20}{500 \div 20} \\ &= \frac{2}{25} = 2:25\end{aligned}$$

Since the two ratios are equal, therefore, the given ratios are in proportion.

Middle term are 2.5 litre and ₹ 40.

Extreme terms are 200 ml and ₹ 500.

5. Let the fourth term be x . Then the proportion is

$$35 : 45 :: 63 : x$$

Writing the unknown term first,

First term \times Fourth term = second term \times third term

$$35 \times x = 45 \times 63$$

$$x = \frac{45 \times 63}{35} = 81$$

6. Writing the unknown term first,

second term \times third term = first term \times fourth term

$$28 \times \text{third term} = 20 \times 49$$

$$\text{third term} = \frac{20 \times 49}{28} = 35$$

7. Solve according to example 9.

8. and 9. Solve according to Example 10.

10. $4 : 6 :: 6 : 9$

$$\frac{4}{6} = \frac{6}{9}$$

$$36 = 36 \quad \text{Proved}$$

EXERCISE 12.3

1. 5, 6, 8, 9 and 11 : Solve according to Example 11 (a).

3. 4, 7, 10 and 12 : Solve according to Example 12.

2. 1 year = 12 months; Quantity asked is rupees, so we start our sentence from the other quantity, months.

$$\text{Rent for 3 months} = \text{₹ } 7500$$

$$\text{Rent for 1 month} = \frac{\text{₹ } 7500}{3}$$

$$\begin{aligned}\text{Rent for 12 months} &= \frac{\text{₹}7500}{3} \times 12 \\ &= \text{₹ } 30,000\end{aligned}$$

13. Quantity asked is number of screws, so we start our sentence from the other quantity, days.

$$\text{In 3 days, number of screws produced} = 3750$$

$$\text{In 1 day, number of screws produced} = \frac{3750}{3}$$

$$\begin{aligned}\text{In 20 days, number of screws produced} &= \frac{3750}{3} \times 20 \\ &= 25,000\end{aligned}$$

MCQ

1. **3. and 4.** Take help of the Answer Sheet.

2. $57 : x :: 51 : 85$

57, x , 51 and 85 are first, second, third and fourth term respectively. 57 and 85 are the extreme terms, x and 51 are the middle terms.

We know, $a : b :: c : d$, then $ad = bc$

$$\text{So, } 57 \times 85 = x \times 51$$

$$4845 = 51x$$

$$x = \frac{4845}{51} = 95$$

5. Ratio 12 : 13 is not equivalent to 84 : 93.

6. Mohan earns = ₹ 500, spend = ₹ 225

$$\text{so, saving} = 500 - 225 = \text{₹ } 275$$

$$\begin{aligned}\text{Ratio of expenditure and saving} &= \frac{225}{275} = \frac{45}{55} \\ &= \frac{9}{11} = 9 : 11\end{aligned}$$

7. Cost of 5 bars of chocolates = ₹ 82.50

$$\begin{aligned}\text{Cost of 1 bar of chocolate} &= \frac{82.50}{5} \\ &= \text{₹ } 16.5\end{aligned}$$

$$\begin{aligned}\text{Now, the cost of one dozen bars} &= 16.5 \times 12 \\ &= \text{₹ } 198\end{aligned}$$

8. Ratio of triangle sides = $1 : 3 : 5 = 1 + 3 + 5$
= 9

Perimeter = 90 cm

$$\text{length of largest side} = \frac{5}{9} \times 90 = 50 \text{ cm}$$

EXERCISE 13.1

1. **3, 4 and 6** : Take help of the Answer Sheet.
2. Draw yourself.
4. (b) The figure without details may look symmetrical. But its details make it clearly non-symmetrical.
5. (a) Capital alphabets in English which have only one line of symmetry are :
A, B, C, D, E, K, M, T, U, V, W, Y
(b) Capital alphabets in English which have two lines of symmetry are :
H, I, O, X
(c) Capital alphabets in English which have no line of symmetry are :
F, G, J, L, N, P, Q, R, S, Z

EXERCISE 13.2

1. Draw according to Example 3.
2. Draw according to Example 4.
3. (a) Draw one vertical and one horizontal line of symmetry.
(b) Draw four lines of symmetry as in a square.
(c) Draw one vertical line of symmetry.
(d) Draw one vertical and one horizontal line of symmetry.

MCQ

1. to 8. Take help of the Answer Sheet.

EXERCISE 14.1 TO 14.6

Draw yourself. Take help of the Examples and Methods given in the text book.

MCQ

1. to 8. Take help of the Answer Sheet. □