NCERT SOLUTIONS

CLASS - 7TH

Class : 7th
Subject : Maths
Chapter : 2
Chapter Name : Fractions and Decimals

Exercise 2.1

Q1 Solve:
(i) $2 - \frac{3}{5}$
(ii) $4 + \frac{7}{8}$
(iii) $\frac{3}{5} + \frac{2}{7}$
(iv) $\frac{9}{11} - \frac{4}{15}$
(v) $\frac{7}{10} + \frac{2}{5} + \frac{3}{2}$
(vi) $2\frac{2}{3} + 3\frac{1}{2}$
(vii) $8\frac{1}{2} - 3\frac{5}{8}$

Answer. (i) $2 - \frac{3}{5} = \frac{2 \times 5}{5} - \frac{3}{5} = \frac{10-3}{5} = \frac{7}{5}$
(ii) $4 + \frac{7}{8} = \frac{4 \times 8}{8} + \frac{7}{8} = \frac{(4 \times 8)+7}{8} = \frac{39}{8} = 4\frac{7}{8}$
(iii) $\frac{3}{5} + \frac{2}{7} = \frac{3 \times 7}{5 \times 7} + \frac{2 \times 5}{7 \times 5} = \frac{21+10}{35} = \frac{31}{35}$
(iv) $\frac{9}{11} - \frac{4}{15} = \frac{9 \times 15}{11 \times 15} - \frac{4 \times 11}{15 \times 11} = \frac{135-44}{165} = \frac{91}{165}$
(v) $\frac{7}{10} + \frac{2}{5} + \frac{3}{2} = \frac{7}{10} + \frac{2 \times 2}{5 \times 2} + \frac{3 \times 5}{2 \times 5} = \frac{7+4+15}{10} = \frac{26}{10} = \frac{13}{5} = 2\frac{3}{5}$
(vi) $2\frac{2}{3} + 3\frac{1}{2} = \frac{8}{3} + \frac{7}{2} = \frac{8 \times 2}{3 \times 2} + \frac{7 \times 3}{2 \times 3} = \frac{16+21}{6} = \frac{37}{6} = 6\frac{1}{6}$
(vii) $8\frac{1}{2} - 3\frac{5}{8} = \frac{17}{2} - \frac{29}{8} = \frac{17 \times 4}{2 \times 4} - \frac{29}{8} = \frac{68-29}{8} = \frac{39}{8} = 4\frac{7}{8}$

Page : 31 , Block Name : Exercise 2.1

Q2 Arrange the following in descending order:
(i) $\frac{2}{9}, \frac{2}{3}, \frac{8}{21}$
(ii) $\frac{1}{5}, \frac{3}{7}, \frac{7}{10}$

Answer. (i) Changing them to like fractions, we obtain
$\frac{2}{9} = \frac{2 \times 7}{9 \times 7} = \frac{14}{63}$
$\frac{2}{3} = \frac{2 \times 21}{3 \times 21} = \frac{42}{63}$
$\frac{8}{21} = \frac{8 \times 3}{21 \times 3} = \frac{24}{63}$
Since $42 > 24 > 14$,
$\therefore \frac{2}{3} > \frac{8}{21} > \frac{2}{9}$
(ii) Changing them to like fractions, we obtain

$\frac{1}{5} = \frac{1 \times 14}{5 \times 14} = \frac{14}{70}$

$\frac{3}{7} = \frac{3 \times 10}{7 \times 10} = \frac{30}{70}$

$\frac{7}{10} = \frac{7 \times 7}{10 \times 7} = \frac{49}{70}$

As $49 > 30 > 14$

$\therefore \frac{7}{10} > \frac{3}{7} > \frac{1}{5}$

Page : 31 , Block Name : Exercise 2.1

Q3 In a "magic square", the sum of the numbers in each row, in each column and along the diagonals is the same. Is this a magic square?

$\frac{4}{11}$	$\frac{9}{11}$	$\frac{2}{11}$	(Along the first row $\frac{4}{11} + \frac{9}{11} + \frac{2}{11} = \frac{15}{11}$)
$\frac{3}{11}$	$\frac{5}{11}$	$\frac{7}{11}$	
$\frac{8}{11}$	$\frac{1}{11}$	$\frac{6}{11}$	

Answer. Along the first row, sum = $\frac{4}{11} + \frac{9}{11} + \frac{2}{11} = \frac{15}{11}$

Along the second row, sum = $\frac{3}{11} + \frac{5}{11} + \frac{7}{11} = \frac{15}{11}$

Along the third row, sum = $\frac{8}{11} + \frac{1}{11} + \frac{6}{11} = \frac{15}{11}$

Along the first column, sum = $\frac{4}{11} + \frac{3}{11} + \frac{8}{11} = \frac{15}{11}$

Along the second column, sum = $\frac{9}{11} + \frac{5}{11} + \frac{1}{11} = \frac{15}{11}$

Along the third column, sum = $\frac{2}{11} + \frac{7}{11} + \frac{6}{11} = \frac{15}{11}$

Along the first diagonal, sum = $\frac{2}{11} + \frac{5}{11} + \frac{8}{11} = \frac{15}{11}$

Since the sum of the numbers in each row, in each column, and along the diagonals is the same, it is a magic square.

Page : 31 , Block Name : Exercise 2.1

Q4 A rectangular sheet of paper is $12\frac{1}{2}$ cm long and $10\frac{2}{3}$ cm wide. Find its perimeter.

Answer. Length = $12\frac{1}{2}$ cm $= \frac{25}{2}$ cm
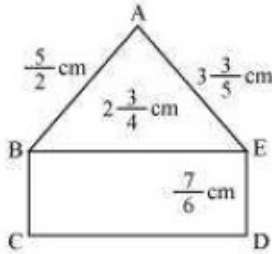
Breadth = $10\frac{2}{3}$ cm $= \frac{32}{3}$ cm

Perimeter = $2 \times ($ Length $+$ Breadth $)$

$= 2 \times \left[\frac{25}{2} + \frac{32}{3} \right] = 2 \times \left[\frac{(25 \times 3) + (32 \times 2)}{6} \right] = 2 \times \left[\frac{75 + 64}{6} \right]$

$= 2 \times \frac{139}{6} = \frac{139}{3} = 46\frac{1}{3}$ cm

Page : 31 , Block Name : Exercise 2.1

Q5 Find the perimeters of (i) $\triangle$ABE (ii) the rectangle BCDE in this figure. Whose perimeter is greater?

