CHAPTER-2

Fractions and Decimals

EX 2.1:

Question 1
Solve:

$(i)\ 2 - \dfrac{3}{5}$. $(ii)\ 4 + \dfrac{7}{8}$

$(iii)\ \dfrac{3}{5} + \dfrac{2}{7}$ $(iv)\ \dfrac{9}{11} - \dfrac{4}{15}$

$(v)\ \dfrac{7}{10} + \dfrac{2}{5} + \dfrac{3}{2}$ $(vi)\ 2\dfrac{2}{3} + 3\dfrac{1}{2}$

$(vii)\ 8\dfrac{1}{2} - 3\dfrac{5}{8}$

Solution:

$(i)\ 2 - \dfrac{3}{5} = \dfrac{2}{1} - \dfrac{3}{5} = \dfrac{2 \times 5 - 3 \times 1}{1 \times 5}$

$\qquad = \dfrac{10 - 3}{5} = \dfrac{7}{5} = 1\dfrac{2}{5}$

Hence, $2 - \dfrac{3}{5} = 1\dfrac{2}{5}$

$$5\overline{)7}(1$$
$$\underline{-5}$$
$$2$$

$(ii)\ 4 + \dfrac{7}{8} = \dfrac{4}{1} + \dfrac{7}{8} = \dfrac{4 \times 8 + 1 \times 7}{1 \times 8}$

$\qquad = \dfrac{32 + 7}{8} = \dfrac{39}{8} = 4\dfrac{7}{8}$

Hence, $4 + \dfrac{7}{8} = 4\dfrac{7}{8}$

$$8\overline{)39}(4$$
$$\underline{-32}$$
$$7$$

$(iii)\ \dfrac{3}{5} + \dfrac{2}{7} = \dfrac{3 \times 7 + 2 \times 5}{5 \times 7} = \dfrac{21 + 10}{35} = \dfrac{31}{35}$

Hence, $\dfrac{3}{5} + \dfrac{2}{7} = \dfrac{31}{35}$

$(iv)\ \dfrac{9}{11} - \dfrac{4}{15} = \dfrac{9 \times 15 - 4 \times 11}{11 \times 15} = \dfrac{135 - 44}{165} = \dfrac{91}{165}$

Hence, $\dfrac{9}{11} - \dfrac{4}{15} = \dfrac{91}{165}$

(v) $\dfrac{7}{10} + \dfrac{2}{5} + \dfrac{3}{2} = \dfrac{7+4+15}{10}$

[LCM of 10, 5 and 2 = 10]

$= \dfrac{26}{10} = \dfrac{26 \div 2}{10 \div 2} = \dfrac{13}{5} = 2\dfrac{3}{5}$

$$5)\overline{13}(2$$
$$\underline{10}$$
$$3$$

Hence, $\dfrac{7}{10} + \dfrac{2}{5} + \dfrac{3}{2} = 2\dfrac{3}{5}$

(vi) $2\dfrac{2}{3} + 3\dfrac{1}{2} = \dfrac{8}{3} + \dfrac{7}{2} = \dfrac{8 \times 2 + 3 \times 7}{3 \times 2}$

$= \dfrac{16+21}{6} = \dfrac{37}{6} = 6\dfrac{1}{6}$

$$6)\overline{37}(6$$
$$\underline{36}$$
$$1$$

Hence, $2\dfrac{2}{3} + 3\dfrac{1}{2} = 6\dfrac{1}{6}$

(vii) $8\dfrac{1}{2} - 3\dfrac{5}{8} = \dfrac{17}{2} - \dfrac{29}{8}$ [LCM of 2 and 8 = 8]

$= \dfrac{17 \times 4 - 29 \times 1}{8}$

$= \dfrac{68-29}{8} = \dfrac{39}{8} = 4\dfrac{7}{8}$

$$8)\overline{39}(4$$
$$\underline{32}$$
$$7$$

Hence, $8\dfrac{1}{2} - 3\dfrac{5}{8} = 4\dfrac{7}{8}$

Question 2

Arrange the following in descending order:

(i) $\frac{2}{9}, \frac{2}{3}, \frac{8}{21}$ (ii) $\frac{1}{5}, \frac{3}{7}, \frac{7}{10}$

Solution:

(i) $\frac{2}{9}, \frac{2}{3}, \frac{8}{21}$

LCM of 9, 3 and 21 = 3 × 3 × 7 = 63

Making the denominator same, we have

$$\frac{2}{9} \times \frac{7}{7} = \frac{14}{63}, \quad \frac{2}{3} \times \frac{21}{21} = \frac{42}{63}$$

and $\frac{8}{21} \times \frac{3}{3} = \frac{24}{63}$

3	9, 3, 21
3	3, 1, 7
7	1, 1, 7
	1, 1, 1

Since 42 > 24 > 14

Thus $\frac{42}{63} > \frac{24}{63} > \frac{14}{63}$

Hence, $\frac{2}{3} > \frac{8}{21} > \frac{2}{9}$

(ii) $\frac{1}{5}, \frac{3}{7}, \frac{7}{10}$

2	5, 7, 10
5	5, 7, 5
7	1, 7, 1
	1, 1, 1

LCM of 5, 7 and 10

$= 2 \times 5 \times 7$

$= 70$

Making the denominator same, we have

$\frac{1}{5} \times \frac{14}{14} = \frac{14}{70}$ [∵ 70 ÷ 5 = 14]

$\frac{3}{7} \times \frac{10}{10} = \frac{30}{70}$ [∵ 70 ÷ 7 = 10]

$\frac{7}{10} \times \frac{7}{7} = \frac{49}{70}$ [∵ 70 ÷ 10 = 7]

Since 49 > 30 > 14

Thus $\frac{49}{70} > \frac{30}{70} > \frac{14}{70}$

Hence, $\frac{7}{10} > \frac{3}{7} > \frac{1}{5}$

Question 3

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

$\dfrac{4}{11}$	$\dfrac{9}{11}$	$\dfrac{2}{11}$
$\dfrac{3}{11}$	$\dfrac{5}{11}$	$\dfrac{7}{11}$
$\dfrac{8}{11}$	$\dfrac{1}{11}$	$\dfrac{6}{11}$

Solution:

Along first row, $\dfrac{4}{11} + \dfrac{9}{11} + \dfrac{2}{11} = \dfrac{15}{11}$

Along second row, $\dfrac{3}{11} + \dfrac{5}{11} + \dfrac{7}{11} = \dfrac{15}{11}$

Along third row, $\dfrac{8}{11} + \dfrac{1}{11} + \dfrac{6}{11} = \dfrac{15}{11}$

Along first column, $\dfrac{4}{11} + \dfrac{3}{11} + \dfrac{8}{11} = \dfrac{15}{11}$

Along second column, $\dfrac{9}{11} + \dfrac{5}{11} + \dfrac{1}{11} = \dfrac{15}{11}$

Along third column, $\dfrac{2}{11} + \dfrac{7}{11} + \dfrac{6}{11} = \dfrac{15}{11}$

Along first diagonal, $\dfrac{4}{11} + \dfrac{5}{11} + \dfrac{6}{11} = \dfrac{15}{11}$

Along second diagonal, $\dfrac{2}{11} + \dfrac{5}{11} + \dfrac{8}{11} = \dfrac{15}{11}$

Since, the sum of all the fraction row wise, column wise and the diagonal wise is same i.e. 1511.

Hence, it is a magic square.

Question 4

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

Solution:

Length of sheet = $12\frac{1}{2}$ cm = $\frac{25}{2}$ cm

Breadth of the sheet = $10\frac{2}{3}$ = $\frac{32}{3}$ cm

Perimeter = 2 × [length + breadth]

$$= 2 \times \left[\frac{25}{2} + \frac{32}{3} \right] \text{ cm}$$

$$= 2 \times \left[\frac{25 \times 3 + 32 \times 2}{2 \times 3} \right] \text{ cm}$$

$$= 2 \times \left[\frac{75 + 64}{6} \right] \text{ cm}$$

[LCM of 2 and 3 = 6]

$$= {}^{1}2 \times \frac{139}{6_3} = \frac{139}{3}$$

$$= 46\frac{1}{3} \text{ cm}$$

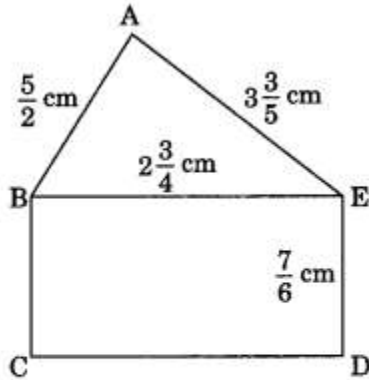$$\begin{array}{r} 3\overline{)\,139\,}(46 \\ \underline{12} \\ 19 \\ \underline{18} \\ 1 \end{array}$$

Hence, the required perimeter = $46\frac{1}{3}$ cm.

Question 5

Find the perimeter of (i) ΔABE (ii) the rectangle BCDE in this figure. Whose perimeter is greater?

Solution:

(i) Perimeter of ΔABE

$= AB + BE + AE$

$= \dfrac{5}{2}$ cm $+ 2\dfrac{3}{4}$ cm $+ 3\dfrac{3}{5}$ cm

$= \left(\dfrac{5}{2} + \dfrac{11}{4} + \dfrac{18}{5}\right)$ cm

$= \left(\dfrac{5 \times 10 + 11 \times 5 + 18 \times 4}{20}\right)$ cm

$$[\text{LCM of } 2, 4, 5 = 20]$$

$= \left(\dfrac{50 + 55 + 72}{20}\right)$ cm

$\begin{array}{r} 20\overline{)177}(8 \\ \underline{-160} \\ 17 \end{array}$

$= \dfrac{177}{20}$ cm $= 8\dfrac{17}{20}$ cm

Hence, the perimeter of ΔABE $= 8\dfrac{17}{20}$ cm.

Hence, the perimeter of $\triangle ABE = 8\dfrac{17}{20}$ cm.

