2. Fractions and Decimals

Learn and Remember

1. Fraction can be expressed in the form of $\frac{a}{b}$ (a and b are integers and $b \neq 0$) where a is numerator and b is denominator.

2. The set of fractions is closed with respect to addition, multiplication and division.

3. Product of two fraction $= \dfrac{\text{Product of their numerators}}{\text{Product of their denominators}}$.

4. Fraction acts as an operator 'of'. For example, $\frac{1}{3}$ of 3 is $\frac{1}{3} \times 3 = 1$.

5. A reciprocal of a fraction is interchanging of numerator and denominator.

6. To divide a fraction by another fraction. We multiply the first fraction by the reciprocal of the other.

7. A decimal number has two parts namely the whole part and decimal part.

8. Decimal numbers can be added or subtracted by writing in columns with their decimal points directly below each other so that tenth should come under tenths, hundredth should come under hundredths and so on.

9. Multiplying two decimal numbers ignoring the decimal point and put the decimal point in the product by counting the digits from its right most place.

10. To multiply a decimal number by 10, 100 or 1000 move the decimal point in the number to the right by as many places as there are zero over 1.

11. While dividing two decimal numbers, first shift the decimal point to the right by equal number of places in both to convert the divisor to a whole number.

12. To divide a decimal by 10, 100 or 1000 shift the digits in the decimal number to the left by as many places there are zeros over 1, to get quotient.

TEXTBOOK QUESTIONS SOLVED

Exercise 2.1 (Page No. 31)

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

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

(Taking L.C.M. of 1 and 5 is 5.)

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

(Taking L.C.M. of 1 and 8 is 8.)

(iii) $\dfrac{3}{5} + \dfrac{2}{7} = \dfrac{21+10}{35} = \dfrac{31}{35}$ (Taking L.C.M. of 5 and 7 is 35.)

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

(Taking L.C.M. of 11 and 15 is 165.)

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

(Taking L.C.M. of 10, 5 and 2 is 10.)

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

(Change into mixed fraction.)

(vi) $2\dfrac{2}{3} + 3\dfrac{1}{2} = \dfrac{8}{3} + \dfrac{7}{2}$ (Change into improper fraction.)

$= \dfrac{16+21}{6}$ (Taking L.C.M. of 3 and 2 is 6.)

$= \dfrac{37}{6} = 6\dfrac{1}{6}$ (Change into mixed fraction.)

(vii) $8\dfrac{1}{2} - 3\dfrac{5}{8} = \dfrac{17}{2} - \dfrac{29}{8}$　　(Change into improper fraction.)

$$= \dfrac{68 - 29}{8}$$　　(Taking L.C.M. of 2 and 8 is 8.)

$$= \dfrac{39}{8} = 4\dfrac{7}{8}.$$　　(Change into mixed fraction.)

Q2. Arrange the following in descending order:

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

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

$\Rightarrow \dfrac{14}{63}, \dfrac{42}{63}, \dfrac{24}{63}$　　(Converting into like fractions.)

On arranging the numerators in descending order when denominators are same.

$\Rightarrow \dfrac{42}{63} > \dfrac{24}{63} > \dfrac{14}{63}$

Write in their actual form.

Therefore,

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

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

$\Rightarrow \dfrac{14}{70}, \dfrac{30}{70}, \dfrac{49}{70}$　　(Converting into like fractions.)

On arranging the numerators in descending order when denominators are same.

$\Rightarrow \dfrac{49}{70} > \dfrac{30}{70} > \dfrac{14}{70}$

Write in their actual form.

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 diagonals is the same. Is this a magic square?

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

$\left(\text{Along the first row } \dfrac{4}{11} + \dfrac{9}{11} + \dfrac{2}{11} = \dfrac{15}{11}\right).$

Sol. Given, the sum of first row = $\dfrac{4}{11} + \dfrac{9}{11} + \dfrac{2}{11} = \dfrac{15}{11}$

Similarly, we find the sum of each row, column and also diagonals.

The sum of second row = $\dfrac{3}{11} + \dfrac{5}{11} + \dfrac{7}{11} = \dfrac{3+5+7}{11} = \dfrac{15}{11}$

The sum of third row = $\dfrac{8}{11} + \dfrac{1}{11} + \dfrac{6}{11} = \dfrac{8+1+6}{11} = \dfrac{15}{11}$

The sum of first column = $\dfrac{4}{11} + \dfrac{3}{11} + \dfrac{8}{11} = \dfrac{4+3+8}{11} = \dfrac{15}{11}$

The sum of second column = $\dfrac{9}{11} + \dfrac{5}{11} + \dfrac{1}{11} = \dfrac{9+5+1}{11} = \dfrac{15}{11}$

The sum of third column = $\dfrac{2}{11} + \dfrac{7}{11} + \dfrac{6}{11} = \dfrac{2+7+6}{11} = \dfrac{15}{11}$

The sum of first diagonal (left to right)

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

The sum of second diagonal (right to left)

$$= \dfrac{2}{11} + \dfrac{5}{11} + \dfrac{8}{11} = \dfrac{2+5+8}{11} = \dfrac{15}{11}$$

Yes, this is **a magic square** because the sum of fractions in each row, in each column and along the diagonals are the same.

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

Sol. Given that the sheet of paper is in rectangular form.

