FRACTIONS AND DECIMALS

NCERT Textbook Questions

EXERCISE 2.1

Q.1 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) $8\frac{1}{2}-3\frac{5}{8}$

Sol. (i) $2-\frac{3}{5}=\frac{2}{1}-\frac{3}{5}=\frac{10-3}{5}=\frac{7}{5}=1\frac{2}{5}$

$$5\overline{)7}\ 1,\quad -5,\quad 2$$

(ii) $4+\frac{7}{8}=\frac{4}{1}+\frac{7}{8}=\frac{32+7}{8}=\frac{39}{8}=4\frac{7}{8}$

$$8\overline{)39}\ 4,\quad -32,\quad 7$$

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

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

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

$$5\overline{)13}\ 2,\quad -10,\quad 3$$

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

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

$$\begin{array}{r|l} & 6 \\ 6 & 37 \\ & -36 \\ & 1 \end{array}$$

(vii) $8\frac{1}{2} - 3\frac{5}{8} = \frac{(8\times 2)+1}{2} - \frac{(3\times 8)+5}{8} = \frac{17}{2} - \frac{29}{8}$

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

$$\begin{array}{r|l} & 4 \\ 8 & 39 \\ & -32 \\ & 7 \end{array}$$

Q.2. Arrange the following in descending order:

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

Sol. (i) $\frac{2}{9}, \frac{2}{3}, \frac{8}{21}$. Converting the given fractions into like fractions, we have

$$\frac{2}{9} = \frac{2\times 7}{9\times 7} = \frac{14}{63}; \frac{2}{3} = \frac{2\times 21}{3\times 21} = \frac{42}{63}; \frac{8}{21} = \frac{8\times 3}{21\times 3} = \frac{24}{63}$$

Since $42 > 24 > 14$,

so $\frac{42}{63} > \frac{24}{63} > \frac{14}{63}$.

Thus $\frac{2}{3} > \frac{8}{21} > \frac{2}{9}$.

(ii) $\frac{1}{5}, \frac{3}{7}, \frac{7}{10}$. Converting the given fractions into like fractions, we have

$$\frac{1}{5} = \frac{1\times 14}{5\times 14} = \frac{14}{70}; \frac{3}{7} = \frac{3\times 10}{7\times 10} = \frac{30}{70}; \frac{7}{10} = \frac{7\times 7}{10\times 7} = \frac{49}{70}$$

Since $49 > 30 > 14$

so $\frac{49}{70} > \frac{30}{70} > \frac{14}{70}$.

Thus $\frac{7}{10} > \frac{3}{7} > \frac{1}{5}$.

Q.3 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 $\frac{4}{11}+\frac{9}{11}+\frac{2}{11}=\frac{15}{11}$)

Sol. Sum of number along the

$$\text{1st row} = \frac{4}{11}+\frac{9}{11}+\frac{2}{11}=\frac{4+9+2}{11}=\frac{15}{11}$$

$$\text{2nd row} = \frac{3}{11}+\frac{5}{11}+\frac{7}{11}=\frac{3+5+7}{11}=\frac{15}{11}$$

$$\text{3rd row} = \frac{8}{11}+\frac{1}{11}+\frac{6}{11}=\frac{8+1+6}{11}=\frac{15}{11}$$

$$\text{1st column} = \frac{4}{11}+\frac{3}{11}+\frac{8}{11}=\frac{4+3+8}{11}=\frac{15}{11}$$

$$\text{2nd column} = \frac{9}{11}+\frac{5}{11}+\frac{1}{11}=\frac{9+5+1}{11}=\frac{15}{11}$$

$$\text{3rd column} = \frac{2}{11}+\frac{7}{11}+\frac{6}{11}=\frac{2+7+6}{11}=\frac{15}{11}$$

$$\text{1st diagonal} = \frac{4}{11}+\frac{5}{11}+\frac{6}{11}=\frac{4+5+6}{11}=\frac{15}{11}$$

$$\text{2nd diagonal} = \frac{8}{11}+\frac{5}{11}+\frac{2}{11}=\frac{8+5+2}{11}=\frac{15}{11}$$

Since, the sum of numbers in each case is the same, therefore, it is a magic square.

Q.4. A rectangular sheet of paper is $12\frac{1}{2}$ cm long and $10\frac{2}{3}$ cm wide. Find its perimeter.

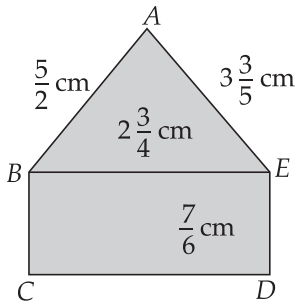
Sol. Perimeter of the rectangular sheet of paper = 2 × [Length + Breadth]

$$= 2\times\left[12\frac{1}{2}+10\frac{2}{3}\right]=2\times\left[\frac{25}{2}+\frac{32}{3}\right]$$

$$= 2\times\left[\frac{75+64}{6}\right]=2\times\left(\frac{139}{6}\right)=\frac{139}{3}=46\frac{1}{3}\text{cm.}$$

$$\begin{array}{r} 46 \\ 3\overline{)139} \\ -12 \\ \hline 19 \\ -18 \\ \hline 1 \end{array}$$

Q.5. Find the perimeter of (i) ΔABE and (ii) the rectangle $BCDE$ in this figure. Whose perimeter is greater?