(ii) Perimeter of rectangle BCDE

$$= 2 \times [\text{Length} + \text{Breadth}]$$

$$= 2 \times \left[2\dfrac{3}{4} + \dfrac{7}{6}\right] \text{ cm}$$

$$= 2 \times \left[\dfrac{11}{4} + \dfrac{7}{6}\right] \text{ cm}$$

$$= 2 \times \left[\dfrac{11 \times 3 + 7 \times 2}{12}\right] \text{ cm}$$

[LCM of 4 and 6 = 12]

$$= 2 \times \left[\dfrac{33 + 14}{12}\right] \text{ cm} = \cancel{2}^{1} \times \dfrac{47}{\cancel{12}\,6}$$

$$= \dfrac{47}{6} \text{ cm} = 7\dfrac{5}{6} \text{ cm}$$

Hence, the required perimeter

$$= 7\dfrac{5}{6} \text{ cm.}$$

$$\begin{array}{r} 6)\overline{\;47\;}(7 \\ \underline{-42} \\ 5 \end{array}$$

Since $8\dfrac{17}{20} > 7\dfrac{5}{6}$

Thus perimeter of $\triangle ABE$ is greater than the perimeter of the rectangle BCDE.

Question 6

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?

Solution:

The width of the picture

$$= 7\frac{3}{5} \text{ cm} = \frac{38}{5} \text{ cm}$$

The required width of the frame

$$= 7\frac{3}{10} \text{ cm} = \frac{73}{10} \text{ cm}$$

∴ The width of the picture to be trimmed of

$$= \frac{38}{5} \text{ cm} - \frac{73}{10} \text{ cm} = \left(\frac{38}{5} - \frac{73}{10}\right) \text{cm}$$

$$= \left(\frac{2 \times 38 - 73 \times 1}{10}\right) \text{ cm}$$

[LCM of 5 and 10 = 10]

$$= \left(\frac{76 - 73}{10}\right) \text{ cm} = \frac{3}{10} \text{ cm}$$

Hence, the required width to be trimmed $=\frac{3}{10}$ cm.

Question 7

Ritu ate $\frac{3}{5}$ 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?

Solution:

Let the whole part of the apple be 1.

Part of the apple eaten by Ritu $= \frac{3}{5}$

∴ Part of the apple eaten by her brother Somu

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

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

Since $\frac{3}{5} > \frac{2}{5}$

Thus, the share of Ritu was larger.

Difference between the two parts

$$= \frac{3}{5} - \frac{2}{5} = \frac{1}{5} \text{ part.}$$

Question 8

Michael finished colouring a picture in $\frac{7}{12}$ hour. Vaibhav finished colouring the same picture in $\frac{3}{4}$ hour. Who worked longer? By what fraction was it longer?

Solution:

Time taken by Michael = $\frac{7}{12}$ hour

Time taken by Vaibhav = $\frac{3}{4}$ hour

Comparing $\dfrac{7}{12}$ and $\dfrac{3}{4}$, we have

$$\frac{7 \times 1}{12} \text{ and } \frac{3 \times 3}{12} \quad \Rightarrow \quad \frac{7}{12} \text{ and } \frac{9}{12}$$

[LCM of 12 and 4 = 12]

Since $\dfrac{9}{12} > \dfrac{7}{12} \quad \Rightarrow \quad \dfrac{3}{4}$ hour $> \dfrac{7}{12}$ hour

Hence, time taken by Vaibhav was longer.

$$\text{Difference} = \frac{3}{4} - \frac{7}{12} = \frac{3 \times 3}{4 \times 3} - \frac{7 \times 1}{12}$$

$$= \frac{9}{12} - \frac{7}{12} = \frac{2}{12} = \frac{1}{6} \text{ hour longer.}$$

Q1 : Solve:

(i) $2 - \dfrac{3}{5}$ (ii) $4 + \dfrac{7}{8}$ (iii) $\dfrac{3}{5} + \dfrac{2}{7}$

(iv) $\dfrac{9}{11} - \dfrac{4}{15}$ (v) $\dfrac{7}{10} + \dfrac{2}{5} + \dfrac{3}{2}$ (vi) $2\dfrac{2}{3} + 3\dfrac{1}{2}$

(vii) $8\dfrac{1}{2} - 3\dfrac{5}{8}$

Answer :

(i) $2 - \dfrac{3}{5} = \dfrac{2 \times 5}{5} - \dfrac{3}{5} = \dfrac{10 - 3}{5} = \dfrac{7}{5}$

(ii) $4 + \dfrac{7}{8} = \dfrac{4 \times 8}{8} + \dfrac{7}{8} = \dfrac{(4 \times 8) + 7}{8} = \dfrac{39}{8} = 4\dfrac{7}{8}$

(iii) $\dfrac{3}{5} + \dfrac{2}{7} = \dfrac{3 \times 7}{5 \times 7} + \dfrac{2 \times 5}{7 \times 5} = \dfrac{21 + 10}{35} = \dfrac{31}{35}$

(iv) $\dfrac{9}{11} - \dfrac{4}{15} = \dfrac{9 \times 15}{11 \times 15} - \dfrac{4 \times 11}{15 \times 11} = \dfrac{135 - 44}{165} = \dfrac{91}{165}$

(v) $\dfrac{7}{10} + \dfrac{2}{5} + \dfrac{3}{2} = \dfrac{7}{10} + \dfrac{2 \times 2}{5 \times 2} + \dfrac{3 \times 5}{2 \times 5} = \dfrac{7 + 4 + 15}{10} = \dfrac{26}{10} = \dfrac{13}{5} = 2\dfrac{3}{5}$

(vi) $2\dfrac{2}{3} + 3\dfrac{1}{2} = \dfrac{8}{3} + \dfrac{7}{2} = \dfrac{8 \times 2}{3 \times 2} + \dfrac{7 \times 3}{2 \times 3} = \dfrac{16 + 21}{6} = \dfrac{37}{6} = 6\dfrac{1}{6}$

(vii) $8\dfrac{1}{2} - 3\dfrac{5}{8} = \dfrac{17}{2} - \dfrac{29}{8} = \dfrac{17 \times 4}{2 \times 4} - \dfrac{29}{8} = \dfrac{68 - 29}{8} = \dfrac{39}{8} = 4\dfrac{7}{8}$

(i) $\dfrac{2}{9}, \dfrac{2}{3}, \dfrac{8}{21}$ (ii) $\dfrac{1}{5}, \dfrac{3}{7}, \dfrac{7}{10}$

Answer :

(i) $\dfrac{2}{9}, \dfrac{2}{3}, \dfrac{8}{21}$

Changing them to like fractions, we obtain

$$\dfrac{2}{9} = \dfrac{2 \times 7}{9 \times 7} = \dfrac{14}{63}$$

$$\dfrac{2}{3} = \dfrac{2 \times 21}{3 \times 21} = \dfrac{42}{63}$$

$$\dfrac{8}{21} = \dfrac{8 \times 3}{21 \times 3} = \dfrac{24}{63}$$

Since 42>24>14,

$$\therefore \dfrac{2}{3} > \dfrac{8}{21} > \dfrac{2}{9}$$

(ii) $\dfrac{1}{5}, \dfrac{3}{7}, \dfrac{7}{10}$

Changing them to like fractions, we obtain

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

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

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

As 49 > 30>14,

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

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

$\frac{4}{11}$	$\frac{9}{11}$	$\frac{2}{11}$
$\frac{3}{11}$	$\frac{5}{11}$	$\frac{7}{11}$
$\frac{8}{11}$	$\frac{1}{11}$	$\frac{6}{11}$

(Along the first row $\frac{4}{11}+\frac{9}{11}+\frac{2}{11}=\frac{15}{11}$)

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 = $\frac{4}{11}+\frac{5}{11}+\frac{6}{11}=\frac{15}{11}$

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

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

Find its perimeter.
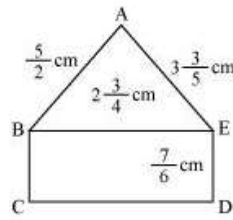
Answer :

Length $= 12\frac{1}{2}$ cm $= \frac{25}{2}$ cm

Breadth $= 10\frac{2}{3}$ cm $= \frac{32}{3}$ cm

Perimeter = 2 × (Length + Breadth)

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

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

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

Answer :

(i) Perimeter of ∆ABE = AB + BE + EA

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

$$= \left(\frac{5\times10}{2\times10} + \frac{11\times5}{4\times5} + \frac{18\times4}{5\times4}\right)$$

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

(ii)

Perimeter of rectangle = 2 (Length + Breadth)

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

$$= 2\left[\frac{11\times3}{4\times3} + \frac{7\times2}{6\times2}\right] = 2\left[\frac{33+14}{12}\right]$$

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

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

Changing them to like fractions, we obtain

$$\frac{177}{20} = \frac{177\times3}{20\times3} = \frac{531}{60}$$

$$\frac{43}{6} = \frac{43\times10}{6\times10} = \frac{430}{60}$$

As 531 > 430,

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

Perimeter (∆ABE) > Perimeter (BCDE)

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 $= \left(\frac{38}{5} - \frac{73}{10}\right)$

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

Q7 : Ritu ate $\frac{3}{5}$ 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 $= \frac{3}{5}$

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

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

Therefore, Somu ate $\frac{2}{5}$ 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 $\frac{1}{5}$.

Q8 : Michael finished colouring a picture in $\frac{7}{12}$ hour. Vaibhav finished colouring the same picture in $\frac{3}{4}$ hour. Who worked longer? By what fraction was it longer?