Answer. (i) Perimeter of $\triangle$ABE = AB + BE+ EA

$$= \left(\frac{5}{2} + 2\frac{3}{4} + 3\frac{3}{5} \right) = \left(\frac{5}{2} + \frac{11}{4} + \frac{18}{5} \right)$$

$$= \left(\frac{5 \times 10}{2 \times 10} + \frac{11 \times 5}{4 \times 5} + \frac{18 \times 4}{5 \times 4} \right)$$

$$= \frac{50 + 55 + 72}{20} = \frac{177}{20} = 8\frac{17}{20} \text{cm}$$

(ii) Perimeter of rectangle = 2 (Length + Breadth)

Perimeter of rectangle = $2 \left[\frac{11}{4} + \frac{7}{6} \right]$

$2 \left[\frac{11 \times 3}{4 \times 3} + \frac{7 \times 2}{6 \times 2} \right] = 2 \left[\frac{33 + 14}{12} \right]$

$2 \times \frac{47}{12} = \frac{47}{6} = 7\frac{5}{6}$cm

Perimeter of $\triangle$ABE = $\frac{177}{20}$cm

Changing them to like fractions, we obtain

$\frac{177}{20} = \frac{177 \times 3}{20 \times 3} = \frac{531}{60}$

$\frac{43}{6} = \frac{43 \times 10}{6 \times 10} = \frac{430}{60}$

As $531 > 430$

$\therefore \frac{177}{20} > \frac{43}{6}$

Perimeter ($\triangle$ABE) > Perimeter (BCDE)

Page : 31 , Block Name : Exercise 2.1

Q6 Salil wants to put a picture in a frame. The picture is $7\frac{3}{5}$ cm wide. To fit in the frame the picture cannot be more than $7\frac{3}{10}$ cm wide. How much should the picture be trimmed?

Answer. Width of picture = $7\frac{3}{5} = \frac{38}{5}$cm

Required width = = $7\frac{3}{10} = \frac{73}{10}$cm

The picture should be trimmed by = = $\left(\frac{38}{5} - \frac{73}{10} \right)$

$\left(\frac{38 \times 2}{5 \times 2} - \frac{73}{10} \right) = \frac{76 - 73}{10} = \frac{3}{10}$cm

Page : 31 , Block Name : Exercise 2.1

Q7 Ritu ate 3/5 part of an apple and the remaining apple was eaten by her brother Somu. How much part of the apple did Somu eat? Who had the larger share? By how much?

Answer. Part of apple eaten by Ritu = 3/5

Part of apple eaten by Somu = 1 - Part of apple eaten by Ritu

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

Therefore. Somu ate 2/5 part of the apple.

Since 3 > 2, Ritu had the larger share.

Difference between the 2 shares = $\frac{3}{5} - \frac{2}{5} = \frac{1}{5}$

Therefore, Ritu's share is larger than the share of Somu by 1/5 .

Page : 32 , Block Name : Exercise 2.1

Q8 Michael finished colouring a picture in 7/12 hour. Vaibhav finished colouring the same picture in 3/4 hour. Who worked longer? By what fraction was it longer?

Answer. Time taken by Michael = 7/12 hr

Time taken by Vaibhav =3/4 hr

Converting these fractions into like fractions, we obtain

$\frac{3}{4} = \frac{3 \times 3}{4 \times 3} = \frac{9}{12}$

And $\frac{7}{12}$

Since 9 > 7

Vaibhav worked longer.

Difference = $\frac{9}{12} - \frac{7}{12} = \frac{2}{12} = \frac{1}{6}$ hour

Page : 32 , Block Name : Exercise 2.1
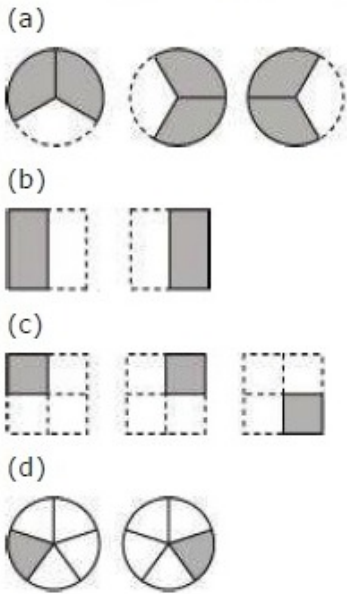
Exercise 2.2

Q1 Which of the drawings (a) to (d) show :

(i) $2 \times \frac{1}{5}$

(ii) $2 \times \frac{1}{2}$

(iii) $3 \times \frac{2}{3}$

(iv) $3 \times \frac{1}{4}$

Answer. (i) $2 \times \frac{1}{5}$ represents addition of 2 figures, each representing 1 shaded part out of 5 equal parts. Hence, $2 \times \frac{1}{5}$ is represented by (d).

(ii) $2 \times \frac{1}{2}$ represents addition of 2 figures, each representing 1 shaded part out of 2 equal parts. Hence, $2 \times \frac{1}{2}$ is represented by (b).

(iii) $3 \times \frac{2}{3}$ represents addition of 3 figures, each representing 2 shaded parts out of 3 equal parts. Hence, $3 \times \frac{2}{3}$ is represented by (a).

(iv) $3 \times \frac{1}{4}$ represents addition of 3 figures, each representing 1 shaded part out of 4 equal parts. Hence, $3 \times \frac{1}{4}$ is represented by (c).
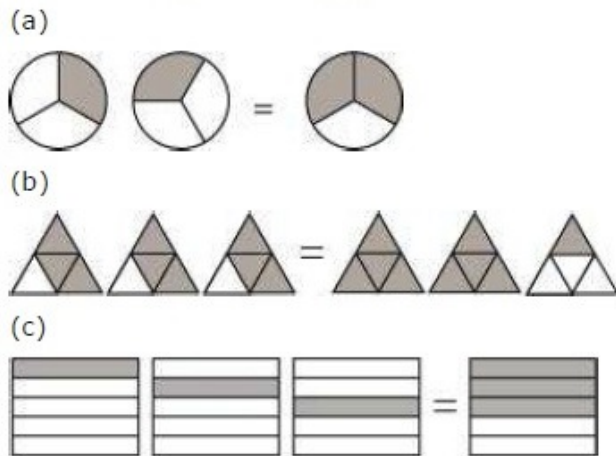
Page : 36 , Block Name : Exercise 2.2

Q2 Some pictures (a) to (c) are given below. Tell which of them show:
(i) $3 \times \frac{1}{5} = \frac{3}{5}$
(ii) $2 \times \frac{1}{3} = \frac{2}{3}$
(iii) $3 \times \frac{3}{4} = 2\frac{1}{4}$

Answer. $3 \times \frac{1}{5}$ represents the addition of 3 figures, each representing 1 shaded part out of 5 equal parts and 3/5 represents 3 shaded parts out of 5 equal parts. Hence, $3 \times \frac{1}{5}$ is represented by (c).