Sol. (i) Perimeter of $\Delta ABE = AB + BE + AE$

$$= \frac{5}{2}\text{cm} + 2\frac{3}{4}\text{cm} + 3\frac{3}{5}\text{cm} = \left[\frac{5}{2} + \frac{11}{4} + \frac{18}{5}\right]\text{cm} = \left[\frac{50+55+72}{20}\right]\text{cm}$$

$$= \frac{177}{20}\text{cm} = 8\frac{17}{20}\text{cm}$$

(ii) Perimeter of rectangle $BCDE = 2\,[BE + DE]$

$$= 2\left[2\frac{3}{4}\text{cm} + \frac{7}{6}\text{cm}\right] = 2\left[\frac{11}{4} + \frac{7}{6}\right]\text{cm}$$

$$= 2\left[\frac{3\times(11)+2\times(7)}{12}\right]\text{cm} = 2\left[\frac{33+14}{12}\right]\text{cm} = \frac{47}{6}\text{cm} = 7\frac{5}{6}\text{cm}$$

Further, LCM of 20 and 6 is 60

$$\therefore \qquad \frac{177}{20} = \frac{177\times 3}{20\times 3} = \frac{531}{60} \text{ and } \frac{47}{6} = \frac{47\times 10}{6\times 10} = \frac{470}{60}.$$

Also, $470 < 531 \Rightarrow \frac{531}{60} > \frac{470}{60}$ or $\frac{177}{20} > \frac{47}{6}$

Thus, the perimeter of ΔABE is greater.

Q.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 the picture should be trimmed?

Sol. The picture should be trimmed by $7\frac{3}{5} - 7\frac{3}{10} = \frac{38}{5} - \frac{73}{10} = \frac{76-73}{10} = \frac{3}{10}\text{cm}.$

Q.7. 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?

Sol. Ritu ate 3/5 part of an apple, Somu ate the remaining part, i.e. $1-\frac{3}{5}=\frac{2}{5}$ part.

Again $3>2$

Since $\frac{3}{5}>\frac{2}{5}$, so Ritu had the larger share.

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

Thus, Ritu has the larger share by 1/5 part of an apple.

Q.8. 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?

Sol. $\frac{3}{4}=\frac{3\times3}{4\times3}=\frac{9}{12}$

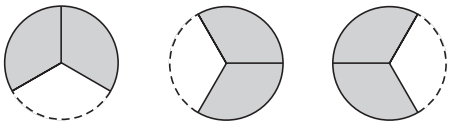
Since $9>7$, so $\frac{9}{12}>\frac{7}{12}$

$\therefore$ Vaibhav worked longer by fraction $\frac{9}{12}-\frac{7}{12}=\frac{9-7}{12}=\frac{2}{12}=\frac{2\div2}{12\div2}=\frac{1}{6}$ hour

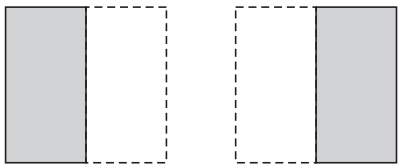
EXERCISE 2.2

Q.1 Which of the drawings (a) to (d) show:

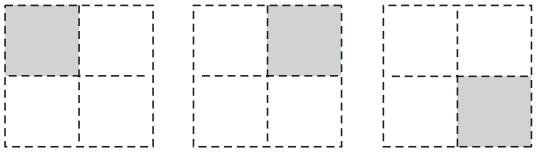
(i) $2\times\frac{1}{5}$ **(ii)** $2\times\frac{1}{2}$ **(iii)** $3\times\frac{2}{3}$ **(iv)** $3\times\frac{1}{4}$



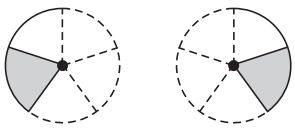
(a)



(b)



(c)

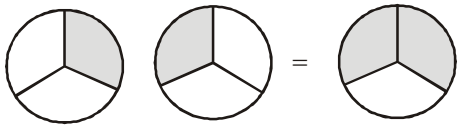


(d)

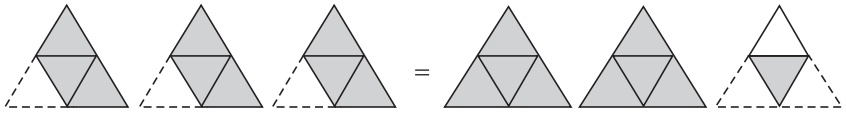
Sol. (i) (d) (ii) (b) (iii) (a) (iv) (c)

Q.2. Some pictures (a) to (c) are given below. Tell which of them show:

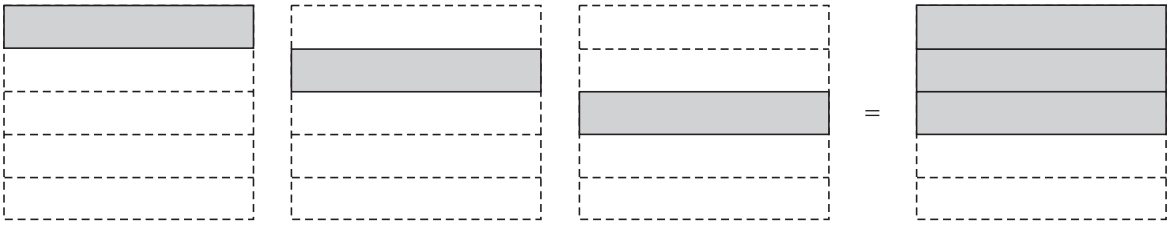
(i) $3\times\frac{1}{5}=\frac{3}{5}$ **(ii)** $2\times\frac{1}{3}=\frac{2}{3}$ **(iii)** $3\times\frac{3}{4}=2\frac{1}{4}$



(a)



(b)



(c)

Sol. (i) Since $3\times\frac{1}{5}=\frac{1}{5}+\frac{1}{5}+\frac{1}{5}=\frac{3}{5}$, which is shown by drawing (c).
So (i) $\rightarrow$ (c)

(ii) Since $2\times\frac{1}{3}=\frac{1}{3}+\frac{1}{3}=\frac{2}{3}$, which is shown by drawing (a).
So (ii) $\rightarrow$ (a)