Answer :

Time taken by Michael $= \frac{7}{12}$ hr

Time taken by Vaibhav $= \frac{3}{4}$ hr

Converting these fractions into like fractions, we obtain

$\frac{3}{4} = \frac{3 \times 3}{4 \times 3} = \frac{9}{12}$
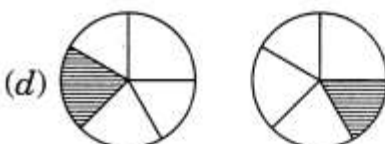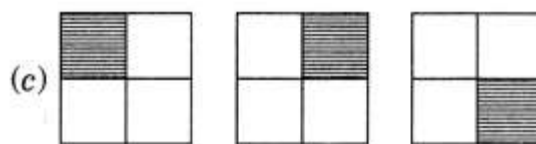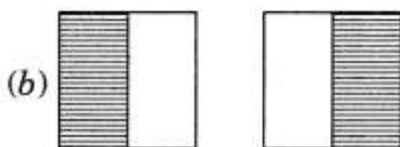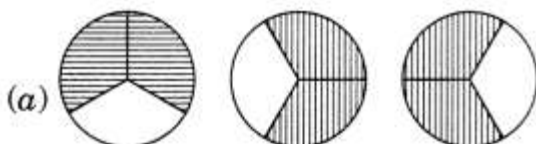
And, $\frac{7}{12}$

Since 9 > 7,

Vaibhav worked longer.

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

Ex 2.2:-

Question 1
Which of the drawings (a) to (d) show.
(i) $2 \times \frac{1}{5}$ (iii) $3 \times \frac{2}{3}$ (ii) $2 \times \frac{1}{2}$ (iv) $3 \times \frac{1}{4}$

Solution:
(i) $2 \times \frac{1}{5}$ represents drawing (d)
(ii) $2 \times \frac{1}{2}$ represents drawing (b)

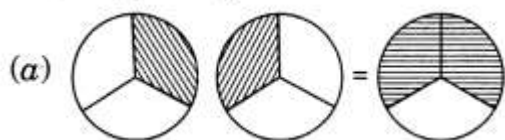(iii) 3×23 represents drawing (a)

(ic) 3×14 represents drawing (c)

Question 2

Some pictures (a) to (c) are given below. Tell which of them show:

(i) $3 \times \dfrac{1}{5} = \dfrac{3}{5}$ (ii) $2 \times \dfrac{1}{3} = \dfrac{2}{3}$

(iii) $3 \times \dfrac{3}{4} = 2\dfrac{1}{4}$

(a)

(b)

(c)

Solution:

(i) $3 \times 15 = 35$ represents figure (c)

(ii) $2 \times 13 = 23$ represents figure (a)

(iii) $3 \times 34 = 214$ represents figure (b)

Question 3

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

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

(iv) $5 \times \dfrac{2}{9}$ (v) $\dfrac{2}{3} \times 4$ (vi) $\dfrac{5}{2} \times 6$

(vii) $11 \times \dfrac{4}{7}$ (viii) $20 \times \dfrac{4}{5}$ (ix) $13 \times \dfrac{1}{3}$

(x) $15 \times \dfrac{3}{5}$

Solution:

$(i)\ 7 \times \dfrac{3}{5} = \dfrac{21}{5} = 4\dfrac{1}{5}$

$$5\overline{)\ 21\ }(4$$
$$\underline{-20}$$
$$1$$

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

$$3\overline{)\ 4\ }(1$$
$$\underline{-3}$$
$$1$$

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

$$7\overline{)\ 12\ }(1$$
$$\underline{-7}$$
$$5$$

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

$$9\overline{)\ 10\ }(1$$
$$\underline{-9}$$
$$1$$

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

$$3\overline{)\ 8\ }(2$$
$$\underline{-6}$$
$$2$$

$(vi)\ \dfrac{5}{2} \times 6 = \dfrac{\cancel{30}^{15}}{\cancel{2}} = 15$

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

$$7\overline{)\ 44\ }(6$$
$$\underline{-42}$$
$$2$$

$(viii)\ 20 \times \dfrac{4}{5} = \dfrac{\cancel{80}^{16}}{\cancel{5}} = 16$

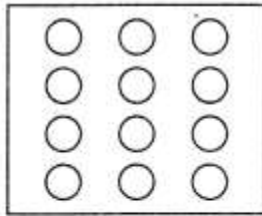$(ix)\ 13 \times \dfrac{1}{3} = \dfrac{13}{3} = 4\dfrac{1}{3}$

$$3\overline{)\ 13\ }(4$$
$$\underline{-12}$$
$$1$$

$(x)\ 15 \times \dfrac{3}{5} = \dfrac{\cancel{45}^{9}}{\cancel{5}} = 9$

Shade:
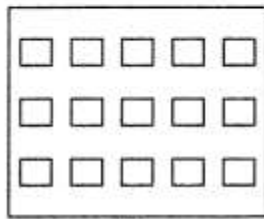(i) $\frac{1}{2}$ of the circles in box (a)
(ii) $\frac{2}{3}$ of the circles in box (b)
(iii) $\frac{3}{5}$ of the circles in box (c)

(a)
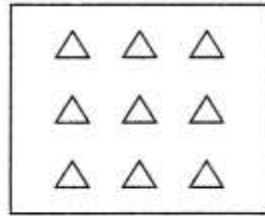
(b)

(c)

Solution:

(i) $\frac{1}{2}$ of the circles

(a)
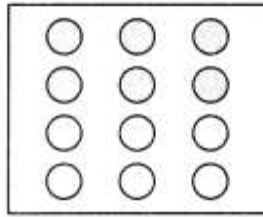
$= \frac{1}{\cancel{2}} \times \cancel{12}^{6} = 6$ circles are to be shaded.

(ii) $\frac{2}{3}$ of the triangles $= \frac{2}{\cancel{3}} \times \cancel{9}^{3}$
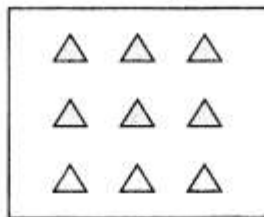
(b)

$= 6$ triangles are to be shaded

(iii) $\frac{3}{5}$ of the squares $= \frac{3}{\cancel{5}} \times \cancel{15}^{3}$
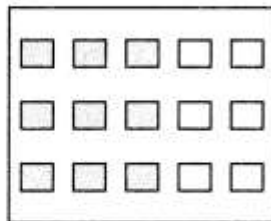
(c)

$= 9$ squares are to be shaded

Question 5

Find:

(a) $\dfrac{1}{2}$ of (i) 24 (ii) 46   (b) $\dfrac{2}{3}$ of (i) 18 (ii) 27

(c) $\dfrac{3}{4}$ of (i) 16 (ii) 36   (d) $\dfrac{4}{5}$ of (i) 20 (ii) 35

Solution:

(a) (i) $\dfrac{1}{2}$ of 24 = $\dfrac{1}{2} \times 24^{12} = 12$

(ii) $\dfrac{1}{2}$ of 46 = $\dfrac{1}{2} \times 46^{23} = 23$

(b) (i) $\dfrac{2}{3}$ of 18 = $\dfrac{2}{3} \times 18^{6} = 12$

(ii) $\dfrac{2}{3}$ of 27 = $\dfrac{2}{3} \times 27^{9} = 18$

(c) (i) $\dfrac{3}{4}$ of 16 = $\dfrac{3}{4} \times 16^{4} = 12$

(ii) $\dfrac{3}{4}$ of 36 = $\dfrac{3}{4} \times 36^{9} = 27$

(d) (i) $\dfrac{4}{5}$ of 20 = $\dfrac{4}{5} \times 20^{4} = 16$

(ii) $\dfrac{4}{5}$ of 35 = $\dfrac{4}{5} \times 37^{7} = 28$

Question 6

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

Solution:

(a) $3 \times 5\frac{1}{5} = 3 \times \frac{26}{5}$

$= \frac{78}{5}$

$= 15\frac{3}{5}$

$$5 \overline{)\ 7\ 8\ }(15$$
$$-5$$
$$\overline{\quad 2\ 8}$$
$$-2\ 5$$
$$\overline{\qquad 3}$$

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

$= \frac{135}{4}$

$= 33\frac{3}{4}$

$$4 \overline{)\ 1\ 3\ 5\ }(33$$
$$-1\ 2$$
$$\overline{\quad 1\ 5}$$
$$-1\ 2$$
$$\overline{\qquad 3}$$

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

$= \frac{63}{4} = 15\frac{3}{4}$

$$
\begin{array}{r}
4\overline{)63}\,(15 \\
-4 \\
\hline
23 \\
-20 \\
\hline
3
\end{array}
$$

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

$= \frac{76}{3}$

$= 25\frac{1}{3}$

$$
\begin{array}{r}
3\overline{)76}\,(25 \\
-6 \\
\hline
16 \\
-15 \\
\hline
1
\end{array}
$$

(e) $3\frac{1}{4} \times 6 = \frac{13}{\cancel{4}_2} \times \cancel{6}^3$

$= \frac{13 \times 3}{2}$

$= \frac{39}{2} = 19\frac{1}{2}$

$$
\begin{array}{r}
2\overline{)39}\,(19 \\
-2 \\
\hline
19 \\
-18 \\
\hline
1
\end{array}
$$

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

$= \frac{136}{5}$

$= 27\frac{1}{5}$

$$
\begin{array}{r}
5\overline{)136}\,(27 \\
-10 \\
\hline
36 \\
-35 \\
\hline
1
\end{array}
$$

Question 7
Find:

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

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

Solution:

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

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

Question 8

Vidya and Pratap went for a picnic. Their mother gave them a water bottle that contained 5 litres of water. Vidya consumed 25 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?

Solution:

(i) Water consumed by Vidya = 25 of 5 litres

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

Water consumed by Patap

= 5 litres − 2 litres = 3 litres

(ii) Fraction of water consumed by Pratap

= 35 litres

Exercise 2.2 : Solutions of Questions on Page Number : 36

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) $3 \times \frac{1}{4}$
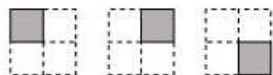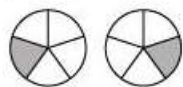
(a)
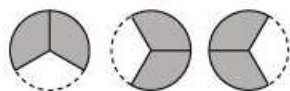
(b)

(c)

(d)

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).