(ii) $2 \times \frac{1}{3}$ represents the addition of 2 figures, each representing 1 shaded part out of 3 equal parts and 2/3 represents 2 shaded palts out of 3 equal palts. Hence, $2 \times \frac{1}{3}$ is represented by (a).

(iii) $3 \times \frac{3}{4}$ represents the addition of 3 figures, each representing 3 shaded parts out of 4 equal parts and $2\frac{1}{4}$ represents 2 fully shaded figures and one figure having 1 part as shaded out of 4 equal parts. Hence, $3 \times \frac{3}{4}$ is represented by (b).

Page : 36 , Block Name : Exercise 2.2

Q3 Multiply and reduce to lowest form and convert into a mixed fraction:

(i) $7 \times \frac{3}{5}$ (ii) $4 \times \frac{1}{3}$ (iii) $2 \times \frac{6}{7}$ (iv) $5 \times \frac{2}{9}$ (v) $\frac{2}{3} \times 4$

(vi) $\frac{5}{2} \times 6$ (vii) $11 \times \frac{4}{7}$ (viii) $20 \times \frac{4}{5}$ (ix) $13 \times \frac{1}{3}$ (x) $15 \times \frac{3}{5}$

Answer. (i) $7 \times \frac{3}{5} = \frac{21}{5} = 4\frac{1}{5}$

(ii) $4 \times \frac{1}{3} = \frac{4}{3} = 1\frac{1}{3}$

(iii) $2 \times \frac{6}{7} = \frac{12}{7} = 1\frac{5}{7}$

(iv) $5 \times \frac{2}{9} = \frac{10}{9} = 1\frac{1}{9}$

(v) $\frac{2}{3} \times 4 = \frac{8}{3} = 2\frac{2}{3}$

(vi) $\frac{5}{2} \times 6 = 15$

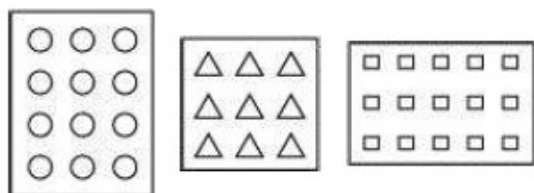(vii) $11 \times \frac{4}{7} = \frac{44}{7} = 6\frac{2}{7}$

(viii) $20 \times \frac{4}{5} = 16$

(ix) $13 \times \frac{1}{3} = \frac{13}{3} = 4\frac{1}{3}$

(x) $15 \times \frac{3}{5} = 9$

Page : 36 , Block Name : Exercise 2.2

Q4 Shade: (i) 1/2 of the circles in box (a) (ii) 2 3 of the triangles in box (b) (iii) 3 5 of the squares in box (c).
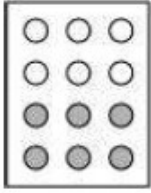

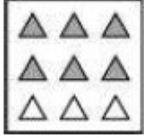(a)   (b)   (c)

Answer. (i) It can be observed that there are 12 circles in the given box. We have to shade 1/2 of the circles in it. As $12 \times \frac{1}{2} = 6$, therefore, we will shade any 6 circles of it.

(ii) It can be observed that there are 9 triangles in the given box. We have to shade 2/3 of the triangle in it. As $9 \times \frac{2}{3} = 6$, therefore, we will shade any 6 triangles of it.

(iii) It can be observed that there are 15 squares in the given box. We have to shade 3/5 of the squares in it. As $\frac{3}{5} \times 15 = 9$, therefore, we will shade any 9 squares of it.
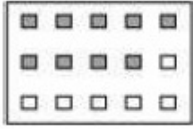
Page : 37 , Block Name : Exercise 2.2

Q5 Find:
(a) 1/2 of (i) 24 (ii) 36
(b) 2/3 of (i) 18 (ii) 27
(c) 3/4 of (i) 16 (ii) 36
(d) 4 5 of (i) 20 (ii) 35

Answer. (a) (i) $\frac{1}{2} \times 24 = 12$
(ii) $\frac{1}{2} \times 46 = 23$
(b) (i) $\frac{2}{3} \times 18 = 12$
(ii) $\frac{2}{3} \times 27 = 18$
(c) (i) $\frac{3}{4} \times 16 = 12$
(ii) $\frac{3}{4} \times 36 = 27$
(d) (i) $\frac{4}{5} \times 20 = 16$
(ii) $\frac{4}{5} \times 35 = 28$

Page : 37 , Block Name : Exercise 2.2

Q6 Multiply and express as a mixed fraction :
(a) $3 \times 5\frac{1}{5}$
(b) $5 \times 6\frac{3}{4}$
(c) $7 \times 2\frac{1}{4}$

(d) $4 \times 6\frac{1}{3}$

(e) $3\frac{1}{4} \times 6$

(f) $3\frac{2}{5} \times 8$

Answer. (a) $3 \times 5\frac{1}{5} = 3 \times \frac{26}{5} = \frac{78}{5} = 15\frac{3}{5}$

(b) $5 \times 6\frac{3}{4} = 5 \times \frac{27}{4} = \frac{135}{4} = 33\frac{3}{4}$

(c) $7 \times 2\frac{1}{4} = 7 \times \frac{9}{4} = \frac{63}{4} = 15\frac{3}{4}$

(d) $4 \times 6\frac{1}{3} = 4 \times \frac{19}{3} = \frac{76}{3} = 25\frac{1}{3}$

(e) $3\frac{1}{4} \times 6 = \frac{13}{4} \times 6 = \frac{78}{4} = \frac{39}{2} = 19\frac{1}{2}$

(f) $3\frac{2}{5} \times 8 = \frac{17}{5} \times 8 = \frac{136}{5} = 27\frac{1}{5}$

Page : 37 , Block Name : Exercise 2.2

Q7 Find:

(a) 1/2 of (i) $2\frac{3}{4}$ (ii) $4\frac{2}{9}$

(b) 5/8 of (i) $3\frac{5}{6}$ (ii) $9\frac{2}{3}$

Answer. (a) (i) $\frac{1}{2} \times 2\frac{3}{4} = \frac{1}{2} \times \frac{11}{4} = \frac{11}{8} = 1\frac{3}{8}$

(ii) $\frac{1}{2} \times 4\frac{2}{9} = \frac{1}{2} \times \frac{38}{9} = \frac{19}{9} = 2\frac{1}{9}$

(b) (i) $\frac{5}{8} \times 3\frac{5}{6} = \frac{5}{8} \times \frac{23}{6} = \frac{115}{48} = 2\frac{19}{48}$

(ii) $\frac{5}{8} \times 9\frac{2}{3} = \frac{5}{8} \times \frac{29}{3} = \frac{145}{24} = 6\frac{1}{24}$

Page : 37 , Block Name : Exercise 2.2

Q8 Vidya and Pratap went for a picnic. Their mother gave them a water bottle that contained 5 litres of water. Vidya consumed 2/5 of the water. Pratap consumed the remaining water. (i) How much water did Vidya drink? (ii) What fraction of the total quantity of water did Pratap drink?