(iii) Since $3\times\frac{3}{4}=\frac{3}{4}+\frac{3}{4}+\frac{3}{4}=2\frac{1}{4}$, which is shown by drawing (b).
So (iii) $\rightarrow$ (b)

Q.3. Multiply and reduce to lowest form:

(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) $\frac{2}{3}\times4$ **(vi)** $\frac{5}{2}\times6$ **(vii)** $11\times\frac{4}{7}$ **(viii)** $20\times\frac{4}{5}$

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

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

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

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

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

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

(vi) $\frac{5}{2} \times 6 = \frac{5 \times 6}{2} = \frac{30}{2} = \frac{15}{1}$

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

(viii) $20 \times \frac{4}{5} = \frac{20 \times 4}{5} = \frac{80}{5} = \frac{16}{1}$

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

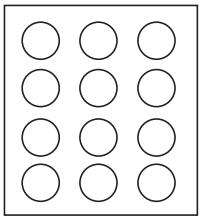
(x) $15 \times \frac{3}{5} = \frac{15 \times 3}{5} = \frac{45}{5} = \frac{9}{1}$

Q.4. Shade:

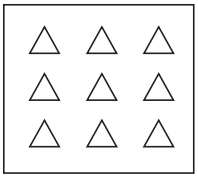
(i) 1/2 of the circles in box (a)

(ii) 2/3 of the triangles in box (b)

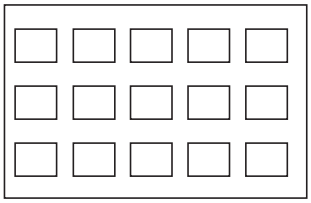
(iii) 3/5of the squares in box (c).



(a)



(b)

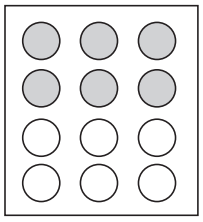


(c)

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

Since $\frac{1}{2}$ of $12 = \frac{1}{2} \times 12 = 6$

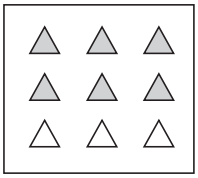
So, we shade 6 circles.



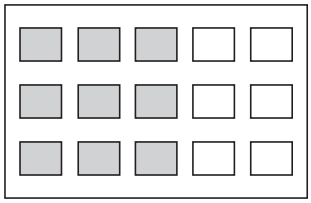
(ii) $\frac{2}{3}$ of the triangles :

Since $\frac{2}{3}$ of $9 = \frac{2 \times 9}{3} = 6$

So we shade 6 triangles.



(iii) $\frac{3}{5}$ of the squares:



Since $\frac{3}{5}$ of $15 = \frac{3 \times 15}{5} = 9$

So we shade 9 triangles.

Q.5. 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

Sol. (a) (i) $\frac{1}{2}$ of $24 = \frac{1}{2} \times 24 = \frac{1 \times 24}{2} = \frac{24}{2} = 12$

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

(b) (i) $\frac{2}{3}$ of $18 = \frac{2}{3} \times 18 = \frac{2 \times 18}{3} = \frac{36}{3} = 12$

(ii) $\frac{2}{3}$ of $27 = \frac{2}{3} \times 27 = \frac{2 \times 27}{3} = \frac{54}{3} = 18$

(c) (i) $\frac{3}{4}$ of $16 = \frac{3}{4} \times 16 = \frac{3 \times 16}{4} = \frac{48}{4} = 12$

(ii) $\frac{3}{4}$ of $36 = \frac{3}{4} \times 36 = \frac{3 \times 36}{4} = \frac{108}{4} = 27$

(d) (i) $\frac{4}{5}$ of $20 = \frac{4}{5} \times 20 = \frac{4 \times 20}{5} = \frac{80}{5} = 16$

(ii) $\frac{4}{5}$ of $35 = \frac{4}{5} \times 35 = \frac{4 \times 35}{5} = \frac{140}{5} = 28$

Q.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)** $3\frac{2}{5}\times 8$

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

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

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

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

(e) $3\frac{1}{4}\times 6 = \frac{13}{4}\times 16=\frac{13\times 6}{4}=\frac{39}{2}=19\frac{1}{2}$

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

Q.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)** $9\frac{2}{3}$

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

(ii) $\frac{1}{2}$ of $4\frac{2}{9} = \frac{1}{2}$ of $\frac{38}{9}=\frac{1}{2}\times\frac{38}{9}=\frac{1\times 38}{2\times 9}=\frac{38}{18}=\frac{38\div 2}{18\div 2}=\frac{19}{9}=2\frac{1}{9}$

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

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

Q.8. Vidya and Pratap went for a picnic. Their mother gave them a water bag 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?

Sol. Total quantity of water = 5 litres

(i) Amount of water consumed by Vidya = $\frac{2}{5}$ of 5 litre

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

(ii) Remaining water = water consumed by Pratap

i.e. Amount of water consumed by Pratap = 5 litres – 2 litres = 3 litres

∴ Fraction of water consumed by Pratap = 3/5.