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) $3 \times \frac{3}{4} = 2\frac{1}{4}$

(a)

(b)
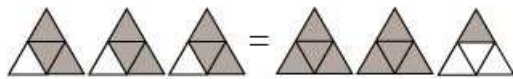
(c)
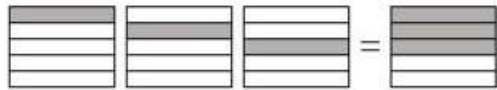
Answer :

(i) $3 \times \frac{1}{5}$ represents the addition of 3 figures, each representing 1 shaded part out of 5 equal parts and $\frac{3}{5}$ represents 3 shaded parts out of 5 equal parts. Hence, $3 \times \frac{1}{5} = \frac{3}{5}$ 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 $\frac{2}{3}$ represents 2 shaded parts out of 3 equal parts. Hence, $2 \times \frac{1}{3} = \frac{2}{3}$ is represented by (a).
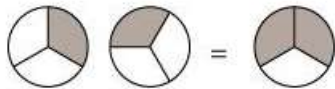
(iii) $3 \times \frac{3}{4}$ represents the addition of 3 figures, each representing 3 shaded parts out of 4 equal parts and $2\frac{1}{4}$ represents 2 fully shaded figures and one figure having 1 part as shaded out of 4 equal parts. Hence, $3 \times \frac{3}{4} = 2\frac{1}{4}$ is represented by (b)

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

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

(v) $\dfrac{2}{3} \times 4$ (vi) $\dfrac{5}{2} \times 6$ (vii) $11 \times \dfrac{4}{7}$ (viii) $20 \times \dfrac{4}{5}$

(ix) $13 \times \dfrac{1}{3}$ (x) $15 \times \dfrac{3}{5}$

Answer :

(i) $7 \times \dfrac{3}{5} = \dfrac{21}{5} = 4\dfrac{1}{5}$

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

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

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

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

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

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

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

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

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

Q4 : Shade:

(i) $\frac{1}{2}$ of the circles in box (a) (ii) $\frac{2}{3}$ of the triangles in box (b)

(iii) $\frac{3}{5}$ of the squares in box (c)
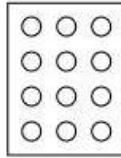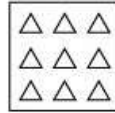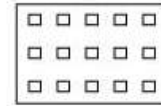
(a)   (b)   (c)

Answer :

(i) It can be observed that there are 12 circles in the given box. We have to shade $\frac{1}{2}$ of the circles in it. As $12 \times \frac{1}{2} = 6$, therefore, we will shade any 6 circles of it.
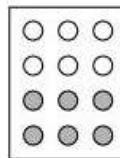
Q5 : Find:

(a) $\frac{1}{2}$ of (i) 24 (ii) 46

(b) $\frac{2}{3}$ of (i) 18 (ii) 27

(c) $\frac{3}{4}$ of (i) 16 (ii) 36

(d) $\frac{4}{5}$ 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) $\frac{4}{5} \times 35 = 28$

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

Q7 : Find (a) $\frac{1}{2}$ of (i) $2\frac{3}{4}$ (ii) $4\frac{2}{9}$ (b) $\frac{5}{8}$ 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) $\frac{5}{8} \times 9\frac{2}{3} = \frac{5}{8} \times \frac{29}{3} = \frac{145}{24} = 6\frac{1}{24}$

Q8 : Vidya and Pratap went for a picnic. Their mother gave them a water bottle that contained 5 litres of water. Vidya consumed $\frac{2}{5}$ 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 = $\frac{2}{5}$ of 5 litres

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

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

Ex 2.3:-

Question 1
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) $\frac{3}{10}$

Solution:

(i) (a) $\frac{1}{4}$ of $\frac{1}{4} = \frac{1}{4} \times \frac{1}{4} = \frac{1 \times 1}{4 \times 4} = \frac{1}{16}$

(b) $\frac{1}{4}$ of $\frac{3}{5} = \frac{1}{4} \times \frac{3}{5} = \frac{1 \times 3}{4 \times 5} = \frac{3}{20}$

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

(ii) (a) $\frac{1}{7}$ of $\frac{2}{9} = \frac{1}{7} \times \frac{2}{9} = \frac{1 \times 2}{7 \times 9} = \frac{2}{63}$

(b) $\frac{1}{7}$ of $\frac{6}{5} = \frac{1}{7} \times \frac{6}{5} = \frac{1 \times 6}{7 \times 5} = \frac{6}{35}$

(c) $\frac{1}{7}$ of $\frac{3}{10} = \frac{1}{7} \times \frac{3}{10} = \frac{1 \times 3}{7 \times 10} = \frac{3}{70}$

Question 2

Multiply and reduce to lowest form (if possible):

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

(iv) $\dfrac{9}{5} \times \dfrac{3}{5}$ (v) $\dfrac{1}{3} \times \dfrac{15}{8}$ (vi) $\dfrac{11}{2} \times \dfrac{3}{10}$

(vii) $\dfrac{4}{5} \times \dfrac{12}{7}$

Solution:

(i) $\dfrac{2}{3} \times 2\dfrac{2}{3} = \dfrac{2}{3} \times \dfrac{8}{3} = \dfrac{2 \times 8}{3 \times 3}$

$\quad = \dfrac{16}{9} = 1\dfrac{7}{9}$

$$9)\overline{16}\,(1$$
$$\underline{-9}$$
$$7$$

(ii) $\dfrac{2}{7} \times \dfrac{7}{9} = \dfrac{2 \times 7}{7 \times 9} = \dfrac{14}{63} = \dfrac{14 \div 7}{63 \div 7} = \dfrac{2}{9}$

(iii) $\dfrac{3}{8} \times \dfrac{6}{4} = \dfrac{3 \times 6}{8 \times 4} = \dfrac{18}{32} = \dfrac{18 \div 2}{32 \div 2} = \dfrac{9}{16}$

(iv) $\dfrac{9}{5} \times \dfrac{3}{5} = \dfrac{9 \times 3}{5 \times 5} = \dfrac{27}{25} = 1\dfrac{2}{25}$

$$25)\overline{27}\,(1$$
$$\underline{-25}$$
$$2$$

(v) $\dfrac{1}{3} \times \dfrac{15}{8} = \dfrac{1 \times 15}{3 \times 8} = \dfrac{15}{24} = \dfrac{15 \div 3}{24 \div 3} = \dfrac{5}{8}$

(vi) $\dfrac{11}{2} \times \dfrac{3}{10} = \dfrac{11 \times 3}{2 \times 10} = \dfrac{33}{20} = 1\dfrac{13}{20}$

$$20)\overline{33}\,(1$$
$$\underline{-20}$$
$$13$$

(vii) $\dfrac{4}{5} \times \dfrac{12}{7} = \dfrac{4 \times 12}{5 \times 7} = \dfrac{48}{35} = 1\dfrac{13}{35}$

$$35)\overline{48}\,(1$$
$$\underline{-35}$$
$$13$$

Question 3

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) $3\frac{4}{7} \times \frac{3}{5}$

Solution:

(i) $\dfrac{2}{5} \times 5\dfrac{1}{4} = \dfrac{\cancel{2}}{5} \times \dfrac{21}{\cancel{4}_2} = \dfrac{1 \times 21}{5 \times 2}$

$$= \dfrac{21}{10} = 2\dfrac{1}{10}$$

$$10\overline{)21}(2$$
$$\underline{-20}$$
$$1$$

(ii) $6\dfrac{2}{5} \times \dfrac{7}{9} = \dfrac{32}{5} \times \dfrac{7}{9} = \dfrac{32 \times 7}{5 \times 9}$

$$= \dfrac{224}{45} = 4\dfrac{44}{45}$$

$$45\overline{)224}(4$$
$$\underline{-180}$$
$$\overline{-44}$$

(iii) $\dfrac{3}{2} \times 5\dfrac{1}{3} = \dfrac{\cancel{3}}{\cancel{2}} \times \dfrac{\cancel{16}^8}{\cancel{3}} = 8$

(iv) $\dfrac{5}{6} \times 2\dfrac{3}{7} = \dfrac{5}{6} \times \dfrac{17}{7} = \dfrac{85}{42} = 2\dfrac{1}{42}$

$$42\overline{)85}(2$$
$$\underline{-84}$$
$$1$$

(v) $3\dfrac{2}{5} \times \dfrac{4}{7} = \dfrac{17}{5} \times \dfrac{4}{7} = \dfrac{68}{35} = 1\dfrac{33}{35}$

$$35\overline{)68}(1$$
$$\underline{-35}$$
$$\overline{33}$$

(vi) $2\dfrac{3}{5} \times 3 = \dfrac{13}{5} \times 3 = \dfrac{39}{5} = 7\dfrac{4}{5}$

$$5\overline{)39}(7$$
$$\underline{-35}$$
$$4$$

(vii) $3\dfrac{4}{7} \times \dfrac{3}{5} = \dfrac{\cancel{25}^5}{7} \times \dfrac{3}{\cancel{5}} = \dfrac{5 \times 3}{7}$

$$= \dfrac{15}{7} = 2\dfrac{1}{7}$$

$$7\overline{)15}(2$$
$$\underline{-14}$$
$$1$$

Question 4

Which is greater:

(i) $\dfrac{2}{7}$ of $\dfrac{3}{4}$ or $\dfrac{3}{5}$ of $\dfrac{5}{8}$ (ii) $\dfrac{1}{2}$ of $\dfrac{6}{7}$ or $\dfrac{2}{3}$ of $\dfrac{3}{7}$

Solution:

(i) $\dfrac{2}{7}$ of $\dfrac{3}{4} = \dfrac{\cancel{2}}{7} \times \dfrac{3}{\cancel{4}_2} = \dfrac{1 \times 3}{7 \times 2} = \dfrac{3}{14}$

$\dfrac{3}{5}$ of $\dfrac{5}{8} = \dfrac{3}{\cancel{5}} \times \dfrac{\cancel{5}}{8} = \dfrac{3}{8}$

Since in $\dfrac{3}{14}$ and $\dfrac{3}{8}$, their numerators are same and $14 > 8$.