Then, the length of sheet = $12\frac{1}{2}$ cm

and breadth of sheet = $10\frac{2}{3}$ cm.

We know, perimeter of rectangle = 2(length + breadth)

$$= 2\left(12\frac{1}{2} + 10\frac{2}{3}\right) = 2\left(\frac{25}{2} + \frac{32}{3}\right)$$

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

$$= \frac{139}{3} = 46\frac{1}{3} \text{ cm.}$$

Thus, the perimeter of rectangular sheet is $46\frac{1}{3}$ cm.

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

Sol. (i) We have to find ΔABE's perimeter

Given in ΔABE,

$AB = \frac{5}{2}$ cm, $BE = 2\frac{3}{4}$ cm, $AE = 3\frac{3}{5}$ cm

We know, the perimeter of ΔABE = AB + BE + AE
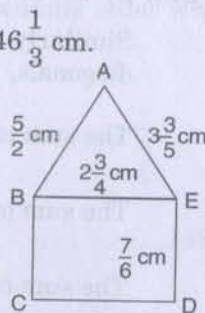
$$= \left(\frac{5}{2} + 2\frac{3}{4} + 3\frac{3}{5}\right) \text{ cm} = \left(\frac{5}{2} + \frac{11}{4} + \frac{18}{5}\right) \text{ cm}$$

$$= \left(\frac{50+55+72}{20}\right) \text{ cm} = \frac{177}{20} \text{ cm}$$

Thus, the perimeter of ΔABE is $8\frac{17}{20}$ cm.

(ii) Rectangle BCDE's perimeter = ?

Given in rectangle BCDE,

$$BE = 2\frac{3}{4} \text{ cm, } ED = \frac{7}{6} \text{ cm}$$

We know, the perimeter of rectangle = 2(length + breadth)

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

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

Thus, the perimeter of rectangle BCDE is $7\frac{5}{6}$ cm.

Comparing the perimeter of triangle and perimeter of rectangle,

$$\therefore \qquad 8\frac{17}{20} \text{ cm} > 7\frac{5}{6} \text{ cm}$$

Thus, the perimeter of triangle ABE is greater than rectangle 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?

Sol. Given the width of the picture = $7\frac{3}{5}$ cm

and the width of the picture frame = $7\frac{3}{10}$ cm.

Therefore, the picture should be trimmed = $\left(7\frac{3}{5} - 7\frac{3}{10}\right)$ cm

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

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

Thus, the pictured should be trimmed by $\frac{3}{10}$ 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?

Sol. The part of an apple eaten by Ritu = $\dfrac{3}{5}$

And part of an apple eaten by Somu = $1 - \dfrac{3}{5} = \dfrac{5-3}{5} = \dfrac{2}{5}$

Thus, Somu ate $\dfrac{2}{5}$ part of an apple.

Comparing the parts of apple $\dfrac{3}{5} > \dfrac{2}{5}$.

Thus, Ritu had the larger share than her brother Somu.

Larger share will be more = $\dfrac{3}{5} - \dfrac{2}{5} = \dfrac{3-2}{5} = \dfrac{1}{5}$ part.

Thus, Ritu's part is $\dfrac{1}{5}$ more than Somu's part.

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

Sol. Time taken by Michael to colour the picture = $\dfrac{7}{12}$ hour.

Time taken by Vaibhav to colour the picture = $\dfrac{3}{4}$ hour.

To find longer time, let us compare $\dfrac{7}{12}$ and $\dfrac{3}{4}$.

Converting them to like fractions, we have,

$$\dfrac{7}{12} \text{ and } \dfrac{3\times3}{4\times3} = \dfrac{9}{12}$$

Since, $7 < 9$ so $\dfrac{7}{12} < \dfrac{9}{12}$

Therefore, $\dfrac{7}{12}$ hour $< \dfrac{3}{4}$ hour

Thus, Vaibhav worked longer time.

Vaibhav worked longer time = $\left(\dfrac{3}{4} - \dfrac{7}{12}\right)$ hour = $\left(\dfrac{9-7}{12}\right)$ hour
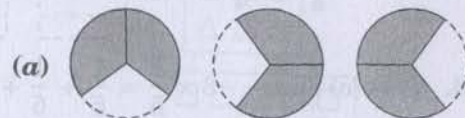
$= \left(\dfrac{2}{12}\right)$ hour = $\dfrac{1}{6}$ hour

Thus, Vaibhav took $\dfrac{1}{6}$ hour more than Michael.

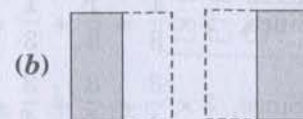## Exercise 2.2 (Page No. 36-37)

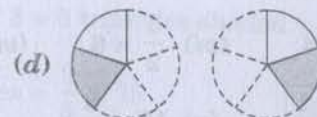**Q1. Which of the drawings (a) to (d) show:**

  (i) $2 \times \dfrac{1}{5}$ (a)

  (ii) $2 \times \dfrac{1}{2}$ (b)

  (iii) $3 \times \dfrac{2}{3}$ (c)

  (iv) $3 \times \dfrac{1}{4}$ (d)