EXERCISE 2.3

Q.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)** $\frac{3}{10}$

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

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

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

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

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

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

Q.2. 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)** $\frac{4}{5} \times \frac{12}{7}$

Sol. (i) $\frac{2}{3} \times 2\frac{2}{3} = \frac{2}{3} \times \frac{8}{3} = \frac{16}{9}$

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

(iii) $\frac{3}{8}\times\frac{6}{4}=\frac{3\times6}{8\times4}=\frac{18}{32}=\frac{18\div2}{32\div2}=\frac{9}{16}$ (iv) $\frac{9}{5}\times\frac{3}{5}=\frac{9\times3}{5\times5}=\frac{27}{25}$

(v) $\frac{1}{3}\times\frac{15}{8}=\frac{1\times15}{3\times8}=\frac{15}{24}=\frac{15\div3}{24\div3}=\frac{5}{8}$ (vi) $\frac{11}{2}\times\frac{3}{10}=\frac{11\times3}{2\times10}=\frac{33}{20}$

(vii) $\frac{4}{5}\times\frac{12}{7}=\frac{4\times12}{5\times7}=\frac{48}{35}$

Q.3 For the fractions given below:

(a) Multiply and reduce the product to lowest form (if possible)

(b) Tell whether the fraction obtained is proper or improper.

(c) If the fraction obtained is improper then convert it into a mixed fraction.

(i) $\frac{2}{5}\times5\frac{1}{4}$ **(ii)** $6\frac{2}{5}\times\frac{7}{9}$ **(iii)** $\frac{3}{2}\times5\frac{1}{3}$ **(iv)** $\frac{5}{6}\times2\frac{3}{7}$

(v) $3\frac{2}{5}\times\frac{4}{7}$ **(vi)** $2\frac{3}{5}\times3$ **(vii)** $3\frac{4}{7}\times\frac{3}{5}$

Sol. (i) $\frac{2}{5}\times5\frac{1}{4}=\frac{2}{5}\times\frac{21}{4}=\frac{21}{10}$

It's an improper fraction.

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

(ii) $6\frac{2}{5}\times\frac{7}{9}=\frac{32}{5}\times\frac{7}{9}=\frac{224}{45}$

It's an improper fraction.

So $\frac{224}{45}=4\frac{44}{45}$

(iii) $\frac{3}{2}\times5\frac{1}{3}=\frac{3}{2}\times\frac{16}{3}=8$

(iv) $\frac{5}{6}\times2\frac{3}{7}=\frac{5}{6}\times\frac{17}{7}=\frac{85}{42}$

It's an improper fraction.

So $\frac{85}{42}=2\frac{1}{42}$.

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

It's an improper fraction.

So $\frac{68}{35} = 1\frac{33}{35}$.

(vi) $2\frac{3}{5} \times 3 = \frac{13}{5} \times \frac{3}{1} = \frac{39}{5}$

It's an improper fraction.

So $\frac{39}{5} = 7\frac{4}{5}$.

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

It's an improper fraction.

So $\frac{15}{7} = 2\frac{1}{7}$.

Q.4 Which is greater: (i) $\frac{2}{7}$ of $\frac{3}{4}$ or $\frac{3}{5}$ of $\frac{5}{8}$ (ii) $\frac{1}{2}$ of $\frac{6}{7}$ or $\frac{2}{3}$ of $\frac{3}{7}$

Sol. (i) $\frac{2}{7}\ of\ \frac{3}{4} = \frac{2}{7} \times \frac{3}{4} = \frac{2 \times 3}{7 \times 4} = \frac{6}{28} = \frac{6 \div 2}{28 \div 2} = \frac{3}{14}$

$\frac{3}{5}\ of\ \frac{5}{8} = \frac{3}{5} \times \frac{5}{8} = \frac{3 \times 5}{5 \times 8} = \frac{15}{40} = \frac{15 \div 5}{40 \div 5} = \frac{3}{8}$

LCM (14, 8) = 56

$\frac{3}{14} = \frac{3 \times 4}{14 \times 4} = \frac{12}{56}$; $\frac{3}{8} = \frac{3 \times 7}{8 \times 7} = \frac{21}{56}$

Since 21 > 12, so $\frac{21}{56} > \frac{12}{56} \Rightarrow \frac{3}{8} > \frac{3}{14}$.

So $\frac{3}{5}$ of $\frac{5}{8} > \frac{2}{7}$ of $\frac{3}{4}$.

(ii) $\frac{1}{2}$ of $\frac{6}{7} = \frac{1}{2} \times \frac{6}{7} = \frac{1 \times 6}{2 \times 7} = \frac{6}{14} = \frac{6 \div 2}{14 \div 2} = \frac{3}{7}$

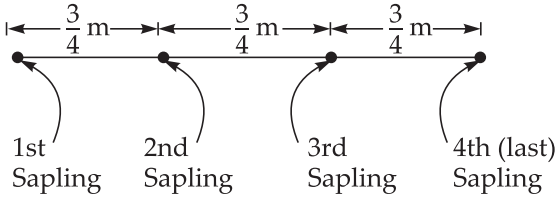
$\frac{2}{3}$ of $\frac{3}{7} = \frac{2}{3} \times \frac{3}{7} = \frac{2 \times 3}{3 \times 7} = \frac{6}{21} = \frac{6 \div 3}{21 \div 3} = \frac{2}{7}$

Since $3 > 2 \Rightarrow \frac{3}{7} > \frac{2}{7}$

So $\frac{1}{2}$ of $\frac{6}{7} > \frac{2}{3}$ *of* $\frac{3}{7}$.

Q.5 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.

Sol. Number of saplings = 4



Distance between two adjacent saplings = 3/4 m

∴ Distance between 1st and last (4th) sapling =

$$3 \times \frac{3}{4}\text{m} = \frac{3 \times 3}{4}\text{m} = \frac{9}{4}\text{m} = 2\frac{1}{4}\text{m}$$

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

Sol. Hours in all required by Lipika to read the book

$$= 1\frac{3}{4} \times 6 = \frac{7}{4} \times 6 = \frac{7 \times 6}{4} = \frac{42}{4} = \frac{42 \div 2}{4 \div 2} = \frac{21}{2} = 10\frac{1}{2} \text{ hours}$$

Q.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?

Sol. Distance covered in 1 litre of petrol = 16 km.