Answer. (i) Water consumed by Vidya = 2/5 of 5 litres

$= \frac{2}{5} \times 5 = 2$

(ii) Water consumed by Pratap = $1 - \frac{2}{5} = \frac{3}{5}$ of the total water.

Page : 37 , Block Name : Exercise 2.2

Exercise 2.3

Q1 Find:

(i) $\frac{1}{4}$ of (a) $\frac{1}{4}$ (b) $\frac{3}{5}$ (c) $\frac{4}{3}$

(ii) $\frac{1}{7}$ of (a) $\frac{2}{9}$ (b) $\frac{6}{5}$ (c) $\frac{3}{10}$

Answer. (i) (a) $\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$
(b) $\frac{1}{4} \times \frac{3}{5} = \frac{3}{20}$
(c) $\frac{1}{4} \times \frac{4}{3} = \frac{1}{3}$
(ii) (a) $\frac{1}{7} \times \frac{2}{9} = \frac{2}{63}$
(b) $\frac{1}{7} \times \frac{6}{5} = \frac{6}{35}$
(c) $\frac{1}{7} \times \frac{3}{10} = \frac{3}{70}$

Page : 41 , Block Name : Exercise 2.3

Q2 Multiply and reduce to lowest form (if possible) :

(i) $\frac{2}{3} \times 2\frac{2}{3}$ (ii) $\frac{2}{7} \times \frac{7}{9}$ (iii) $\frac{3}{8} \times \frac{6}{4}$ (iv) $\frac{9}{5} \times \frac{3}{5}$

(v) $\frac{1}{3} \times \frac{15}{8}$ (vi) $\frac{11}{2} \times \frac{3}{10}$ (vii) $\frac{4}{5} \times \frac{12}{7}$

Answer. (i) $\frac{2}{3} \times 2\frac{2}{3} = \frac{2}{3} \times \frac{8}{3} = \frac{16}{9} = 1\frac{7}{9}$
(ii) $\frac{2}{7} \times \frac{7}{9} = \frac{2}{9}$
(iii) $\frac{3}{8} \times \frac{6}{4} = \frac{9}{16}$
(iv) $\frac{9}{5} \times \frac{3}{5} = \frac{27}{25} = 1\frac{2}{25}$
(v) $\frac{1}{3} \times \frac{15}{8} = \frac{5}{8}$
(vi) $\frac{11}{2} \times \frac{3}{10} = \frac{33}{20} = 1\frac{13}{20}$
(vii) $\frac{4}{5} \times \frac{12}{7} = \frac{48}{35} = 1\frac{13}{35}$

Page : 42 , Block Name : Exercise 2.3

Q3 Multiply the following fractions:

(i) $\frac{2}{5} \times 5\frac{1}{4}$ (ii) $6\frac{2}{5} \times \frac{7}{9}$ (iii) $\frac{3}{2} \times 5\frac{1}{3}$ (iv) $\frac{5}{6} \times 2\frac{3}{7}$

(v) $3\frac{2}{5} \times \frac{4}{7}$ (vi) $2\frac{3}{5} \times 3$ (vii) $3\frac{4}{7} \times \frac{3}{5}$

Answer. (i) $\frac{2}{5} \times 5\frac{1}{4} = \frac{2}{5} \times \frac{21}{4} = \frac{21}{10}$
This is an improper fraction and it can be written as a mixed fraction as $2\frac{1}{10}$
(ii) $6\frac{2}{5} \times \frac{7}{9} = \frac{32}{5} \times \frac{7}{9} = \frac{224}{45}$

This is an improper fraction and it can be written as a mixed fraction as $4\frac{44}{45}$

(iii) $\frac{3}{2} \times 5\frac{1}{3} = \frac{3}{2} \times \frac{16}{3} = 8$

This is a whole number.

(iv) $\frac{5}{6} \times 2\frac{3}{7} = \frac{5}{6} \times \frac{17}{7} = \frac{85}{42}$

This is an improper fraction and it can be written as a mixed fraction as $2\frac{1}{42}$

(v) $3\frac{2}{5} \times \frac{4}{7} = \frac{17}{5} \times \frac{4}{7} = \frac{68}{35}$

This is an improper fraction and it can be written as a mixed fraction as $1\frac{33}{35}$

(vi) $2\frac{3}{5} \times 3 = \frac{13}{5} \times 3 = \frac{39}{5}$

This is an improper fraction and it can be written as a mixed fraction as $7\frac{4}{5}$

(vii) $3\frac{4}{7} \times \frac{3}{5} = \frac{25}{7} \times \frac{3}{5} = \frac{15}{7}$

This is an improper fraction and it can be written as a mixed fraction as $2^{2\frac{1}{7}}$

Page : 42 , Block Name : Exercise 2.3

Q4 Which is greater:
(i) 2/7 of 3/4 or 3/5 of 5/8
(ii) 1/2 of 6/7 or 2/3 of 3/7

Answer. (i) $\frac{2}{7} \times \frac{3}{4} = \frac{3}{14}$

$\frac{3}{5} \times \frac{5}{8} = \frac{3}{8}$

Converting these fractions into like fractions,

$\frac{3}{14} = \frac{3 \times 4}{14 \times 4} = \frac{12}{56}$

$\frac{3}{8} = \frac{3 \times 7}{8 \times 7} = \frac{21}{56}$

Since $\frac{21}{56} > \frac{12}{56}$

$\therefore \frac{3}{8} > \frac{3}{14}$

Therefore, $\frac{3}{5}$ of $\frac{5}{8}$ is greater.

(ii) $\frac{1}{2} \times \frac{6}{7} = \frac{3}{7}$

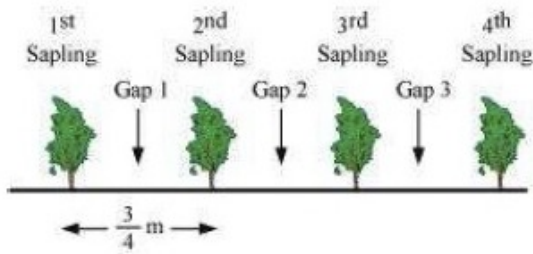$\frac{2}{3} \times \frac{3}{7} = \frac{2}{7}$

Since 3 > 2,

$\therefore \frac{3}{7} > \frac{2}{7}$

Therefore, $\frac{1}{2}$ of $\frac{6}{7}$ is greater.