Sol. (i) — (d) Since, $2 \times \dfrac{1}{5} = \dfrac{1}{5} + \dfrac{1}{5}$
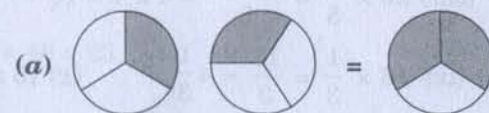
  (ii) — (b) Since, $2 \times \dfrac{1}{2} = \dfrac{1}{2} + \dfrac{1}{2}$

  (iii) — (a) Since, $3 \times \dfrac{2}{3} = \dfrac{2}{3} + \dfrac{2}{3} + \dfrac{2}{3}$
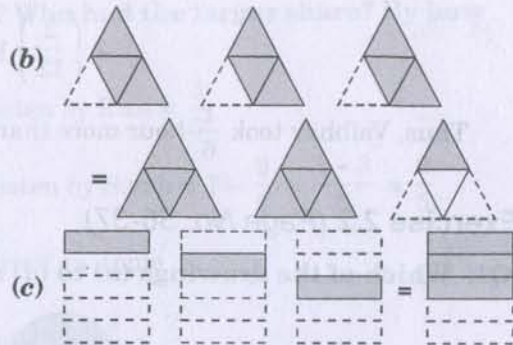
  (iv) — (c) Since, $3 \times \dfrac{1}{4} = \dfrac{1}{4} + \dfrac{1}{4} + \dfrac{1}{4} + \dfrac{1}{4}$.

Q2. Some pictures (a) to (c) are given below. Tell which of them show:

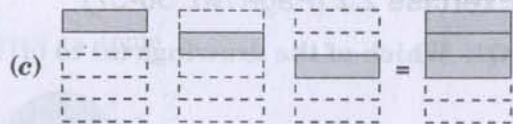 (i) $3 \times \dfrac{1}{5} = \dfrac{3}{5}$ (a)

(*ii*) $2 \times \dfrac{1}{3} = \dfrac{2}{3}$ (*b*)

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

Sol. (*i*) — (*c*) Since, $3 \times \dfrac{1}{5} = \dfrac{1}{5} + \dfrac{1}{5} + \dfrac{1}{5} = \dfrac{3}{5}$

(*ii*) — (*a*) Since, $2 \times \dfrac{1}{3} = \dfrac{1}{3} + \dfrac{1}{3} = \dfrac{2}{3}$

(*iii*) — (*b*) Since, $3 \times \dfrac{3}{4} = \dfrac{3}{4} + \dfrac{3}{4} + \dfrac{3}{4} = \dfrac{9}{4} = 2\dfrac{1}{4}$.

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*) $15 \times \dfrac{3}{5}$.

Sol. (*i*) $7 \times \dfrac{3}{5} = \dfrac{7\times3}{5} = \dfrac{21}{5} = 4\dfrac{1}{5}$ (*ii*) $4 \times \dfrac{1}{3} = \dfrac{4\times1}{3} = \dfrac{4}{3} = 1\dfrac{1}{3}$

(*iii*) $2 \times \dfrac{6}{7} = \dfrac{2\times6}{7} = \dfrac{12}{7} = 1\dfrac{5}{7}$ (*iv*) $5 \times \dfrac{2}{9} = \dfrac{5\times2}{9} = \dfrac{10}{9} = 1\dfrac{1}{9}$

(*v*) $\dfrac{2}{3} \times 4 = \dfrac{2\times4}{3} = \dfrac{8}{3} = 2\dfrac{2}{3}$ (*vi*) $\dfrac{5}{2} \times 6 = \dfrac{5\times6}{2} = \dfrac{30}{2} = 15$
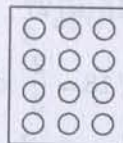
(*vii*) $11 \times \dfrac{4}{7} = \dfrac{11\times4}{7} = \dfrac{44}{7} = 6\dfrac{2}{7}$

(*viii*) $20 \times \dfrac{4}{5} = \dfrac{20\times4}{5} = 4 \times 4 = 16$

(*ix*) $13 \times \dfrac{1}{3} = \dfrac{13}{3} = 4\dfrac{1}{3}$ (*x*) $15 \times \dfrac{3}{5} = \dfrac{15\times3}{5} = 3 \times 3 = 9$.
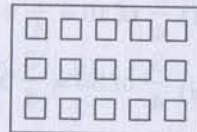
Q4. Shade:

(*i*) $\dfrac{1}{2}$ of the circles in box (*a*)

(*ii*) $\dfrac{2}{3}$ of the triangles in box (*b*)

(*iii*) $\dfrac{3}{5}$ of the squares in box (*c*)

Sol. (*i*) $\dfrac{1}{2}$ of the 12 circles $= \dfrac{1}{2} \times 12$

$= 6$ circles shaded.
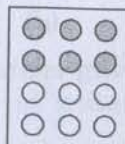
(*ii*) $\dfrac{2}{3}$ of the 9 triangles $= \dfrac{2}{3} \times 9$

$= 2 \times 3 = 6$ triangles shaded.
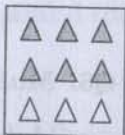
(*iii*) $\dfrac{3}{5}$ of the 15 squares $= \dfrac{3}{5} \times 15$

$= 3 \times 3 = 9$ squares shaded.
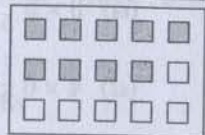
Q5. Find:

(*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.