∴ Distance covered in $2\frac{3}{4}$ litres of petrol

$$= 16 \times 2\frac{3}{4} \text{ km.} = 16 \times \frac{11}{4}\text{km} = \frac{4 \times 11}{1}\text{km} = 44 \text{ km.}$$

Q.8. (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 $\square$, such that $\frac{3}{5}\times\square=\frac{24}{75}$?

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

Sol. (a) (i) $\frac{2}{3}\times\boxed{\frac{5}{10}}=\frac{10}{30}$ (ii) $\frac{5}{10}=\frac{5\sqrt{5}}{10\sqrt{5}}=\frac{1}{2}$

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

EXERCISE 2.4

Q.1 Find:

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

(iv) $4\div\frac{8}{3}$ **(v)** $3\div2\frac{1}{3}$ **(vi)** $5\div3\frac{4}{7}$

Sol. (i) $12\div\frac{3}{4}=12\times\frac{4}{3}=\frac{12\times4}{3}=\frac{48}{3}=\frac{48\div3}{3\div3}=\frac{16}{1}$

(ii) $14\div\frac{5}{6}=14\times\frac{6}{5}=\frac{14\times6}{5}=\frac{84}{5}=16\frac{4}{5}$

(iii) $8\div\frac{7}{3}=8\times\frac{3}{7}=\frac{8\times3}{7}=\frac{24}{7}=3\frac{3}{7}$

(iv) $4\div\frac{8}{3}=4\times\frac{3}{8}=\frac{4\times3}{8}=\frac{12}{8}=\frac{12\div4}{8\div4}=\frac{3}{2}=1\frac{1}{2}$

(v) $3\div2\frac{1}{3}=3\div\frac{7}{3}=3\times\frac{3}{7}=\frac{3\times3}{7}=\frac{9}{7}=1\frac{2}{7}$

(vi) $5\div3\frac{4}{7}=5\div\frac{25}{7}=5\times\frac{7}{25}=\frac{5\times7}{25}=\frac{35}{25}=\frac{35\div5}{25\div5}=\frac{7}{5}=1\frac{2}{5}$

Q.2 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)** $\frac{1}{11}$

Sol. (i) The reciprocal of $\frac{3}{7}$ is $\frac{7}{3}$; (improper fraction)

(ii) The reciprocal of $\frac{5}{8}$ is $\frac{8}{5}$; (improper fraction)

(iii) The reciprocal of $\frac{9}{7}$ is $\frac{7}{9}$; (proper fraction)

(iv) The reciprocal of $\frac{6}{5}$ is $\frac{5}{6}$; (proper fraction)

(v) The reciprocal of $\frac{12}{7}$ is $\frac{7}{12}$; (proper fraction)

(vi) The reciprocal of $\frac{1}{8}$ is 8 ; (whole number)

(vii) The reciprocal of $\frac{1}{11}$ is 11; (whole number)

Q.3 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)** $4\frac{3}{7} \div 7$

Sol. (i) $\frac{7}{3} \div 2 = \frac{7}{3} \times \frac{1}{2} = \frac{7 \times 1}{3 \times 2} = \frac{7}{6} = 1\frac{1}{6}$

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

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

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

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

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

Q.4 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)** $2\frac{1}{5} \div 1\frac{1}{5}$

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

(ii) $\frac{4}{9} \div \frac{2}{3} = \frac{4}{9} \times \frac{3}{2} = \frac{2 \times 1}{3 \times 1} = \frac{2}{3}$

(iii) $\frac{3}{7} \div \frac{8}{7} = \frac{3}{7} \times \frac{7}{8} = \frac{3 \times 1}{1 \times 8} = \frac{3}{8}$

(iv) $2\frac{1}{3} \div \frac{3}{5} = \frac{7}{3} \div \frac{3}{5} = \frac{7}{3} \times \frac{5}{3} = \frac{35}{9} = 3\frac{8}{9}$

(v) $3\frac{1}{2} \div \frac{8}{3} = \frac{7}{2} \div \frac{8}{3} = \frac{7}{2} \times \frac{3}{8} = \frac{21}{16} = 1\frac{5}{16}$

(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) $3\frac{1}{5} \div 1\frac{2}{3} = \frac{16}{5} \div \frac{5}{3} = \frac{16}{5} \times \frac{3}{5} = \frac{48}{25} = 1\frac{23}{25}$

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

EXERCISE 2.5

Q.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**

Sol. (i) Comparing the digits at tenths place, we have $5 > 0$

$\therefore\ 0.5 > 0.05$

(ii) Comparing the digits at tenths place, we have $7 > 5$

$\therefore\ 0.7 > 0.5$

(iii) Comparing the digits at ones place, we have $7 > 0$

$\therefore\ 7 > 0.7$

(iv) Since the digits at ones place are same.

$\therefore$ Comparing the digits at tenths place, we have $3 < 4$

$\therefore$ $1.37 < 1.49$ or $1.49 > 1.37$

(v) Since the digits at ones place are same.

$\therefore$ Comparing the digits at tenths place, we have $0 < 3$

$\therefore$ $2.03 < 2.30$ or $2.30 > 2.03$

(vi) 0.8 can be written as 0.80. Now, digits at tenths place are same

$\therefore$ Comparing the digits at hundredths place, we have $0 < 8$

$\therefore$ $0.80 < 0.88$ or $0.88 > 0.8$

Q.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

Sol. We know that 100 paise = ₹1 or 1 paise = $₹\frac{1}{100}$

(i) 7 paise = $₹7 \times \frac{1}{100} = ₹\frac{7}{100}$ = ₹0.07

(ii) 7 rupees 7 paise = ₹7 + ₹0.07 = ₹7.07

(iii) 77 rupees 77 paise = ₹77 + 77 paise = $₹77 + ₹77 \times \frac{1}{100}$

= ₹77 + ₹0.77 = ₹77.77

(iv) 50 paise = $₹50 \times \frac{1}{100}$ = ₹0.50

(v) 235 paise = 200 paise + 35 paise

= $₹2 + ₹\,35 \times \frac{1}{100}$ [Since 200 paise = ₹2]

= ₹2 + ₹0.35 = ₹2.35

Q.3. (i) Express 5 cm in metre and kilometre (ii) Express 35 mm in cm, m and km

Sol. We know that 1 cm. = 10 mm, 100 cm = 1 m, 1000 m = 1 km.