Page : 42 , Block Name : Exercise 2.3

Q5 Saili plants 4 saplings, in a row, in her garden. The distance between two adjacent saplings is 3/4 m. Find the distance between the first and the last sapling.

Answer.

From the figure, it can be observed that gaps between 1st and last sapling = 3

Length of 1 gap = 3/4 m

Therefore, distance between I and IV sapling = $3 \times \frac{3}{4} = \frac{9}{4} = 2\frac{1}{4}$ m

Page : 42 , Block Name : Exercise 2.3

Q6 Lipika reads a book for $1\frac{3}{4}$ hours everyday. She reads the entire book in 6 days. How many hours in all were required by her to read the book?

Answer. Number of hours Lipika reads the book per day = $1\frac{3}{4} = \frac{7}{4}$

Number of days = 6

Total number of hours required by her to read the book = $\frac{7}{4} \times 6$
$= \frac{21}{2} = 10\frac{1}{2}$

Page : 42 , Block Name : Exercise 2.3

Q7 A car runs 16 km using 1 litre of petrol. How much distance will it cover using $2\frac{3}{4}$ litres of petrol.

Answer. Number of kms a car can run per litre petrol = 16 km

Quantity of petrol = $2\frac{3}{4}$L $= \frac{11}{4}$L

Number of kms a car can run for 11/4 litre petrol = $\frac{11}{4} \times 16$

It will cover 44 km distance by using $2\frac{3}{4}$ litres of petrol.

Page : 42 , Block Name : Exercise 2.3

Q8

(a) (i) Provide the number in the box □, such that $\frac{2}{3} \times \square = \frac{10}{30}$.

(ii) The simplest form of the number obtained in □ is _____.

(b) (i) Provide the number in the box □, such that $\frac{3}{5} \times \square = \frac{24}{75}$?

(ii) The simplest form of the number obtained in □ is _____.

Answer.

(a) (i) As $\dfrac{2}{3} \times \dfrac{5}{10} = \dfrac{10}{30}$,

Therefore, the number in the box ☐, such that $\dfrac{2}{3} \times \square = \dfrac{10}{30}$ is

$\dfrac{5}{10}$.

(ii) The simplest form of $\dfrac{5}{10}$ is $\dfrac{1}{2}$.

(b) (i) As $\dfrac{3}{5} \times \dfrac{8}{15} = \dfrac{24}{75}$,

Therefore, the number in the box ☐, such that $\dfrac{3}{5} \times \square = \dfrac{24}{75}$ is

$\dfrac{8}{15}$.

(ii) As $\dfrac{8}{15}$ cannot be further simplified, therefore, its simplest form is $\dfrac{8}{15}$

Page : 42 , Block Name : Exercise 2.3

Exercise 2.4

Q1 Find:

(i) $12 \div \dfrac{3}{4}$ (ii) $14 \div \dfrac{5}{6}$ (iii) $8 \div \dfrac{7}{3}$ (iv) $4 \div \dfrac{8}{3}$

(v) $3 \div 2\dfrac{1}{3}$ (vi) $5 \div 3\dfrac{4}{7}$

Answer. (i) $12 \div \frac{3}{4} = 12 \times \frac{4}{3} = 16$

(ii) $14 \div \frac{5}{6} = 14 \times \frac{6}{5} = \frac{84}{5}$

(iii) $8 \div \frac{7}{3} = 8 \times \frac{3}{7} = \frac{24}{7}$

(iv) $4 \div \frac{8}{3} = 4 \times \frac{3}{8} = \frac{3}{2}$

(v) $3 \div 2\frac{1}{3} = 3 \div \frac{7}{3} = 3 \times \frac{3}{7} = \frac{9}{7}$

(vi) $5 \div 3\frac{4}{7} = 5 \div \frac{25}{7} = 5 \times \frac{7}{25} = \frac{7}{5}$

Page : 46 , Block Name : Exercise 2.4

Q2 Find the reciprocal of each of the following fractions. Classify the reciprocals as proper fractions, improper fractions and whole numbers.

(i) 3/7
(ii) 5/8
(iii) 9/7
(iv) 6/5
(v) 12/7
(vi) 1/8
(vii) 1/11

Answer. A proper fraction is the fraction which has its denominator greater than its numerator while improper fraction is the fraction which has its numerator greater than its denominator. Whole numbers are a collection of all positive integers including 0.

(i) 3/7
Reciprocal = 7/3
Therefore, it is an improper fraction.
(ii) 5/8
Reciprocal = 8/5
Therefore, it is an improper fraction.
(iii) 9/7
Reciprocal = 7/9
Therefore, it is a proper fraction.
(iv) 6/5
Reciprocal = 5/6
Therefore, it is a proper fraction.
(v) 12/7
Reciprocal = 7/12
Therefore, it is a proper fraction.
(vi) 1/8
Reciprocal = 8/1
Therefore, it is a whole number.
(vii)1/11
Reciprocal = 11/1
Therefore, it is a whole number.

Page : 46 , Block Name : Exercise 2.4

Q3 Find:
(i) $\frac{7}{3} \div 2$
(ii) $\frac{4}{9} \div 5$
(iii) $\frac{6}{13} \div 7$
(iv) $4\frac{1}{3} \div 3$
(v) $3\frac{1}{2} \div 4$
(vi) $4\frac{3}{7} \div 7$

Answer. (i) $\frac{7}{3} \div 2 = \frac{7}{3} \times \frac{1}{2} = \frac{7}{6}$
(ii) $\frac{4}{9} \div 5 = \frac{4}{9} \times \frac{1}{5} = \frac{4}{45}$

(iii) $\frac{6}{13} \div 7 = \frac{6}{13} \times \frac{1}{7} = \frac{6}{91}$

(iv) $4\frac{1}{3} \div 3 = \frac{13}{3} \div 3 = \frac{13}{3} \times \frac{1}{3} = \frac{13}{9}$

(v) $3\frac{1}{2} \div 4 = \frac{7}{2} \div 4 = \frac{7}{2} \times \frac{1}{4} = \frac{7}{8}$

(vi) $4\frac{3}{7} \div 7 = \frac{31}{7} \times \frac{1}{7} = \frac{31}{49}$

Page : 46 , Block Name : Exercise 2.4

Q4 Find:

(i) $\frac{2}{5} \div \frac{1}{2}$

(ii) $\frac{4}{9} \div \frac{2}{3}$

(iii) $\frac{3}{7} \div \frac{8}{7}$

(iv) $2\frac{1}{3} \div \frac{3}{5}$

(v) $3\frac{1}{2} \div \frac{8}{3}$

(vi) $\frac{2}{5} \div 1\frac{1}{2}$

(vii) $3\frac{1}{5} \div 1\frac{2}{3}$

(viii) $2\frac{1}{5} \div 1\frac{1}{5}$

Answer. (i) $\frac{2}{5} \div \frac{1}{2} = \frac{2}{5} \times 2 = \frac{4}{5}$

(ii) $\frac{4}{9} \div \frac{2}{3} = \frac{4}{9} \times \frac{3}{2} = \frac{2}{3}$