$\therefore \quad \dfrac{3}{14} < \dfrac{3}{8}$ or $\dfrac{3}{8} > \dfrac{3}{14}$

Hence, $\dfrac{3}{5}$ of $\dfrac{5}{8} > \dfrac{2}{7}$ of $\dfrac{3}{4}$

(ii) $\dfrac{1}{2}$ of $\dfrac{6}{7}$ or $\dfrac{2}{3}$ of $\dfrac{3}{7}$

$\dfrac{1}{2}$ of $\dfrac{6}{7} = \dfrac{1}{2} \times \dfrac{6}{7} = \dfrac{1 \times 6}{2 \times 7} = \dfrac{\cancel{6}^3}{\cancel{14}_7} = \dfrac{3}{7}$

$\dfrac{2}{3}$ of $\dfrac{3}{7} = \dfrac{2}{\cancel{3}} \times \dfrac{\cancel{3}}{7} = \dfrac{2}{7}$

Here, denominators are same.

$\therefore \quad \dfrac{2}{7} < \dfrac{3}{7}$ or $\dfrac{3}{7} > \dfrac{2}{7}$

Hence, $\dfrac{1}{2}$ of $\dfrac{6}{7} > \dfrac{2}{3}$ of $\dfrac{3}{7}$

Question 5
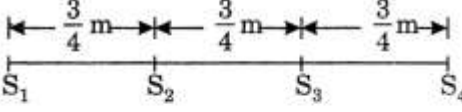
Saili plants 4 saplings, in a row, in her garden. The distance between two adjacent saplings is 34 m. Find the distance between the first and the last sapling.

Solution:

Number of saplings = 4

Distance between two adjacent saplings = 34 m

∴ Distance between the first and the last sapling

$$= \frac{3}{4} \text{ m} + \frac{3}{4} \text{ m} + \frac{3}{4} \text{ m} = 3 \times \frac{3}{4} \text{ m}$$

$$= \frac{9}{4} \text{ m} = 2\frac{1}{4} \text{ m}$$

Question 6

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?

Solution:

In 1 day Lipika needs $1\frac{3}{4}$ hours

In 6 days Lipika will need $6 \times 1\frac{3}{4}$ hours

$$= \overset{3}{\cancel{6}} \times \frac{7}{\underset{2}{\cancel{4}}} \text{ hours} = \frac{3 \times 7}{2} \text{ hours}$$

$$= \frac{21}{2} \text{ hours} = 10\frac{1}{2} \text{ hours}$$

Hence the required hours = $10\frac{1}{2}$.

Question 7

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

Solution:

In 1 litre of petrol, the car covers 16 km distance In $2\frac{3}{4}$ litres of petrol, the car will cover $2\frac{3}{4} \times 16$ km distance

$$= 2\frac{3}{4} \times 16 \text{ km} = \frac{11}{\cancel{4}} \times \cancel{16}^{4} \text{ km}$$

$$= 11 \times 4 \text{ km} = 44 \text{ km}$$

Hence, the required distance = 44 km.

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

(ii) The simplest form of the number obtained in $\boxed{}$ is _____.

(b) (i) Provide the number in the box $\boxed{}$, such that $\dfrac{3}{5} \times \boxed{} = \dfrac{24}{75}$.

(ii) The simplest form of the number obtained in $\boxed{}$ is _____.

Solution:

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

Hence, the required number in $\boxed{}$ is $\dfrac{5}{10}$.

(ii) The simplest form of the number obtained in $\boxed{}$ is $\dfrac{\cancel{5}}{\cancel{10}\,2} = \dfrac{1}{2}$.

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

Hence, the required number in the box $\boxed{}$ is $\dfrac{24}{75}$.

Simplest form of $\dfrac{\cancel{24}^{\,8}}{\cancel{75}_{\,25}} = \dfrac{8}{25}$.

(ii) The simplest form of the number obtained in $\boxed{}$ is $\dfrac{8}{25}$.

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) $\frac{1}{7} \times \frac{3}{10} = \frac{3}{70}$

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

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

(iv) $\dfrac{9}{5} \times \dfrac{3}{5}$ (v) $\dfrac{1}{3} \times \dfrac{15}{8}$ (vi) $\dfrac{11}{2} \times \dfrac{3}{10}$

(vii) $\dfrac{4}{5} \times \dfrac{12}{7}$

Answer :

(i) $\dfrac{2}{3} \times 2\dfrac{2}{3} = \dfrac{2}{3} \times \dfrac{8}{3} = \dfrac{16}{9} = 1\dfrac{7}{9}$

(ii) $\dfrac{2}{7} \times \dfrac{7}{9} = \dfrac{2}{9}$

(iii) $\dfrac{3}{8} \times \dfrac{6}{4} = \dfrac{9}{16}$

(iv) $\dfrac{9}{5} \times \dfrac{3}{5} = \dfrac{27}{25} = 1\dfrac{2}{25}$

(v) $\dfrac{1}{3} \times \dfrac{15}{8} = \dfrac{5}{8}$

(vi) $\dfrac{11}{2} \times \dfrac{3}{10} = \dfrac{33}{20} = 1\dfrac{13}{20}$

(vii) $\dfrac{4}{5} \times \dfrac{12}{7} = \dfrac{48}{35} = 1\dfrac{13}{35}$

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) $3\dfrac{2}{5} \times \dfrac{4}{7} = \dfrac{17}{5} \times \dfrac{4}{7} = \dfrac{68}{35}$

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

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

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

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

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

Q4 : Which is greater:

(i) $\dfrac{2}{7}$ of $\dfrac{3}{4}$ or $\dfrac{3}{5}$ of $\dfrac{5}{8}$

(ii) $\dfrac{1}{2}$ of $\dfrac{6}{7}$ or $\dfrac{2}{3}$ of $\dfrac{3}{7}$

Answer :

(i) $\dfrac{2}{7} \times \dfrac{3}{4} = \dfrac{3}{14}$

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

Converting these fractions into like fractions,

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

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

Since $\dfrac{21}{56} > \dfrac{12}{56}$,

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

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

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

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

Since $3 > 2$,

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

Q5 : Saili plants 4 saplings, in a row, in her garden. The distance between two adjacent saplings is $\frac{3}{4}$ m. Find the distance between the first and the last sapling.

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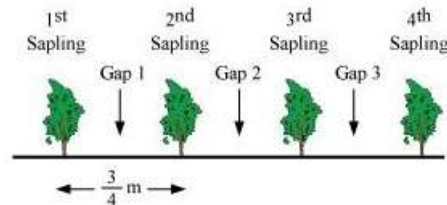
From the figure, it can be observed that gaps between 1st and last sapling = 3

Length of 1 gap = $\frac{3}{4}$ m

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

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 = $1\frac{3}{4} = \frac{7}{4}$ hours

Number of days = 6

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

= $\frac{21}{2} = 10\frac{1}{2}$ hours

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 $\frac{11}{4}$ litre petrol = $\frac{11}{4} \times 16$ = 44 km

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

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 $\frac{2}{3} \times \frac{5}{10} = \frac{10}{30}$,

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

$\frac{5}{10}$.

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

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

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

$\frac{8}{15}$.

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

Ex 2.4:-

Question 1
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) $5 \div 3\dfrac{4}{7}$

Solution:

(i) $12 \div \dfrac{3}{4} = \cancel{12}^{4} \times \dfrac{4}{\cancel{3}} = 4 \times 4 = 16$

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

$= \dfrac{84}{5} = 16\dfrac{4}{5}$

$$\begin{array}{r} 5\overline{)84}(16 \\ -5 \\ \hline 34 \\ -30 \\ \hline 4 \end{array}$$

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

$$\begin{array}{r} 7\overline{)24}(3 \\ -21 \\ \hline 3 \end{array}$$

(iv) $4 \div \dfrac{8}{3} = \cancel{4} \times \dfrac{3}{\cancel{8}_2} = \dfrac{3}{2} = 1\dfrac{1}{2}$

$$\begin{array}{r} 2\overline{)3}(1 \\ -2 \\ \hline 1 \end{array}$$

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

$= \dfrac{9}{7} = 1\dfrac{2}{7}$

$$\begin{array}{r} 7\overline{)9}(1 \\ -7 \\ \hline 2 \end{array}$$

(vi) $5 \div 3\dfrac{4}{7} = 5 \div \dfrac{25}{7} = \cancel{5}^{1} \times \dfrac{7}{\cancel{25}_5}$

$= \dfrac{7}{5} = 1\dfrac{2}{5}$

$$\begin{array}{r} 5\overline{)7}(1 \\ -5 \\ \hline 2 \end{array}$$

Question 2

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

(i) $\dfrac{3}{7}$ (ii) $\dfrac{5}{8}$ (iii) $\dfrac{9}{7}$ (iv) $\dfrac{6}{5}$

(v) $\dfrac{12}{7}$ (vi) $\dfrac{1}{8}$ (vii) $\dfrac{1}{11}$

Solution:

(i) Reciprocal of $\frac{3}{7}=\frac{7}{3}$, which is improper fraction.

(ii) Reciprocal of $\frac{5}{8}=\frac{8}{5}$, which is improper fraction.

(iii) Reciprocal of $\frac{9}{7}=\frac{7}{9}$, which is proper fraction.

(iv) Reciprocal of $\frac{6}{5}=\frac{5}{6}$, which is proper fraction.

(vi) Reciprocal of $\frac{12}{7}=\frac{7}{12}$, which is proper fraction.

(vi) Reciprocal of $\frac{1}{8}=8$, which is whole number.

(vii) Reciprocal of $\frac{1}{11}=11$, which is whole number.