(i) 5 cm = $\frac{5}{100}$ m = 0.05 m; 5 cm = $\frac{5}{100000}$ km = 0.00005 km

(ii) 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.

Q.4. Express in kg:

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

Sol. (i) $200\text{ g} = \frac{200}{1000}\text{kg} = \frac{2}{10}\text{kg} = 0.2\text{kg}$

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

(iii) $4\text{ kg }8\text{ g} = 4\text{kg} + \frac{8}{1000}\text{ kg} = 4\text{ kg} + 0.008\text{ kg} = 4.008\text{ kg}$

Q.5. Write the following decimal numbers in the expanded form:

(i) 20.03 (ii) 2.03 (iii) 200.03 (iv) 2.034

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

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

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

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

Q.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

Sol. (i) 2.56; Place value of 2 in the decimal number $2.56 = 2 \times 1 = 2$

(ii) 21.37; Place value of 2 are in the decimal number $21.37 = 2 \times 10 = 20$

(iii) 10.25; Place value of 2 in the decimal number 10.25

$$= 2 \times \left(\frac{1}{10}\right) = \frac{2 \times 1}{10} = \frac{2}{10} = \frac{1}{5}$$

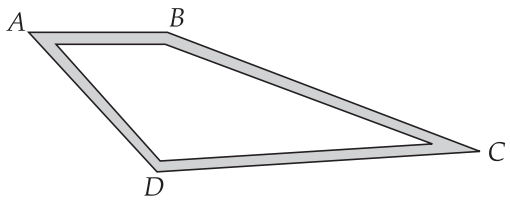
(iv) 9.42; Place value of 2 in the decimal number 9.42

$$= 2 \times \left(\frac{1}{100}\right) = \frac{2 \times 1}{100} = \frac{2}{100} = \frac{1}{50}$$

(v) 63.352;Place value of 2 in the decimal number 63.352

$$= 2 \times \left(\frac{1}{1000}\right) = \frac{2 \times 1}{1000} = \frac{2}{1000} = \frac{1}{500}$$

Q.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?



Sol. Distance from *A* to *B* = 7.5 km.

Distance from *B* to *C* = 12.7 km.

∴ Distance from *A* to *C* through *B* = (7.5 + 12.7) km = 20.2 km.

∴ Distance travelled by Dinesh = 20.2 km.

Again, Distance from *A* to *D* = 9.3 km.,

Distance from *D* to *C* = 11.8 km.

∴ Distance from *A* to *C* through *D* = (9.3 + 11.8) km = 21.1 km.

∴ Distance travelled by Ayub = 21.1 km.

Since (21.1 – 20.2) km = 0.9 km or 900 m

∴ Ayub travelled more distance by 900 m.

Q.8. Shyama bought 5 kg 300 g apples and 3 kg 250 g mangoes. Sarala bought 4 kg 800g oranges and 4 kg 150 g bananas. Who bought more fruits?

Sol. For Shyama :

Apples bought = 5 kg 300g = 5.300 kg

Mangoes bought = 3 kg 250g = 3.250 kg

$$\begin{array}{r} 5.300 \\ +3.250 \\ \hline 8.550 \end{array}$$

∴ Fruits bought = Apples bought + Mangoes bought

= 5.300 kg + 3.250 kg

= 8.550 kg

For Sarala :

Oranges bought = 4 kg 800g = 4.800 kg

Bananas bought = 4 kg 150g = 4.150 kg

$$\begin{array}{r} 4.800 \\ +4.150 \\ \hline 8.950 \end{array}$$

∴ Fruits bought = Oranges bought + Bananas bought

= 4.800 kg + 4.150 kg

= 8.950 kg

Since 8.950 > 8.550

So, Sarala bought more fruits.

Q.9. How much less is 28 km than 42.6 km?

Sol. Since 42.6 km – 28 km = 14.6 km

28 km is less than 42.6 km by 14.6 km.

EXERCISE 2.6

Q.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

Sol. (i) 0.2 × 6

Since 2 × 6 = 12 and there is one digit to the right of decimal point in 0.2

∴ 0.2 × 6 = 1.2

(ii) 8 × 4.6

Since 8 × 46 = 368 and there is one digit to the right of decimal point in 4.6

∴ 8 × 4.6 = 36.8.

(iii) 2.71 × 5

Since 271 × 5 = 1355 and there are two digits to the right of decimal point in 2.71.

∴ 2.71 × 5 = 13.55

(iv) 20.1 × 4

Since 201 × 4 = 804 and there is one digit to the right of decimal point in 20.1

∴ 20.1 × 4 = 80.4

(v) 0.05 × 7

Since 5 × 7 = 35 and there are 2 digits to the right of decimal point in 0.05

∴ 0.05 × 7 = 0.35

(vi) 211.02 × 4

Since 21102 × 4 = 84408 and there are 2 digits to the right of decimal point in 211.02

∴ 211.02 × 4 = 844.08

(vii) 2 × 0.86

Since 2 × 86 = 172 and there is two digit to the right of decimal point in 0.86

∴ 2 × 0.86 = 1.72

Q.2. Find the area of rectangle whose length is 5.7 cm and breadth is 3 cm.