(iii) $\frac{3}{7} \div \frac{8}{7} = \frac{3}{7} \times \frac{7}{8} = \frac{3}{8}$

(iv) $2\frac{1}{3} \div \frac{3}{5} = \frac{7}{3} \div \frac{3}{5} = \frac{7}{3} \times \frac{5}{3} = \frac{35}{9}$

(v) $3\frac{1}{2} \div \frac{8}{3} = \frac{7}{2} \div \frac{8}{3} = \frac{7}{2} \times \frac{3}{8} = \frac{21}{16}$

(vi) $\frac{2}{5} \div 1\frac{1}{2} = \frac{2}{5} \div \frac{3}{2} = \frac{2}{5} \times \frac{2}{3} = \frac{4}{15}$

(vii) $3\frac{1}{5} \div 1\frac{2}{3} = \frac{16}{5} \div \frac{5}{3} = \frac{16}{5} \times \frac{3}{5} = \frac{48}{25}$

(viii) $2\frac{1}{5} \div 1\frac{1}{5} = \frac{11}{5} \div \frac{6}{5} = \frac{11}{5} \times \frac{5}{6} = \frac{11}{6}$

Page : 46 , Block Name : Exercise 2.4

Exercise 2.5

Q1 Which is greater?

(i) 0.5 or 0.05 (ii) 0.7 or 0.5 (iii) 7 or 0.7 (iv) 1.37 or 1.49 (v) 2.03 or 2.30 (vi) 0.8 or 0.88

Answer. (i) Converting these decimal numbers into equivalent fractions,

$0.5 = \frac{5}{10} = \frac{5 \times 10}{10 \times 10} = \frac{50}{100}$ and $0.05 = \frac{5}{100}$

It can be observed that both fractions have the same denominator.

As 50 > 5,

Therefore, 0.5 > 0.05

(ii) Converting these decimal numbers into equivalent fractions,

$0.7 = \frac{7}{10}$ and $0.5 = \frac{5}{10}$

It can be observed that fractions have the same denominator.

As 70 > 0.7

Therefore, 7 > 0.7

(iii) Converting these decimal numbers into equivalent fractions,

$7 = \frac{7}{1} = \frac{7 \times 10}{1 \times 10} = \frac{70}{10}$ and $0.7 = \frac{7}{10}$

It can be observed that both fractions have the same denominator.

As 70 > 7,

Therefore, 7 > 0.7

(iv) Converting these decimal numbers into equivalent fractions,

$1.37 = \frac{137}{100}$ and $1.49 = \frac{149}{100}$

It can be observed that both fractions have the same denominator.

AS 137 < 149,

Therefore, 1.37 < 1.49

(v) Converting these decimal numbers into equivalent fractions,

$2.03 = \frac{203}{100}$ and $2.30 = \frac{230}{100}$

It can be observed that both fractions have the same denominator.

As 203 < 230,

Therefore, 2.03 < 2.30

(vi) Converting these decimal numbers into equivalent fractions,

$0.8 = \frac{8}{10} = \frac{8 \times 10}{10 \times 10} = \frac{80}{100}$ and $0.88 = \frac{88}{100}$

It can be observed that both fractions have the same denominator.

As 80 < 88,

Therefore, 0.8 < 0.88

Page : 47 , Block Name : Exercise 2.5

Q2 Express as rupees using decimals : (i) 7 paise (ii) 7 rupees 7 paise (iii) 77 rupees 77 paise (iv) 50 paise (v) 235 paise.

Answer. There are 100 paise in 1 rupee. Therefore, if we want to convert paise into rupees, we have to divide paise by 100.

(i) 7 paise = Rs $\frac{7}{100}$ = Rs 0.07

(ii) 7 Rs 7 paise = Rs 7 + Rs $\frac{7}{100}$ = Rs 7.07

(iii) 77 Rs 77 paise = = Rs 77 + Rs $\frac{77}{100}$ = Rs 77.77

(iv) 50 paise = Rs $\frac{50}{100}$ = Rs 0.50

(v) 235 paise = $\frac{235}{100}$ rupees = Rs 2.35

Page : 47 , Block Name : Exercise 2.5

Q3 (i) Express 5 cm in metre and kilometre (ii) Express 35 mm in cm, m and km

Answer. (i) 5 cm

$5cm = \frac{5}{100}m = 0.05m$

$5\text{cm} = \frac{5}{100000}\text{km} = 0.00005\text{km}$

(ii) 35 mm

$35\text{mm} = \frac{35}{10}\text{cm} = 3.5\text{cm}$

$35\text{mm} = \frac{35}{1000}\text{m} = 0.035\text{m}$

$35\text{mm} = \frac{35}{1000000}\text{km} = 0.000035\text{km}$

Page : 47 , Block Name : Exercise 2.5

Q4 Express in kg: (i) 200 g (ii) 3470 g (iii) 4 kg 8 g

Answer. (i) 200 g = $\frac{200}{1000}\text{kg} = 0.2\text{kg}$

(ii) 3470 g = $\frac{3470}{1000}\text{kg} = 3.470\text{kg}$

(iii) 4 kg 8 g = $4\text{kg} + \frac{8}{1000}\text{kg} = 4.008\text{kg}$

Page : 48 , Block Name : Exercise 2.5

Q5 Write the following decimal numbers in the expanded form: (i) 20.03 (ii) 2.03 (iii) 200.03 (iv) 2.034

Answer. (i) 20.03 = $2 \times 10 + 0 \times 1 + 0 \times \frac{1}{10} + 3 \times \frac{1}{100}$

(ii) 2.03 = $2 \times 1 + 0 \times \frac{1}{10} + 3 \times \frac{1}{100}$

(iii) 200.03 = $2 \times 100 + 0 \times 10 + 0 \times 1 + 0 \times \frac{1}{10} + 3 \times \frac{1}{100}$

(iv) 2.034 = $2 \times 1 + 0 \times \frac{1}{10} + 3 \times \frac{1}{100} + 4 \times \frac{1}{1000}$

Page : 48 , Block Name : Exercise 2.5

Q6 Write the place value of 2 in the following decimal numbers: (i) 2.56 (ii) 21.37 (iii) 10.25 (iv) 9.42 (v) 63.352.