Question 3

Find:

(i) $\dfrac{7}{3}\div 2$ (ii) $\dfrac{4}{9}\div 5$ (iii) $\dfrac{6}{13}\div 7$

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

Solution:

(i) $\dfrac{7}{3}\div 2 = \dfrac{7}{3}\times\dfrac{1}{2} = \dfrac{7}{6} = 1\dfrac{1}{6}$

$$6\overline{)7\,(1}$$
$$\underline{-6}$$
$$1$$

(ii) $\dfrac{4}{9}\div 5 = \dfrac{4}{9}\times\dfrac{1}{5} = \dfrac{4}{45}$

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

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

$\qquad = \dfrac{13}{9} = 1\dfrac{4}{9}$

$$9\overline{)13\,(1}$$
$$\underline{-9}$$
$$4$$

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

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

Question 4

Find:

(i) $\dfrac{2}{5} \div \dfrac{1}{2}$ (ii) $\dfrac{4}{9} \div \dfrac{2}{3}$ (iii) $\dfrac{3}{7} \div \dfrac{8}{7}$

(iv) $2\dfrac{1}{3} \div \dfrac{3}{5}$ (v) $3\dfrac{1}{2} \div \dfrac{8}{3}$ (vi) $\dfrac{2}{5} \div 1\dfrac{1}{2}$

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

Solution:

(i) $\dfrac{2}{5} \div \dfrac{1}{2} = \dfrac{2}{5} \times \dfrac{2}{1} = \dfrac{4}{5}$

(ii) $\dfrac{4}{9} \div \dfrac{2}{3} = \dfrac{\cancel{4}^{2}}{\cancel{9}_{3}} \times \dfrac{\cancel{3}^{1}}{\cancel{2}_{1}} = \dfrac{2}{3}$

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

(iv) $2\dfrac{1}{3} \div \dfrac{3}{5} = \dfrac{7}{3} \div \dfrac{3}{5} = \dfrac{7}{3} \times \dfrac{5}{3}$

$= \dfrac{35}{9} = 3\dfrac{8}{9}$

$$9\overline{)\,35\,}(3$$
$$\underline{-27}$$
$$8$$

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

$= \dfrac{21}{16} = 1\dfrac{5}{16}$

$$16\overline{)\,21\,}(1$$
$$\underline{-16}$$
$$5$$

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

(vii) $3\dfrac{1}{5} \div 1\dfrac{2}{3} = \dfrac{16}{5} \div \dfrac{5}{3} = \dfrac{16}{5} \times \dfrac{3}{5}$

$= \dfrac{48}{25} = 1\dfrac{23}{25}$

$$25\overline{)\,48\,}(1$$
$$\underline{-25}$$
$$23$$

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

$= \dfrac{11}{6} = 1\dfrac{5}{6}$

$$6\overline{)\,11\,}(1$$
$$\underline{-6}$$
$$5$$

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) $12 \div \dfrac{3}{4} = 12 \times \dfrac{4}{3} = 16$

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

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

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

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

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

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

(i) $\frac{3}{7}$ (ii) $\frac{5}{8}$ (iii) $\frac{9}{7}$

(iv) $\frac{6}{5}$ (v) $\frac{12}{7}$ (vi) $\frac{1}{8}$

(vii) $\frac{1}{11}$

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) $\frac{3}{7}$

Reciprocal = $\frac{7}{3}$

Therefore, it is an improper fraction.

(ii) $\frac{5}{8}$

Reciprocal = $\frac{8}{5}$

Therefore, it is an improper fraction.

(iii) $\frac{9}{7}$

Reciprocal = $\frac{7}{9}$

Therefore, it is a proper fraction.

(iv) $\dfrac{6}{5}$

Reciprocal $= \dfrac{5}{6}$

Therefore, it is a proper fraction.

(v) $\dfrac{12}{7}$

Reciprocal $= \dfrac{7}{12}$

Therefore, it is a proper fraction.

(vi) $\dfrac{1}{8}$

Reciprocal $= \dfrac{8}{1}$

Therefore, it is a whole number.

(vii) $\dfrac{1}{11}$

Reciprocal $= \dfrac{11}{1}$

Therefore, it is a whole number.

Q3 : Find:

(i) $\dfrac{7}{3} \div 2$ (ii) $\dfrac{4}{9} \div 5$ (iii) $\dfrac{6}{13} \div 7$

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

Answer :

(i) $\dfrac{7}{3} \div 2 = \dfrac{7}{3} \times \dfrac{1}{2} = \dfrac{7}{6}$

(ii) $\dfrac{4}{9} \div 5 = \dfrac{4}{9} \times \dfrac{1}{5} = \dfrac{4}{45}$

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

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

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

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

Q4 : Find:

(i) $\dfrac{2}{5} \div \dfrac{1}{2}$ (ii) $\dfrac{4}{9} \div \dfrac{2}{3}$ (iii) $\dfrac{3}{7} \div \dfrac{8}{7}$

(iv) $2\dfrac{1}{3} \div \dfrac{3}{5}$ (v) $3\dfrac{1}{2} \div \dfrac{8}{3}$ (vi) $\dfrac{2}{5} \div 1\dfrac{1}{2}$

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

Answer :

(i) $\dfrac{2}{5} \div \dfrac{1}{2} = \dfrac{2}{5} \times 2 = \dfrac{4}{5}$

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

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

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

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

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

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

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

Question 1
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
Solution:
(i) 0.5 or 0.05
Comparing the tenths place, we get 5 > 0
∴ 0.5 > 0.05

(ii) 0.7 or 0.5
Comparing the tenths place, we get 7 > 5
∴ 0.7 > 0.5

(iii) 7 or 0.7
Comparing the one's place, we get 7 > 0
∴ 7 > 0.7

(iv) 1.37 or 1.49
Comparing the tenths place, we get 3 < 4
∴ 1.37 < 1.49 or 1.49 > 1.37

(v) 2.03 or 2.30
Comparing the tenths place, we get 0 < 3
∴ 2.03 < 2.30 or 2.30 > 2.03

(vi) 0.8 or 0.88 ⇒ 0.80 or 0.88
Since tenths place is same.
Comparing the hundredth place, we get 0 < 8
∴ 0.80 < 0.88 or 0.88 > 0.80

Question 2

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

Solution:

(i) Since 1 rupee = 100 paise and 1 paise = $\frac{1}{100}$ rupees

7 paise = $\frac{7}{100}$ rupees = 0.07 rupees

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

= 7.07 rupees

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

= 77.77 rupees

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

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

Question 3

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

Solution:

(i) 1 metre = 100 cm

1 kilometre = 1000 metre = 100 × 1000 cm

= 100000 cm

∴ 5 cm = $\frac{5}{100}$ metre = 0.05 metre

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

Hence, 5 cm = 0.05 m and 0.00005 km

(ii) 1 cm = 10 mm and 1 km = 100000 cm

∴ 35 mm = $\frac{35}{10}$ cm = 3.5 cm,

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

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

Hence, 35 mm = 3.5 cm, 0.035 m and 0.000035 km.

Question 4

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

Solution:

(i) 200g = $\frac{200}{1000}$ kg [∵ 1 kg = 1000g]

= 0.2 kg

(ii) 3470 g = $\frac{3470}{10000}$ = 3.47 kg [∵ 1 kg = 1000 g]

(iii) 4 kg 8 g = 4 kg + $\frac{8}{10000}$kg [∵ 1 kg = 1000 g]

= 4 kg + 0.008 kg = 4.008 kg

Question 5

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

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

Question 6

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

Solution:
(i) Place value of 2 in 2.56 = 2 × 1 = 2 i.e. ones
(ii) Place value of 2 in 21.37 = 2 × 10 = 20 i.e. tens
(iii) Place value of 2 in 10.25 = $\frac{2}{10}$ = 0.2 i.e. tenths
(iv) Place value of 2 in 9.42 = $\frac{2}{100}$ = 0.02 i.e. hundredths
(v) Place value of 2 in 63.352 = $\frac{2}{1000}$ = 0.002 i.e. thousandths.

Question 7

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?

Solution:
Distance travelled by Dinesh from A to C
= AB + BC
= 7.5 km +- 12.7 km
= 20.2 km
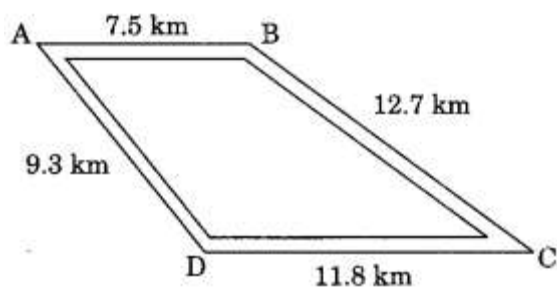
Distance travelled by Ayub from A to C
= AD + DC
= 9.3 km + 11.8 km = 21.1 km
Since 21.1 km > 20.2 km.
Hence, Ayub travelled more distance.

Question 8

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?

Solution:

Fruits bought by Shyama

= 5 kg 300 g apples + 3 kg 250 g mangoes

= 5.300 kg apples + 3.250 kg mangoes

= 8.550 kg of fruits

Fruits bought by Sarala

= 4 kg 800 g oranges +- 4 kg 150 g bananas

= 4.800 kg oranges + 4.150 kg bananas

= 8.950 kg of fruits

Since 8.950 kg > 8.550 kg

Hence, Sarala bought more fruits.

Question 9

How much less is 28 km than 42.6 km?

Solution:

Since 28 km < 42.6 km

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

Hence, 28 km is less than 42.6 km by 14.6 km.

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) 0.5 or 0.05

Converting these decimal numbers into equivalent fractions,

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

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

As 50 > 5,

Therefore, 0.5 > 0.05

(ii) 0.7 or 0.5

Converting these decimal numbers into equivalent fractions,

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

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

As 7 > 5,

Therefore, 0.7 > 0.5

(iii) 7 or 0.7

Converting these decimal numbers into equivalent fractions,

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

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

As 70 > 7,

Therefore, 7 > 0.7

(iv) 1.37 or 1.49

Converting these decimal numbers into equivalent fractions,

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

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

As 137 < 149,

Therefore, 1.37 < 1.49

(v) 2.03 or 2.30

Converting these decimal numbers into equivalent fractions,

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

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

As 203 < 230,

Therefore, 2.03 < 2.30

(vi) 0.8 or 0.88

Converting these decimal numbers into equivalent fractions,

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

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

As 80 < 88,

Therefore, 0.8 < 0.88

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, then we have to divide paise by 100.