Sol. Length of the rectangle = 5.7 cm,

Breadth of the rectangle = 3 cm.

∴ Area of the rectangle = Length × Breadth = 5.7 × 3 = 17.1 cm^2

Q.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**

Sol. (i) 1.3 × 10, Since there is one zero in 10,

So the decimal point is shifted to the right by one place. Thus, 1.3 × 10 = 13

(ii) 36.8 × 10, Since there is one zero in 10

So the decimal point is shifted to the right by one place.

∴ 36.8 × 10 = 368

(iii) 153.7 × 10, Since there is one zero in 10

So the decimal point is shifted to the right by one place.

∴ 153.7 × 10 = 1537

(iv) 168.07 × 10, Since there is one zero in 10

So the decimal point is shifted to the right by one place.

∴ 168.07 × 10 = 1680.7

(v) 31.1 × 100, Since there are two zeros in 100

So the decimal point is shifted to the right by two places.

∴ 31.1 × 100 = 3110.0

(vi) 156.1 × 100, Since there are two zeros in 100

So the decimal point is shifted to the right by two places.

∴ 156.1 × 100 = 15610

(vii) 3.62 × 100, Since there are two zeros in 100

So the decimal point is shifted to the right by two places.

∴ 3.62 × 100 = 362

(viii) 43.07 × 100, Since there are two zeros in 100

So the decimal point is shifted to the right by two places.

∴ 43.07 × 100 = 4307

(ix) 0.5 × 10, Since there is one zero in 10

So the decimal point is shifted to the right by one place.

∴ 0.5 × 10 = 5

(x) 0.08 × 10, Since there is one zero in 10

So the decimal point is shifted to the right by one place.

∴ 0.08 × 10 = 0.8

(xi) 0.9 × 100, Since there is two zeros in 100

So the decimal point is shifted to the right by two places.

∴ 0.9 × 100 = 90

(xii) 0.03 × 1000, Since there are three zeros in 1000

So the decimal point is shifted to the right by three places.

∴ 0.03 × 1000 = 30

Q.4. 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?

Sol. Since distance covered in one litre of petrol = 55.3 km

So distance covered in 10 litres of petrol = 55.3 × 10 = 553.0 km

Q.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) 101.01 × 0.01 **(x) 100.01 × 1.1**

Sol. (i) 2.5 × 0.3

25 × 3 = 75 and total number of digits in the decimal parts of the given decimal numbers = 1 + 1 = 2

Decimal point is placed in the product after 2 places from the right most digit. Thus, 2.5 × 0.3 = 0.75

(ii) 0.1 × 51.7

1 × 517 = 517 and total number of digits in the decimal parts of the given decimal numbers = 1 + 1 = 2

∴ Decimal point is placed in the product after 2 places from the right most digit. Thus, 0.1 × 51.7 = 5.17

(iii) 0.2 × 316.8

2 × 3168 = 6336 and total number of digits in the decimal parts of the given decimal numbers = 1+1=2

Decimal point is placed in the product after 2 places from the right most digit.

0.2 × 316 = 63.36

(iv) 1.3 × 3.1

13 × 31 = 403 and total number of digits in the decimal parts of the given decimal numbers = 1 + 1 = 2

∴ Decimal point is placed in the product after 2 places from the right most digit.

∴ 1.3 × 3.1 = 4.03

(v) 0.5 × 0.05

5 × 5 = 25 and total number of digits in the decimal parts of the given decimal numbers = 1 + 2 = 3

∴ Decimal point is placed in the product after 3 places from the right most digit.

∴ 0.5 × 0.05 = 0.025

(vi) 11.2×0.15

$112 \times 15 = 1680$ and there are $1 + 2 = 3$ digits in the decimal part of the given decimal numbers

$\therefore$ Decimal point is placed in the product after 3 places from the right most digit.

$\therefore \quad 11.2 \times 0.15 = 1.680$

(vii) 1.07×0.02

$107 \times 2 = 214$ and total number of digits in the decimal part of the given decimal numbers $= 2 + 2 = 4$

$\therefore$ Decimal point is placed in the product after 4 places from right most digit.

$\therefore \quad 1.07 \times 0.02 = 0.0214$

(viii) 10.05×1.05

$1005 \times 105 = 105525$ and the total number of digits in the decimal parts of the given decimal numbers is $2 + 2 = 4$.

$\therefore$ The decimal point is placed in the product after 4 places from the right most digit.

$\therefore \quad 10.05 \times 1.05 = 10.5525$

(ix) 101.01×0.01

$10101 \times 1 = 10101$ and the total number of digits in the decimal parts of the given decimal numbers is $2 + 2 = 4$

$\therefore$ The decimal point is placed after 4 places from the right most digit in the product

$\therefore \quad 101.01 \times 0.01 = 1.0101$

(x) 100.01×1.1

$10001 \times 11 = 110011$ and the total number of digits in the decimal parts of the given decimal numbers is $2 + 1 = 3$

$\therefore$ The decimal point is placed after 3 places from the right most digit in the product

$\therefore \quad 100.01 \times 1.1 = 110.011$

EXERCISE 2.7

Q.1. Find:

(i) $0.4 \div 2$ (ii) $0.35 \div 5$ (iii) $2.48 \div 4$ (iv) $65.4 \div 6$

(v) $651.2 \div 4$ (vi) $14.49 \div 7$ (vii) $3.96 \div 4$ (viii) $0.80 \div 5$

Sol. (i) $0.4 \div 2 = \dfrac{0.4}{2} = \dfrac{0.4}{2.0} = \dfrac{4}{20} = \dfrac{4 \div 4}{20 \div 4} = \dfrac{1}{5} = 0.2$