Answer. (i) 2.56
Ones
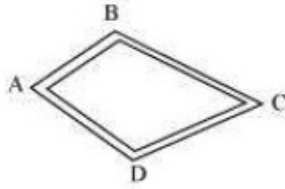(ii) 21.37
Tens
(iii) 10.25
Tenths
(iv) 9.42
Hundredths
(v) 63.352
Thousandths

Page : 48 , Block Name : Exercise 2.5

Q7 Dinesh went from place A to place B and from there to place C. A is 7.5 km from B and B is 12.7 km from C. Ayub went from place A to place D and from there to place C. D is 9.3 km from A and C is

11.8 km from D. Who travelled more and by how much?

Answer. Distance travelled by Dinesh = AB + BC = (7.5 + 12.7) km

$$
\begin{array}{r}
7.5 \\
+12.7 \\
\hline
20.2 \\
\hline
\end{array}
$$

Therefore, Dinesh travelled 20.2 km.

Distance travelled by Ayub = AD + DC = (9.3 + 11.8) km

$$
\begin{array}{r}
9.3 \\
+11.8 \\
\hline
21.1 \\
\hline
\end{array}
$$

Therefore, Ayub travelled 21.1 km.

Hence, Ayub travelled more distance.

Difference = (21.1 − 20.2) km

$$
\begin{array}{r}
21.1 \\
-20.2 \\
\hline
0.9 \\
\hline
\end{array}
$$

Therefore. Ayub travelled 0.9 km more than Dinesh

Page : 48 , Block Name : Exercise 2.5

Q8 Shyama bought 5 kg 300 g apples and 3 kg 250 g mangoes. Sarala bought 4 kg 800 g oranges and 4 kg 150 g bananas. Who bought more fruits?

Answer. Total fruits bought by Shyama = 5 kg 300 g + 3 kg 250 g

= 8 kg 550 g

$\left(8 + \frac{550}{1000}\right)$ kg

= 8.550 kg

Total fruits bought by Sarala = 4 kg 800 g + 4 kg 150 g

= 8 kg 950 g

$= \left(8 + \frac{950}{1000}\right)$ kg

= 8.90 kg

Sarala bought more fruits.

Page : 48 , Block Name : Exercise 2.5

Q9 How much less is 28 km than 42.6 km?

$$\begin{array}{r} 42.6 \\ -28.0 \\ \hline 14.6 \end{array}$$

Answer.

Therefore, 28 km is 14.6 km less than 42.6 km.

Page : 48 , Block Name : Exercise 2.5

Exercise 2.6

Q1 Find: (i) 0.2 × 6 (ii) 8 × 4.6 (iii) 2.71 × 5 (iv) 20.1 × 4 (v) 0.05 × 7 (vi) 211.02 × 4 (vii) 2 × 0.86

Answer. (i) $0.2 \times 6 = \frac{2}{10} \times 6 = \frac{12}{10} = 1.2$
(ii) $8 \times 4.6 = 8 \times \frac{46}{10} = \frac{368}{10} = 36.8$
(iii) $2.71 \times 5 = \frac{271}{100} \times 5 = \frac{1355}{100} = 13.55$
(iv) $20.1 \times 4 = \frac{201}{10} \times 4 = \frac{804}{10} = 80.4$
(v) $0.05 \times 7 = \frac{5}{100} \times 7 = \frac{35}{100} = 0.35$
(vi) $211.02 \times 4 = \frac{21102}{100} \times 4 = \frac{84408}{100} = 844.08$
(vii) $2 \times 0.86 = 2 \times \frac{86}{100} = \frac{172}{100} = 1.72$

Page : 52 , Block Name : Exercise 2.6

Q2 . Find the area of rectangle whose length is 5.7cm and breadth is 3 cm.

Answer. Length = 5.7 cm
Breadth = 3 cm
Area = Length x Breadth
= 5.7 x 3 = 17.1 cm^2

Page : 52 , Block Name : Exercise 2.6

Q3 Find: (i) 1.3 × 10 (ii) 36.8 × 10 (iii) 153.7 × 10 (iv) 168.07 × 10 (v) 31.1 × 100 (vi) 156.1 × 100 (vii) 3.62 × 100 (viii) 43.07 × 100 (ix) 0.5 × 10 (x) 0.08 × 10 (xi) 0.9 × 100 (xii) 0.03 × 1000

Answer. We know that when a decimal number is multiplied by 10, 100, 1000, the decimal point in the product is shifted to the right by as many places as there are zeroes. Therefore, these products can be calculated as
(i) $1.3 \times 10 = 13$
(ii) $36.8 \times 10 = 368$
(iii) $153.7 \times 10 = 1537$
(iv) $168.07 \times 10 = 1680.7$
(v) $31.1 \times 100 = 3110$
(vi) $156.1 \times 100 = 15610$

(vii) $3.62 \times 100 = 362$
(viii) $43.07 \times 100 = 4307$
(ix) $0.5 \times 10 = 5$
(x) $0.08 \times 10 = 0.8$
(xi) $0.9 \times 100 = 90$
(xii) $0.03 \times 1000 = 30$

Page : 52 , Block Name : Exercise 2.6

Q4 A two-wheeler covers a distance of 55.3 km in one litre of petrol. How much distance will it cover in 10 litres of petrol?

Answer. Distance covered in 1 litre of petrol = 55.3 km
Distance covered in 10 Iitre of petrol = 10 x 55.3 = 553 km
Therefore, it will cover 553 km distance in 10 litre petrol.

Page : 52 , Block Name : Exercise 2.6

Q5 Find: (i) 2.5 × 0.3 (ii) 0.1 × 51.7 (iii) 0.2 × 316.8 (iv) 1.3 × 3.1 (v) 0.5 × 0.05 (vi) 11.2 × 0.15 (vii) 1.07 × 0.02 (viii) 10.05 × 1.05 (ix) 101.01 × 0.01 (x) 100.01 × 1.1

Answer. (i) $2.5 \times 0.3 = \frac{25}{10} \times \frac{3}{10} = \frac{75}{100} = 0.75$
(ii) $0.1 \times 51.7 = \frac{1}{10} \times \frac{517}{10} = \frac{517}{100} = 5.17$
(iii) $0.2 \times 316.8 = \frac{2}{10} \times \frac{3168}{10} = \frac{6336}{100} = 63.36$
(iv) $1.3 \times 3.1 = \frac{13}{10} \times \frac{31}{10} = \frac{403}{100} = 4.03$
(v) $0.5 \times 0.05 = \frac{5}{10} \times \frac{5}{100} = \frac{25}{1000} = 0.025$
(vi) $11.2 \times 0.15 = \frac{112}{10} \times \frac{15}{100} = \frac{1680}{1000} = 1.680 = 1.68$
(vii) $1.07 \times 0.02 = \frac{107}{100} \times \frac{2}{100} = \frac{214}{10000} = 0.0214$
(viii) $10.05 \times 1.05 = \frac{1005}{100} \times \frac{105}{100} = \frac{105525}{10000} = 10.5525$
(ix) $101.01 \times 0.01 = \frac{10101}{100} \times \frac{1}{100} = \frac{10101}{10000} = 1.0101$
(x) $1001.01 \times 1.1 = \frac{100101}{100} \times \frac{11}{10} = \frac{1101111}{1000} = 1.101.111$