Sol. (*a*) $\dfrac{1}{2}$ of (*i*) 24 (*ii*) 46

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

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

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

(i) $\frac{2}{3}$ of 18 = $\frac{2}{3}$ × 18 = 2 × 6 = 12

(ii) $\frac{2}{3}$ of 27 = $\frac{2}{3}$ × 27 = 2 × 9 = 18.

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

(i) $\frac{3}{4}$ of 16 = $\frac{3}{4}$ × 16 = 3 × 4 = 12

(ii) $\frac{3}{4}$ of 36 = $\frac{3}{4}$ × 36 = 3 × 9 = 27.

(d) $\frac{4}{5}$ of (i) 20 (ii) 35

(i) $\frac{4}{5}$ of 20 = $\frac{4}{5}$ × 20 = 4 × 4 = 16

(ii) $\frac{4}{5}$ of 35 = $\frac{4}{5}$ × 35 = 4 × 7 = 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) $3\frac{2}{5} \times 8$.

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

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

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

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

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

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

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

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

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?

Sol. Given,

(i) Total quantity of water in bottle = 5 litres

Vidya consumed = $\frac{2}{5}$ of 5 litres = $\frac{2}{5}$ × 5 litres = 2 litres.

Thus, Vidya drank 2 litres water from the bottle.

(ii) Pratap consumed = $\left(1 - \frac{2}{5}\right)$ part of bottle

$= \frac{5-2}{5} = \frac{3}{5}$ part of bottle.

Pratap consumed = $\frac{3}{5}$ of 5 litres water i.e., $\frac{3}{5} \times 5$

$= 3$ litres

Thus, Pratap drank $\frac{3}{5}$ part the total quantity of water.

Exercise 2.3 *(Page No. 41)*

Q1. Find:

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

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

Sol. (i) $\dfrac{1}{4}$ of (a) $\dfrac{1}{4}$　(b) $\dfrac{3}{5}$　(c) $\dfrac{4}{3}$

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

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

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

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

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

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

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

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) $\dfrac{4}{5} \times \dfrac{12}{7}$.

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

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

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

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

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

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

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

Q3. Multiply the following fractions:

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

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

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

(ii) $6\dfrac{2}{5} \times \dfrac{7}{9} = \dfrac{32}{5} \times \dfrac{7}{9} = \dfrac{32 \times 7}{5 \times 9} = \dfrac{224}{45} = 4\dfrac{44}{45}$.

(iii) $\dfrac{3}{2} \times 5\dfrac{1}{3} = \dfrac{3}{2} \times \dfrac{16}{3} = \dfrac{3 \times 16}{2 \times 3} = \dfrac{48}{6} = 8$.

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

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

(vi) $2\dfrac{3}{5} \times 3 = \dfrac{13}{5} \times 3 = \dfrac{13 \times 3}{5 \times 1} = \dfrac{39}{5} = 7\dfrac{4}{5}$.

(vii) $3\dfrac{4}{7} \times \dfrac{3}{5} = \dfrac{25}{7} \times \dfrac{3}{5} = \dfrac{25 \times 3}{7 \times 5} = \dfrac{75}{35} = \dfrac{15}{7} = 2\dfrac{1}{7}$.

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 $\dfrac{3}{7}$.

Sol. (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 $\dfrac{3}{7}$

$\dfrac{2}{7} \times \dfrac{3}{4}$ or $\dfrac{3}{5} \times \dfrac{5}{8}$ $\dfrac{1}{2} \times \dfrac{6}{7}$ or $\dfrac{2}{3} \times \dfrac{3}{7}$

$\dfrac{3}{14}$ or $\dfrac{3}{8}$ $\dfrac{3}{7}$ or $\dfrac{2}{7}$

$\dfrac{3}{14} < \dfrac{3}{8}$ $\dfrac{3}{7} > \dfrac{2}{7}$

Thus, $\dfrac{3}{5}$ of $\dfrac{5}{8}$ is greater.   Thus, $\dfrac{1}{2}$ of $\dfrac{6}{7}$ is greater.

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

Sol. Given that the distance between two adjacent saplings = $\dfrac{3}{4}$ m.

Saili planted 4 saplings in a row, then number of gap in saplings = 3.
Therefore, the distance between the first and the last saplings
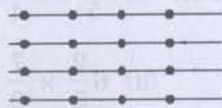
$$= 3 \times \dfrac{3}{4}\ m = \dfrac{9}{4}\ m = 2\dfrac{1}{4}\ m.$$

Thus, the distance between the first and the last saplings is $2\dfrac{1}{4}$ m.

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

Sol. Time taken by Lipika to read a book = $1\dfrac{3}{4}$ hours.

She reads entire book in 6 days.
Now, total hours taken by her to read the entire book

$$= 1\dfrac{3}{4} \times 6 = \dfrac{7}{4} \times 6 = \dfrac{21}{2} = 10\dfrac{1}{2}\ \text{hours.}$$

Thus, $10\dfrac{1}{2}$ hours were required by her to read the book.

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

Sol. In 1 litre of petrol, car covers the distance = 16 km.

In $2\dfrac{3}{4}$ litres of petrol, car covers the distance = $2\dfrac{3}{4}$ of 16 km

$$= \dfrac{11}{4} \times 16\ \text{km} = 44\ \text{km}$$

Thus, car will cover 44 km distance.