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

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

= Rs 7.07

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

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

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

Q3 : (i) Express 5 cm in metre and kilometre

(ii) Express 35 mm in cm, m and km

Answer :

(i) 5 cm

$5 \text{ cm} = \dfrac{5}{100} \text{ m} = 0.05 \text{ m}$

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

(ii) 35 mm

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

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

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

Q4 : Express in kg:

(i) 200 g (ii) 3470 g (iii) 4 kg 8 g

Answer :

(i) $200 \text{ g} = \dfrac{200}{1000} \text{ kg} = 0.2 \text{ kg}$

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

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

Q5 : Write the following decimal numbers in the expanded form:

(i) 20.03 (ii) 2.03 (iii) 200.03

(iv) 2.034

Answer :

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

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

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

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

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 :

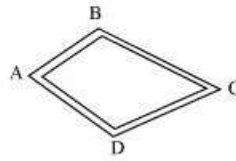(i) 2.56

Ones

(ii) 21.37

Tens

(iii) 10.25

Tenths

(iv) 9.42

Hundredths

(v) 63.352

Thousandths

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

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

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

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

= 8.950 kg

∴ Sarala bought more fruits.

Q9 : How much less is 28 km than 42.6 km?

Answer :

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

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

Question 1
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
Solution:
(i) 0.2 × 6
∵ 2 × 6 = 12 and we have 1 digit right to the decimal point in 0.2.
Thus 0.2 × 6 = 1.2

(ii) 8 × 4.6
∵ 8 × 46 = 368 and there is one digit right to the decimal point in 4.6.
Thus 8 × 4.6 = 36.8

(iii) 2.71 × 5
∵ 271 × 5 = 1355 and there are two digits right to the decimal point in 2.71.
Thus 2.71 × 5 = 13.55

(iv) 20.1 × 4
∵ 201 × 4 = 804 and there is one digit right to the decimal point in 20.1.
∵ 20.1 × 4 = 80.4

(v) 0.05 × 7
∵ 5 × 7 = 35 and there are 2 digits right to the decimal point in 0.05.
Thus 0.05 × 7 = 0.35

(vi) 211.02 × 4
∵ 21102 × 4 = 84408 and there are 2 digits right to the decimal point in 211.02.
Thus 211.02 × 4 = 844.08

(vii) 2 × 0.86
∵ 2 × 86 = 172 and there are 2 digits right to the decimal point in 0.86.
Thus 2 × 0.86 = 1.72

Question 2
Find the area of rectangle whose length is 5.7 cm and breadth is 3 cm.
Solution:
Length = 5.7 cm
Breadth = 3 cm
Area of rectangle = length × breadth
= 5.7 × 3 = 17.1 cm^2
Hence, the required area =17.1 cm^2

Question 3

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

Solution:

$(i)\ 1.3 \times 10 = \dfrac{13}{10} \times 10 = 13$

$(ii)\ 36.8 \times 10 = \dfrac{368}{10} \times 10 = 368$

$(iii)\ 153.7 \times 10 = \dfrac{1537}{10} \times 10 = 1537$

$(iv)\ 168.07 \times 10 = \dfrac{16807}{100} \times 10 = 1680.7$

$(v)\ 31.1 \times 100 = \dfrac{311}{10} \times 100$
$\quad\quad\quad = 311 \times 10 = 3110$

$(vi)\ 156.1 \times 100 = \dfrac{1561}{10} \times 100$
$\quad\quad\quad = 1561 \times 10 = 15610$

$(vii)\ 3.62 \times 100 = \dfrac{362}{100} \times 100 = 362$

$(viii)\ 43.07 \times 100 = \dfrac{4307}{100} \times 100 = 4307$

$(ix)\ 0.5 \times 10 = \dfrac{5}{10} \times 10 = 5$

$(x)\ 0.08 \times 10 = \dfrac{8}{100} \times 10 = \dfrac{8}{10} = 0.8$

$(xi)\ 0.9 \times 100 = \dfrac{9}{10} \times 100 = 9 \times 10 = 90$

$(xii)\ 0.03 \times 1000 = \dfrac{3}{100} \times 1000 = 3 \times 10 = 30$

Question 4

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

Solution:

Distance covered in 1 litre = 55.3 km

Distance covered in 10 litres = 55.3 × 10 km

$$= \frac{553}{1\!\!/0} \times 1\!\!/0 \ \text{km} = 553 \ \text{km}$$

Hence, the required distance = 553 km

Question 5

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) 100.01 × 1.1
(x) 100.01 × 1.1

Solution:

(i) 0 2.5 × 0.3

∵ 25 × 3 = 75 and there are 2 digits (1 + 1) right to the decimal points in 2.5 and 0.3.

Thus 2.5 × 0.3 = 0.75

(ii) 0.1 × 51.7

∵ 1 × 517 = 517 and there are two digits (1 + 1) right to the decimal places in 0.1 and 51.7.

(iii) 0.2 × 316.8

∵ 2 × 3168 = 6336 and there are 2 digits (1 + 1) right to the decimal points in 0.2 and 316.8.

Thus 0.2 × 316.8 = 63.36.

(iv) 1.3 × 3.1

∵ 13 × 31 = 403 and there are 2 digits (1 + 1) right to the decimal points in 1.3 and 3.1.

Thus 1.3 × 3.1 − 4.03

(v) 0.5 × 0.05

∵ 5 × 5 = 25 and there are 3 digits (1 + 2) right to the decimal points in 0.5 and 0.05.

Thus 0.5 × 0.05 = 0.025

(vi) 11.2 × 0.15
∵ 112 × 15 = 1680 and there are 3 digits (1 + 2) right to the decimal points in 11.2 and 0.15.
Thus 11.2 × 0.15 = 1.680

(vii) 1.07 × 0.02
∵ 107 × 2 = 214 and there are 4-digits (2 + 2) right to the decimal places is 1.07 × 0.02.
Thus 1.07 × 0.02 = 0.0214

(viii) 10.05 × 1.05
∵ 1005 × 105 = 105525 and there are 4 digits (2 + 2) right to the decimal places in 10.05 × 1.05.
Thus 10.05 × 1.05 = 10.5525

(ix) 101.01 × 0.01
∵ 10101 × 1 = 10101 and there are 4 digits (2 + 2) right to the decimal places in 101.01 and 0.01.
Thus 101.01 × 0.01 = 1.0101

(x) 100.01 × 1.1
∵ 10001 × 11 = 110011 and there are 3 digits (2 + 1) right to the decimal points in 100.01 and 1.1.
Thus 100.01 × 1.1 = 110.011.

Q1 : Find:

(i) 0.2 x 6 (ii) 8 x 4.6 (iii) 2.71 x 5

(iv) 20.1 x 4 (v) 0.05 x 7 (vi) 211.02 x 4

(vii) 2 x 0.86

Answer :

(i) $0.2 \times 6 = \dfrac{2}{10} \times 6 = \dfrac{12}{10} = 1.2$

(ii) $8 \times 4.6 = 8 \times \dfrac{46}{10} = \dfrac{368}{10} = 36.8$

(iii) $2.71 \times 5 = \dfrac{271}{100} \times 5 = \dfrac{1355}{100} = 13.55$

(iv) $20.1 \times 4 = \dfrac{201}{10} \times 4 = \dfrac{804}{10} = 80.4$

(v) $0.05 \times 7 = \dfrac{5}{100} \times 7 = \dfrac{35}{100} = 0.35$

(vi) $211.02 \times 4 = \dfrac{21102}{100} \times 4 = \dfrac{84408}{100} = 844.08$

(vii) $2 \times 0.86 = 2 \times \dfrac{86}{100} = \dfrac{172}{100} = 1.72$

Q2 : Find the area of rectangle whose length is 5.7 cm 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

Q3 : Find:

(i) 1.3 x 10 (ii) 36.8 x 10 (iii) 153.7 x 10

(iv) 168.07 x 10 (v) 31.1 x 100 (vi) 156.1 x 100

(vii) 3.62 x 100 (viii) 43.07 x 100 (ix) 0.5 x 10

(x) 0.08 x 10 (xi) 0.9 x 100 (xii) 0.03 x 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 x 10 = 13

(ii) 36.8 x 10 = 368

(iii) 153.7 x 10 = 1537

(vi) 168.07 x 10 = 1680.7

(v) 31.1 x 100 = 3110

(vi) 156.1 x 100 = 15610

(vii) 3.62 x 100 = 362

(viii) 43.07 x 100 = 4307

(ix) 0.5 x 10 = 5

(x) 0.08 x 10 = 0.8

(xi) 0.9 x 100 = 90

(xiii) 0.03 x 1000 = 30

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 10litre of petrol = 10 x 55.3 = 553 km

Therefore, it will cover 553 km distance in 10 litre petrol.