Page : 52 , Block Name : Exercise 2.6

Exercise 2.7

Q1 Find:
(i) 0.4 ÷ 2 (ii) 0.35 ÷ 5 (iii) 2.48 ÷ 4 (iv) 65.4 ÷ 6 (v) 651.2 ÷ 4 (vi) 14.49 ÷ 7 (vii) 3.96 ÷ 4 (viii) 0.80 ÷ 5

Answer. (i) $0.4 \div 2 = \frac{4}{10} \div 2 = \frac{4}{10} \times \frac{1}{2} = \frac{2}{10} = 0.2$
(ii) $0.35 \div 5 = \frac{35}{100} \div 5 = \frac{35}{100} \times \frac{1}{5} = \frac{7}{100} = 0.07$
(iii) $2.48 \div 4 = \frac{248}{100} \div 4 = \frac{248}{100} \times \frac{1}{4} = \frac{62}{100} = 0.62$

(iv) $65.4 \div 6 = \frac{654}{10} \div 6 = \frac{654}{10} \times \frac{1}{6} = \frac{109}{10} = 10.9$

(v) $651.2 \div 4 = \frac{6512}{10} \div 4 = \frac{6512}{10} \times \frac{1}{4} = \frac{1628}{10} = 162.8$

(vi) $14.49 \div 7 = \frac{1449}{100} \div 7 = \frac{1449}{100} \times \frac{1}{7} = \frac{207}{100} = 2.07$

(vii) $3.96 \div 4 = \frac{396}{100} \div 4 = \frac{396}{100} \times \frac{1}{4} = \frac{99}{100} = 0.99$

(viii) $0.80 \div 5 = \frac{80}{100} \div 5 = \frac{80}{100} \times \frac{1}{5} = \frac{16}{100} = 0.16$

Page : 55 , Block Name : Exercise 2.7

Q2 Find: (i) 4.8 ÷ 10 (ii) 52.5 ÷ 10 (iii) 0.7 ÷ 10 (iv) 33.1 ÷ 10 (v) 272.23 ÷ 10 (vi) 0.56 ÷ 10 (vii) 3.97 ÷10

Answer. We know that when a decimal number is divided by a multiple of 10 only (i.e., 10, 100, 1000, etc.), the decimal point will be shifted to the left by as many places as there are zeroes. Since here we are dividing by 10, the decimal will shift to the left by 1 place.

(i) 0.48

(ii) 5.25

(iii) 0.07

(iv) 3.31

(v) 27.223

(vi) 0.056

(vii) 0.397

Page : 55 , Block Name : Exercise 2.7

Q3 Find: (i) 2.7 ÷ 100 (ii) 0.3 ÷ 100 (iii) 0.78 ÷ 100 (iv) 432.6 ÷ 100 (v) 23.6 ÷100 (vi) 98.53 ÷ 100

Answer. We know that when a decimal number is divided by a multiple of 10 only (i.e., 10, 100, 1000, etc.), the decimal point will be shifted to the left by as many places as there are zeroes. Since here we are dividing by 1000, the decimal will shift to the left by 2 places.

(i) 0.027

(ii) 0.003

(iii) 0.0078

(iv) 4.326

(v) 0.236

(vi) 0.9853

Page : 55 , Block Name : Exercise 2.7

Q4 Find: (i) 7.9 ÷ 1000 (ii) 26.3 ÷ 1000 (iii) 38.53 ÷ 1000 (iv) 128.9 ÷ 1000 (v) 0.5 ÷ 1000

Answer. We know that when a decimal number is divided by a multiple of 10 only (i.e., 10, 100, 1000, etc.), the decimal point will be shifted to the left by as many places as there are zeroes. Since here we are dividing by 1000, the decimal will shift to the left by 3 places.

(i) 0.0079

(ii) 0.0263

(iii) 0.03853
(iv) 0.1289
(v) 0.0005

Page : 55 , Block Name : Exercise 2.7

Q5 Find: (i) 7 ÷ 3.5 (ii) 36 ÷ 0.2 (iii) 3.25 ÷ 0.5 (iv) 30.94 ÷ 0.7 (v) 0.5 ÷ 0.25 (vi) 7.75 ÷ 0.25 (vii) 76.5 ÷ 0.15 (viii) 37.8 ÷ 1.4 (ix) 2.73 ÷ 1.3

Answer. (i) $7 \div 3.5 = 7 \div \frac{35}{10} = 7 \times \frac{10}{35} = 2$
(ii) $36 \div 0.2 = 36 \div \frac{2}{10} = 36 \times \frac{10}{2} = 180$
(iii) $3.25 \div 0.5 = \frac{325}{100} \div \frac{5}{10} = \frac{325}{100} \times \frac{10}{5} = \frac{65}{10} = 6.5$
(iv) $30.94 \div 0.7 = \frac{3094}{100} \div \frac{7}{10} = \frac{3094}{100} \times \frac{10}{7} = \frac{442}{10} = 44.2$
(v) $0.5 \div 0.25 = \frac{5}{10} \div \frac{25}{100} = \frac{5}{10} \times \frac{100}{25} = 2$
(vi) $7.75 \div 0.25 = \frac{775}{100} \div \frac{25}{100} = \frac{775}{100} \times \frac{100}{25} = 31$
(vii) $76.5 \div 0.15 = \frac{765}{10} \div \frac{15}{100} = \frac{765}{10} \times \frac{100}{15} = 510$
(viii) $37.8 \div 1.4 = \frac{378}{10} \div \frac{14}{10} = \frac{378}{10} \times \frac{10}{14} = 27$
(ix) $2.73 \div 1.3 = \frac{273}{100} \div \frac{13}{10} = \frac{273}{100} \times \frac{10}{13} = \frac{21}{10} = 2.1$

Page : 55 , Block Name : Exercise 2.7

Q6 A vehicle covers a distance of 43.2 km in 2.4 litres of petrol. How much distance will it cover in one litre of petrol?

Answer. Distance covered in 2.4 litres of petrol = 43.2 km
∴ Distance covered in 1 litre of petrol $= = 43.2 \div 2.4 = \frac{432}{10} \div \frac{24}{10} = \frac{432}{10} \times \frac{10}{24} = 18$
Therefore, the vehicle will cover 18 km in 1 litre petrol.

Page : 55 , Block Name : Exercise 2.7