Q8. (a) (i) **Provide the number in the box** ☐, **such that**

$$\dfrac{2}{3} \times \square = \dfrac{10}{30}.$$

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

(b) (i) **Provide the number in the box** ☐, **such that**

$$\dfrac{3}{5} \times \square = \dfrac{24}{75}.$$

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

Sol. (a) (i) Given,

$$\dfrac{2}{3} \times \square = \dfrac{10}{30}$$

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

Thus, $\dfrac{2}{3} \times \boxed{\dfrac{5}{10}} = \dfrac{10}{30}$

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

(b) (i) Given,

$$\dfrac{3}{5} \times \square = \dfrac{24}{75}$$

Therefore, $\dfrac{3 \times 8}{5 \times 15} = \dfrac{24}{75}$

Thus, $\dfrac{3}{5} \times \boxed{\dfrac{8}{15}} = \dfrac{24}{75}$

(ii) The simplest form of $\dfrac{8}{15}$ is $\dfrac{8}{15}$.

Exercise 2.4 *(Page No. 46)*

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) $5 \div 3\dfrac{4}{7}$.

Sol. (i) $12 \div \dfrac{3}{4} = 12 \times$ reciprocal of $\dfrac{3}{4}$

$= 12 \times \dfrac{4}{3} = \dfrac{48}{3} = 16.$

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

$= 14 \times \dfrac{6}{5} = \dfrac{14 \times 6}{5} = \dfrac{84}{5} = 16\dfrac{4}{5}.$

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

$= 8 \times \dfrac{3}{7} = \dfrac{8 \times 3}{7} = \dfrac{24}{7} = 3\dfrac{3}{7}.$

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

$= 4 \times \dfrac{3}{8} = \dfrac{4 \times 3}{8} = \dfrac{3}{2} = 1\dfrac{1}{2}.$

(v) $3 \div 2\dfrac{1}{3} = 3 \times$ reciprocal of $\left(2\dfrac{1}{3}\right)$

$= 3 \times$ reciprocal of $\dfrac{7}{3}$

$= 3 \times \dfrac{3}{7} = \dfrac{3 \times 3}{7} = \dfrac{9}{7} = 1\dfrac{2}{7}.$

(vi) $5 \div 3\dfrac{4}{7} = 5 \times$ reciprocal of $\left(3\dfrac{4}{7}\right)$

$= 5 \times$ reciprocal of $\dfrac{25}{7}$

$= 5 \times \dfrac{7}{25} = \dfrac{5 \times 7}{25} = \dfrac{7}{5} = 1\dfrac{2}{5}.$

Q2. 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) $\dfrac{1}{11}$.

Sol. (i) Reciprocal of $\dfrac{3}{7} = \dfrac{7}{3} \longrightarrow$ improper fraction.

(ii) Reciprocal of $\dfrac{5}{8} = \dfrac{8}{5} \longrightarrow$ improper fraction.

(iii) Reciprocal of $\dfrac{9}{7} = \dfrac{7}{9} \longrightarrow$ proper fraction.

(iv) Reciprocal of $\dfrac{6}{5} = \dfrac{5}{6} \longrightarrow$ proper fraction.

(v) Reciprocal of $\dfrac{12}{7} = \dfrac{7}{12} \longrightarrow$ proper fraction.

(vi) Reciprocal of $\dfrac{1}{8} = 8 \longrightarrow$ whole number.

(vii) Reciprocal of $\dfrac{1}{11} = 11 \longrightarrow$ 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) $4\dfrac{3}{7} \div 7$.

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

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

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

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

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

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

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) $2\dfrac{1}{5} \div 1\dfrac{1}{5}$.

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

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

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

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

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

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

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

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

Exercise 2.5 (Page No. 47-48)

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.**

Sol.   (i) $0.5 > 0.05$ (ii) $0.7 > 0.5$ (iii) $7 > 0.7$

     (iv) $1.37 < 1.49$ (v) $2.03 < 2.30$ (vi) $0.8 < 0.88$.

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.**

Sol. We know, 100 paise = Re. 1

$$\Rightarrow \qquad 1 \text{ paise} = \text{Re. } \dfrac{1}{100}$$

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

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

$$= \text{Rs. } (7 + 0.07) = \text{Rs. } 7.07.$$

   (iii) 77 rupees 77 paise = Rs. 77 + Re. $\dfrac{77}{100}$

$$= \text{Rs. } (77 + 0.77) = \text{Rs. } 77.77.$$

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

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

Q3.   (i) **Express 5 cm in metre and kilometre.**

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

Sol.   (i) Express 5 cm in metre and kilometre

• 5 cm in metre	• 5 cm in kilometre
We know,	We know,
100 cm = 1 metre	1,00,000 cm = 1 kilometre
1 cm = $\dfrac{1}{100}$ metre	1 cm = $\dfrac{1}{1,00,000}$ kilometre
5 cm = $\dfrac{1}{100} \times 5$ metre	5 cm = $\dfrac{5}{1,00,000}$ kilometre
Thus, 5 cm = 0.05 metre.	Thus, 5 cm = 0.00005 kilometre.