Q5 : Find:

(i) 2.5 x 0.3 (ii) 0.1 x 51.7 (iii) 0.2 x 316.8

(iv) 1.3 x 3.1 (v) 0.5 x 0.05 (vi) 11.2 x 0.15

(vii) 1.07 x 0.02 (viii) 10.05 x 1.05 (ix) 101.01 x 0.01

(x) 100.01 x 1.1

Answer :

(i) $2.5 \times 0.3 = \dfrac{25}{10} \times \dfrac{3}{10} = \dfrac{75}{100} = 0.75$

(ii) $0.1 \times 51.7 = \dfrac{1}{10} \times \dfrac{517}{10} = \dfrac{517}{100} = 5.17$

(iii) $0.2 \times 316.8 = \dfrac{2}{10} \times \dfrac{3168}{10} = \dfrac{6336}{100} = 63.36$

(iv) $1.3 \times 3.1 = \dfrac{13}{10} \times \dfrac{31}{10} = \dfrac{403}{100} = 4.03$

(v) $0.5 \times 0.05 = \dfrac{5}{10} \times \dfrac{5}{100} = \dfrac{25}{1000} = 0.025$

(vi) $11.2 \times 0.15 = \dfrac{112}{10} \times \dfrac{15}{100} = \dfrac{1680}{1000} = 1.680 = 1.68$

(vii) $1.07 \times 0.02 = \dfrac{107}{100} \times \dfrac{2}{100} = \dfrac{214}{10000} = 0.0214$

(viii) $10.05 \times 1.05 = \dfrac{1005}{100} \times \dfrac{105}{100} = \dfrac{105525}{10000} = 10.5525$

(ix) $101.01 \times 0.01 = \dfrac{10101}{100} \times \dfrac{1}{100} = \dfrac{10101}{10000} = 1.0101$

(x) $100.01 \times 1.1 = \dfrac{10001}{100} \times \dfrac{11}{10} = \dfrac{110011}{1000} = 110.011$

Filed Under: CBSETagged With: CB

Ex 2.7:-

Question 1
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
Solution:

$(i)\ 0.4 \div 2 = \dfrac{4}{10} \div 2 = \dfrac{4}{10} \times \dfrac{1}{2} = \dfrac{1}{10} \times \dfrac{4}{2}$

$$= \dfrac{1}{10} \times 2 = 0.2$$

$(ii)\ 0.35 \div 5 = \dfrac{35}{100} \div 5 = \dfrac{35}{100} \times \dfrac{1}{5}$

$$= \dfrac{1}{100} \times \dfrac{35}{5} = \dfrac{1}{100} \times 7 = 0.07$$

$(iii)\ 2.48 \div 4 = \dfrac{248}{100} \div 4 = \dfrac{248}{100} \times \dfrac{1}{4}$

$$= \dfrac{1}{100} \times \dfrac{248}{4} = \dfrac{1}{100} \times 62 = 0.62$$

$(iv)\ 65.4 \div 6 = \dfrac{654}{10} \div 6 = \dfrac{654}{10} \times \dfrac{1}{6}$

$$= \dfrac{1}{10} \times \dfrac{654}{6} = \dfrac{1}{10} \times 109 = 10.9$$

$(v)\ 651.2 \div 4 = \dfrac{6512}{10} \div 4 = \dfrac{6512}{10} \times \dfrac{1}{4}$

$$= \dfrac{1}{10} \times \dfrac{6512}{4} = \dfrac{1}{10} \times 1628 = 162.8$$

$(vi)\ 14.49 \div 7 = \dfrac{1449}{100} \div 7 = \dfrac{1449}{100} \times \dfrac{1}{7}$

$$= \dfrac{1}{100} \times \dfrac{1449}{7} = \dfrac{1}{100} \times 207 = 2.07$$

$(vii)\ 3.96 \div 4 = \dfrac{396}{100} \div 4 = \dfrac{396}{100} \times \dfrac{1}{4}$

$$= \dfrac{1}{100} \times \dfrac{396}{4} = \dfrac{1}{100} \times 99 = 0.99$$

$(viii)\ 0.80 \div 5 = \dfrac{80}{100} \div 5 = \dfrac{80}{100} \times \dfrac{1}{5}$

$$= \dfrac{1}{100} \times \dfrac{80}{5} = \dfrac{1}{100} \times 16 = 0.16$$

Question 2

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

Solution:

(i) 4.8 ÷ 10 = 0.48 (Shifting the decimal point to the left by 1 place)

(ii) 52.5 ÷ 10 = 5.25 (Shifting the decimal point to the left by 1 place)

(iii) 0.7 ÷ 10 = 0.07 (Shifting the decimal point to the left by 1 place)

(iv) 33.1 ÷ 10 = 3.31 (Shifting the decimal point to the left by 1 place)

(v) 272.23 ÷ 10 = 27.223 (Shifting the decimal point to the left by 1 place)

(vi) 0.56 4- 10 = 0.056(Shifting the decimal point to the left by 1 place)

(vii) 3.97 ÷ 10 = 0.397(Shifting the decimal point to the left by 1 place)

Question 3

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

Solution:

Solution:

(i) 2.7 ÷ 100 = 0.027(Shifting the decimal point to the left by 2 places)

(ii) 0.3 ÷ 100 = 0.003(Shifting the decimal point to the left by 2 places)

(iii) 0.78 ÷ 100 = 0.0078 (Shifting the decimal point to the left by 2 places)

(iv) 432.6 ÷ 100 = 4.326 (Shifting the decimal point to the left by 2 places)

(v) 23.6 ÷ 100 = 0.236 (Shifting the decimal point to the left by 2 places)

(vi) 98.53 ÷ 100 = 0.9853 (Shifting the decimal point to the left by 2 places)

Question 4

Find:

(i) 7.9 ÷ 1000

(ii) 26.3 ÷ 1000

(iii) 38.53 ÷ 1000

(iv) 128.9 ÷ 1000

(v) 0.5 ÷ 1000

Solution:

(i) 7.9 ÷ 1000 = 0.0079 (Shifting the decimal point to the left by 3 places)

(ii) 26.3 ÷ 1000 = 0.0263 (Shifting the decimal point to the left by 3 places)

(iii) 38.53 ÷ 1000 = 0.03853 (Shifting the decimal point to the left by 3 places)

(iv) 128.9 ÷ 1000 = 0.1289 (Shifting the decimal point to the left by 3 places)
(v) 0.5 ÷ 1000 = 0.0005 (Shifting the decimal point to the left by 3 places)

Question 5
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
Solution:

$(i)\ 7 \div 3.5 = \dfrac{7}{3.5} = \dfrac{70}{35} = 2$

$(ii)\ 36 \div 0.2 = \dfrac{36}{0.2} = \dfrac{360}{2} = 180$

$(iii)\ 3.25 \div 0.5 = \dfrac{3.25}{0.5} = \dfrac{325}{50} = \dfrac{1}{10} \times \dfrac{325}{5}$

$\qquad = \dfrac{1}{10} \times 65 = 6.5$

$(iv)\ 30.94 \div 0.7 = \dfrac{30.94}{0.7} = \dfrac{3094}{70} = \dfrac{1}{10} \times \dfrac{3094}{7}$

$\qquad = \dfrac{1}{10} \times 442 = 44.2$

$(v)\ 0.5 \div 0.25 = \dfrac{0.5}{0.25} = \dfrac{50}{25} = 2$

$(vi)\ 7.75 \div 0.25 = \dfrac{7.75}{0.25} = \dfrac{775}{25} = 31$

$(vii)\ 76.5 \div 0.15 = \dfrac{76.5}{0.15} = \dfrac{7650}{15} = 510$

$(viii)\ 37.8 \div 1.4 = \dfrac{37.8}{1.4} = \dfrac{378}{14} = 27$

$(ix)\ 2.73 \div 1.3 = \dfrac{2.73}{1.3} = \dfrac{2.73}{1.30} = \dfrac{273}{130}$

$\qquad\qquad = \dfrac{1}{10} \times \dfrac{273}{13} = \dfrac{1}{10} \times 21 = 2.1$

Question 6

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?

Solution:

2.4 litres of petrol is required to cover 43.2 km distance

∴ 1 litre of petrol will be required to cover 43.2

$$= \frac{43.2}{2.4} \text{ km distance}$$

$$= \frac{432}{24} \text{ km} = 18 \text{ km}$$

Hence, the required distance = 18 km

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

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) 4.8 ÷ 10 = 0 .48

(ii) 52.5 ÷ 10 = 5.25

(iii) 0.7 ÷ 10 = 0.07

(iv) 33.1 ÷ 10 = 3.31

(v) 272.23 ÷ 10 = 27.223

(vi) 0.56 ÷ 10 = 0.056

(vii) 3.97 ÷ 10 = 0.397

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 100, the decimal will shift to the left by 2 places.

(i) 2.7 ÷ 100 = 0.027

(ii) 0.3 ÷ 100 = 0.003

(iii) 0.78 ÷ 100 = 0.0078

(iv) 432.6 ÷ 100 = 4.326

(v) 23.6 ÷ 100 = 0.236

(vi) 98.53 ÷ 100 = 0.9853

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) 7.9 ÷ 1000 = 0.0079

(ii) 26.3 ÷ 1000 = 0.0263

(iii) 38.53 ÷ 1000 = 0.03853

(iv) 128.9 ÷ 1000 = 0.1289

(v) 0.5 ÷ 1000 = 0.0005

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) $7 \div 3.5 = 7 \div \dfrac{35}{10} = 7 \times \dfrac{10}{35} = 2$

(ii) $36 \div 0.2 = 36 \div \dfrac{2}{10} = 36 \times \dfrac{10}{2} = 180$

(iii) $3.25 \div 0.5 = \dfrac{325}{100} \div \dfrac{5}{10} = \dfrac{325}{100} \times \dfrac{10}{5} = \dfrac{65}{10} = 6.5$

(iv) $30.94 \div 0.7 = \dfrac{3094}{100} \div \dfrac{7}{10} = \dfrac{3094}{100} \times \dfrac{10}{7} = \dfrac{442}{10} = 44.2$

(v) $0.5 \div 0.25 = \dfrac{5}{10} \div \dfrac{25}{100} = \dfrac{5}{10} \times \dfrac{100}{25} = 2$

(vi) $7.75 \div 0.25 = \dfrac{775}{100} \div \dfrac{25}{100} = \dfrac{775}{100} \times \dfrac{100}{25} = 31$

(vii) $76.5 \div 0.15 = \dfrac{765}{10} \div \dfrac{15}{100} = \dfrac{765}{10} \times \dfrac{100}{15} = 510$

(viii) $37.8 \div 1.4 = \dfrac{378}{10} \div \dfrac{14}{10} = \dfrac{378}{10} \times \dfrac{10}{14} = 27$

(ix) $2.73 \div 1.3 = \dfrac{273}{100} \div \dfrac{13}{10} = \dfrac{273}{100} \times \dfrac{10}{13} = \dfrac{21}{10} = 2.1$

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 $= 43.2 \div 2.4 = \dfrac{432}{10} \div \dfrac{24}{10} = \dfrac{432}{10} \times \dfrac{10}{24} = 18$

Therefore, the vehicle will cover 18 km in 1 litre petrol.