(ii) $0.35 \div 5 = \dfrac{0.35}{5} = \dfrac{0.35}{5.00} = \dfrac{35}{500} = \dfrac{35 \div 5}{500 \div 5} = \dfrac{7}{100} = 0.07$

(iii) $2.48 \div 4 = \frac{2.48}{4} = \frac{2.48}{4.00} = \frac{248}{400} = \frac{248 \div 8}{400 \div 8} = \frac{31}{50} = 0.62$

(iv) $65.4 \div 6 = \frac{65.4}{6} = \frac{654 \div 6}{60 \div 6} = \frac{109}{10} = 10.9$

(v) $651.2 \div 4 = \frac{651.2}{4} = \frac{651.2}{4.0} = \frac{6512}{40} = \frac{6512 \div 8}{40 \div 8} = \frac{814}{5} = 162.8$

(vi) $14.49 \div 7 = \frac{14.49}{7} = \frac{14.49}{7.00} = \frac{1449}{700} = \frac{1449 \div 7}{700 \div 7} = \frac{207}{100} = 2.07$

(vii) $3.96 \div 4 = \frac{3.96}{4} = \frac{3.96}{4.00} = \frac{396}{400} = \frac{396 \div 4}{400 \div 4} = \frac{99}{100} = 0.99$

(viii) $0.80 \div 5 = \frac{0.80}{5} = \frac{0.80}{5.00} = \frac{8}{500} = \frac{80 \div 20}{500 \div 20} = \frac{4}{25} = 0.16$

Q.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**

Sol. (i) 4.8 ÷ 10

As there is one zero in 10, the decimal point in the quotient is shifted to the left by one place.

∴ 4.8 ÷ 10 = 0.48

52.5 ÷ 10

As there is one zero in 10, the decimal point in the quotient is shifted to the left by one place.

∴ 52.5 ÷ 10 = 5.25

(iii) 0.7 ÷ 10

As there is one zero in 10, the decimal point in the quotient is shifted to the left by one place.

∴ 0.7 ÷ 10 = 0.07

(iv) 33.1 ÷ 10

As there is one zero in 10, the decimal point in the quotient is shifted to the left by one place.

∴ 33.1 ÷ 10 = 3.31

(v) 272.23 ÷ 10

As there is one zero in 10, the decimal point in the quotient is shifted to the left by one place.

∴ 272.23 ÷ 10 = 27.223

(vi) 0.56 ÷ 10

As there is one zero in 10, the decimal point in the quotient is shifted to the left by one place.

∴ 0.56 ÷ 10 = 0.056

(vii) 3.97 ÷ 10

As there is one zero in 10, the decimal point in the quotient is shifted to the left by one place.

∴ 3.97 ÷10 = 0.397

Q.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

Sol. (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

Q.4. Find:

(i) 7.9 ÷ 1000 (ii) 26.3 ÷ 1000 (iii) 38.53 ÷ 1000 (iv) 128.9 ÷ 1000

(v) 0.5 ÷ 1000

Sol. (i) 7.9 ÷ 1000.

There are three zeros in 1000, the decimal point in the quotient is shifted to the left by 3 places.

∴ 7.9 ÷ 1000 = 0.0079

(ii) 26.3 ÷ 1000.

There are three zeros in 1000, the decimal point in the quotient is shifted to the left by 3 places.

∴ 26.3 ÷ 1000 = 0.0263

(iii) 38.53 ÷ 1000.

There are three zeros in 1000, the decimal point in the quotient is shifted to the left by 3 places.

∴ 38.53 ÷ 1000 = 0.03853

(iv) 128.9 ÷ 1000

There are three zeros in 1000, the decimal point in the quotient is shifted to the left by 3 places.

∴ 128.9 ÷ 1000 = 0.1289

(v) 0.5 ÷ 1000

There are three zeros in 1000, the decimal point in the quotient is shifted to the left by 3 places.

∴ 0.5 ÷ 1000 = 0.0005

Q.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

Sol. (i) $7 \div 3.5 = \frac{7}{35} = \frac{7.0}{3.5} = \frac{70}{35} = \frac{2}{1} = 2$

(ii) $36 \div 0.2 = \frac{36}{0.2} = \frac{36.0}{0.2} = \frac{360}{2} = 180$

(iii) $3.25 \div 0.5 = \frac{3.25}{0.5} = \frac{3.25}{0.50} = \frac{325}{50} = \frac{13}{2} = 6.5$

(iv) $30.94 \div 0.7 = \frac{30.94}{0.7} = \frac{30.94}{0.70} = \frac{3094}{70} = \frac{221}{5} = 44.2$

(v) $0.5 \div 0.25 = \frac{0.5}{0.25} = \frac{0.50}{0.25} = \frac{50}{25} = 2$

(vi) $7.75 \div 0.25 = \frac{7.75}{0.25} = \frac{775}{25} = \frac{31}{1} = 31.0$

(vii) $76.5 \div 0.15 = \frac{76.5}{0.15} = \frac{76.50}{0.15} = \frac{7650}{15} = \frac{510}{1} = 510$

(viii) $37.8 \div 1.4 = \frac{37.8}{1.4} = \frac{378}{14} = \frac{27}{1} = 27$

(ix) $2.73 \div 1.3 = \frac{2.73}{1.3} = \frac{273}{1.30} = \frac{21}{10} = 2.1$

Q.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?

Sol. Total distance covered = 43.2 km

Quantity of petrol used = 2.4 litres

∴ Distance covered in one litre petrol

$$= \frac{\text{Total distance covered}}{\text{Total quantity of petrol}} = \frac{43.2}{2.4}\text{km} = \left[\frac{432}{10} \div \frac{24}{10}\right]\text{km}$$

$$= \frac{432}{10} \times \frac{10}{24}\text{km} = \frac{18 \times 1}{1 \times 1} = 18\text{ km}$$