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

• 35 mm in cm,	• 35 mm in m
We know,　10 mm = 1 cm	We know, 1000 mm = 1 m

$$1 \text{ mm} = \frac{1}{10} \text{ cm} \qquad\qquad 1 \text{ mm} = \frac{1}{1000} \text{ m}$$

$$\text{Therefore, } 35 \text{ mm} = \frac{35}{10} \text{ cm} \qquad 35 \text{ mm} = \frac{35}{1000} \text{ m}$$

$$= 3.5 \text{ cm.} \qquad\qquad \text{Therefore, } 35 \text{ mm}$$

$$= 0.035 \text{ m.}$$

• 35 mm in km

We know,

$$10,00,000 \text{ mm} = 1 \text{ km}$$

$$1 \text{ mm} = \frac{1}{10,00,000} \text{ km}$$

$$35 \text{ mm} = \frac{35}{10,00,000} \text{ km}$$

Therefore,　35 mm = 0.000035 km.

Q4. Express in kg:

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

Sol. We know,　1000 g = 1 kg

$$1 \text{ g} = \frac{1}{1000} \text{ kg}$$

(i) $200 \text{ g} = 200 \text{ g of } \frac{1}{1000} \text{ kg} = \left(200 \times \frac{1}{1000}\right) \text{ kg} = \frac{200}{1000} \text{ kg} = 0.2 \text{ kg.}$

(ii) $3470 \text{ g} = 3470 \text{ g of } \frac{1}{1000} \text{ kg} = \left(3470 \times \frac{1}{1000}\right) \text{ kg} = \frac{3470}{1000} \text{ kg}$

$$= 3.470 \text{ kg.}$$

(iii) $4 \text{ kg } 8 \text{ g} = 4 \text{ kg} + 8 \text{ g} = 4 \text{ kg} + 8 \text{ g of } \frac{1}{1000} \text{ kg}$

$$= 4 \text{ kg} + \left(8 \times \frac{1}{1000}\right) \text{ kg} = 4 \text{ kg} + \left(\frac{8}{1000}\right) \text{ kg}$$

$$= 4 \text{ kg} + 0.008 \text{ kg} = 4.008 \text{ kg.}$$

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

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

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

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

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

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

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.**

Sol. (i) 2.56

$\longrightarrow 2 \times 1 \Rightarrow$　2 ones.

(ii) 21.37

$\longrightarrow 2 \times 10 = 20 \Rightarrow$　2 tens.

(iii) 10.25

$\longrightarrow 2 \times \frac{1}{10} = \frac{2}{10} \Rightarrow$　2 tenths.

(iv) 9.42

$\longrightarrow 2 \times \frac{1}{100} = \frac{2}{100} \Rightarrow$　2 hundredths.

(v) 63.352

$\longrightarrow 2 \times \frac{1}{1000} = \frac{2}{1000} \Rightarrow$　2 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?
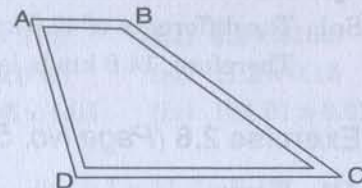
Sol. Distance covered by Dinesh when he went from place A to place B = 7.5 km

and from place B to place C = 12.7 km.

Total distance covered by Dinesh

= AB + BC = (7.5 + 12.7) km
= 20.2 km.

And, distance covered by Ayub when he went from place A to place D = 9.3 km

and when he went from place D to place C = 11.8 km

Total distance covered by Ayub = AD + DC = (9.3 + 11.8) km
= 21.1 km

On comparing the total distance of Ayub and Dinesh

∴   21.1 km > 20.2 km

So, Ayub covered the more distance = (21.1 – 20.2) km = 0.9 km

Thus, Ayub travelled more distance by 0.9 km or 900 m.

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?

Sol. Shyama bought apples = 5 kg 300 g and mangoes = 3 kg 250 g.

Total weight of fruits bought by Shyama = 5 kg 300 g + 3 kg 250 g
= 8 kg 550 g.

Now,   Sarala bought oranges = 4 kg 800 g and bananas
= 4kg 150 g

Total weight of fruits bought by Sarala = 4 kg 800 g + 4 kg 150 g
= 8 kg 950 g.

On comparing the quantity of fruits 8 kg 550 g < 8 kg 950 g
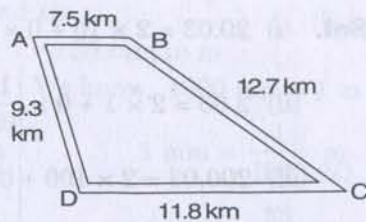
Thus, Sarala bought more fruits.

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

Sol. The difference of 42.6 km and 28 km is 42.6 – 28.0 = 14.6 km

Therefore, 14.6 km is less.

Exercise 2.6 *(Page No. 52)*

Q1. Find:

    (i) **0.2 × 6**   *(ii)* **8 × 4.6**   *(iii)* **2.71 × 5**

    (iv) **20.1 × 4**   *(v)* **0.05 × 7**   *(vi)* **211.02 × 4**

    (vii) **2 × 0.86.**

Sol.   *(i)*   0.2 × 6 = 1.2   *(ii)*   8 × 4.6 = 36.8

     (iii)   2.71 × 5 = 13.55   *(iv)*   20.1 × 4 = 80.4

     (v)   0.05 × 7 = 0.35   *(vi)*   211.02 × 4 = 844.08

     (vii)   2 × 0.86 = 1.72.

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

Sol. Given,   length of rectangle = 5.7 cm

      and breadth of rectangle = 3 cm

We know, the area of rectangle = length × breadth
$$= (5.7 \times 3) \text{ cm}^2 = 17.1 \text{ cm}^2$$

Thus, the area of rectangle is 17.1 cm^2.

Q3. Find:

    (i) **1.3 × 10**   *(ii)* **36.8 × 10**   *(iii)* **153.7 × 10**

    (iv) **168.07 × 10**   *(v)* **31.1 × 100**   *(vi)* **156.1 × 100**

    (vii) **3.62 × 100**   *(viii)* **43.07 × 100**   *(ix)* **0.5 × 10**

    (x) **0.08 × 10**   *(xi)* **0.9 × 100**   *(xii)* **0.03 × 1000.**

Sol.   *(i)*   1.3 × 10 = 13.0   *(ii)*   36.8 × 10 = 368.0

     (iii)   153.7 × 10 = 1537.0   *(iv)*   168.07 × 10 = 1680.70

     (v)   31.1 × 100 = 3110.0   *(vi)*   156.1 × 100 = 15610.0

     (vii)   3.62 × 100 = 362.00   *(viii)*   43.07 × 100 = 4307.00

     (ix)   0.5 × 10 = 5.0   *(x)*   0.08 × 10 = 0.80

     (xi)   0.9 × 100 = 90.0   *(xii)*   0.03 × 1000 = 30.00.

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?

Sol. In one litre, a two-wheeler covers a distance = 55.3 km

In 10 litres, it covers a distance = (55.3 × 10) km = 553.0 km

Thus, 553 km distance will be covered by it in 10 litres of petrol.

Q5. Find :

    (i) **2.5 × 0.3**   *(ii)* **0.1 × 51.7**   *(iii)* **0.2 × 316.8**

    (iv) **1.3 × 3.1**   *(v)* **0.5 × 0.05**   *(vi)* **11.2 × 0.15**

    (vii) **1.07 × 0.02**   *(viii)* **10.05 × 1.05**   *(ix)* **101.01 × 0.01**

    (x) **100.01 × 1.1.**

Sol.   *(i)*   2.5 × 0.3 = 0.75   *(ii)*   0.1 × 51.7 = 5.17

     (iii)   0.2 × 316.8 = 63.36   *(iv)*   1.3 × 3.1 = 4.03

     (v)   0.5 × 0.05 = 0.025   *(vi)*   11.2 × 0.15 = 1.680

     (vii)   1.07 × 0.02 = 0.0214   *(viii)*   10.05 × 1.05 = 10.5525

     (ix)   101.01 × 0.01 = 1.0101   *(x)*   100.01 × 1.1 = 110.011

Exercise 2.7 *(Page No. 55)*

Q1. 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) $0.4 \div 2 = \dfrac{4}{10} \times \dfrac{1}{2} = \dfrac{2}{10}$ (ii) $0.35 \div 5 = \dfrac{035}{100} \times \dfrac{1}{5}$

$$= 0.2.$$
$$= \dfrac{7}{100} = 0.07.$$

(iii) $2.48 \div 4 = \dfrac{248}{100} \times \dfrac{1}{4} = \dfrac{62}{100}$ (iv) $65.4 \div 6 = \dfrac{654}{10} \times \dfrac{1}{6}$

$$= 0.62.$$
$$= \dfrac{109}{10} = 10.9.$$

(v) $651.2 \div 4 = \dfrac{6512}{10} \times \dfrac{1}{4} = \dfrac{1628}{10}$ (vi) $14.49 \div 7 = \dfrac{1449}{100} \times \dfrac{1}{7}$

$$= 162.8.$$
$$= \dfrac{207}{100} = 2.07.$$

(vii) $3.96 \div 4 = \dfrac{396}{100} \times \dfrac{1}{4} = \dfrac{99}{100}$ (viii) $0.80 \div 5 = \dfrac{80}{100} \times \dfrac{1}{5}$

$$= 0.99.$$
$$= \dfrac{16}{100} = 0.16.$$

Q2. Find:

    (i) $4.8 \div 10$ **(ii)** $52.5 \div 10$ **(iii)** $0.7 \div 10$

    (iv) $33.1 \div 10$ **(v)** $272.23 \div 10$ **(vi)** $0.56 \div 10$

    (vii) $3.97 \div 10$.

Sol. (i) $4.8 \div 10 = \dfrac{48}{10} \times \dfrac{1}{10} = \dfrac{48}{100}$ (ii) $52.5 \div 10 = \dfrac{525}{10} \times \dfrac{1}{10}$

$$= 0.48.$$
$$= \dfrac{525}{100} = 5.25.$$

(iii) $0.7 \div 10 = \dfrac{7}{10} \times \dfrac{1}{10} = \dfrac{7}{100}$ (iv) $33.1 \div 10 = \dfrac{331}{10} \times \dfrac{1}{10}$

$$= 0.07.$$
$$= \dfrac{331}{100} = 3.31.$$

(v) $272.23 \div 10 = \dfrac{27223}{100} \times \dfrac{1}{10}$ (vi) $0.56 \div 10 = \dfrac{56}{100} \times \dfrac{1}{10}$

$$= \dfrac{27223}{1000} = 27.223.$$
$$= \dfrac{56}{1000} = 0.056.$$

(vii) $3.97 \div 10 = \dfrac{397}{100} \times \dfrac{1}{10} = \dfrac{397}{1000}$

$$= 0.397.$$

Q3. Find:

    (i) $2.7 \div 100$ **(ii)** $0.3 \div 100$ **(iii)** $0.78 \div 100$

    (iv) $432.6 \div 100$ **(v)** $23.6 \div 100$ **(vi)** $98.53 \div 100$.

Sol. (i) $2.7 \div 100 = \dfrac{27}{10} \times \dfrac{1}{100}$ (ii) $0.3 \div 100 = \dfrac{3}{10} \times \dfrac{1}{100}$

$$= \dfrac{27}{1000} = 0.027.$$
$$= \dfrac{3}{1000} = 0.003.$$

(iii) $0.78 \div 100 = \dfrac{78}{100} \times \dfrac{1}{100}$ (iv) $432.6 \div 100 = \dfrac{4326}{10} \times \dfrac{1}{100}$

$$= \dfrac{78}{10000} = 0.0078.$$
$$= \dfrac{4326}{1000} = 4.326.$$

(v) $23.6 \div 100 = \dfrac{236}{10} \times \dfrac{1}{100}$ (vi) $98.53 \div 100 = \dfrac{9853}{100} \times \dfrac{1}{100}$

$$= \dfrac{236}{1000} = 0.236.$$
$$= \dfrac{9853}{10000} = 0.9853.$$

Q4. Find:

    (i) $7.9 \div 1000$ **(ii)** $26.3 \div 1000$ **(iii)** $38.53 \div 1000$

    (iv) $128.9 \div 1000$ **(v)** $0.5 \div 1000$.

Sol. (i) $7.9 \div 1000 = \dfrac{79}{10} \times \dfrac{1}{1000} = \dfrac{79}{10000} = 0.0079.$

(ii) $26.3 \div 1000 = \dfrac{263}{10} \times \dfrac{1}{1000} = \dfrac{263}{10000} = 0.0263.$

(iii) $38.53 \div 1000 = \dfrac{3853}{100} \times \dfrac{1}{1000} = \dfrac{3853}{100000} = 0.03853.$

(iv) $128.9 \div 1000 = \dfrac{1289}{10} \times \dfrac{1}{1000} = \dfrac{1289}{10000} = 0.1289.$

(v) $0.5 \div 1000 = \dfrac{5}{10} \times \dfrac{1}{1000} = \dfrac{5}{10000} = 0.0005.$

Q5. Find:

    (i) $7 \div 3.5$ **(ii)** $36 \div 0.2$ **(iii)** $3.25 \div 0.5$

    (iv) $30.94 \div 0.7$ **(v)** $0.5 \div 0.25$ **(vi)** $7.75 \div 0.25$

    (vii) $76.5 \div 0.15$ **(viii)** $37.8 \div 1.4$ **(ix)** $2.73 \div 1.3$.

Sol. (i) $7 \div 3.5 = 7 \times \dfrac{1}{3.5} = 7 \times \dfrac{10}{35} = \dfrac{10}{5} = 2.$

(ii) $36 \div 0.2 = 36 \times \dfrac{1}{0.2} = 36 \times \dfrac{10}{2} = 180.$

(iii) $3.25 \div 0.5 = \dfrac{325}{100} \times \dfrac{1}{0.5} = \dfrac{325}{100} \times \dfrac{10}{5} = \dfrac{65}{10} = 6.5.$

(iv) $30.94 \div 0.7 = \dfrac{3094}{100} \times \dfrac{1}{0.7} = \dfrac{3094}{100} \times \dfrac{10}{7} = \dfrac{442}{10} = 44.2.$

(v) $0.5 \div 0.25 = \dfrac{5}{10} \times \dfrac{1}{0.25} = \dfrac{5}{10} \times \dfrac{100}{25} = \dfrac{10}{5} = 2.$

(vi) $7.75 \div 0.25 = \dfrac{775}{100} \times \dfrac{1}{0.25} = \dfrac{775}{100} \times \dfrac{100}{25} = 31.$

(vii) $76.5 \div 0.15 = \dfrac{765}{10} \times \dfrac{1}{0.15} = \dfrac{765}{10} \times \dfrac{100}{15} = 51 \times 10 = 510.$

(viii) $37.8 \div 1.4 = \dfrac{378}{10} \times \dfrac{1}{1.4} = \dfrac{378}{10} \times \dfrac{10}{14} = 27.$

(ix) $2.73 \div 1.3 = \dfrac{273}{100} \times \dfrac{1}{1.3} = \dfrac{273}{100} \times \dfrac{10}{13} = \dfrac{21}{10} = 2.1.$

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 petrol?

Sol. In 2.4 litres of petrol, distance covered by the vehicle = 43.2 km.

Now, in 1 litre of petrol, distance covered by the vehicle = $43.2 \div 2.4$

$$= \left(\dfrac{432}{10} \times \dfrac{1}{2.4} \right) \text{km} = \left(\dfrac{432}{10} \times \dfrac{10}{24} \right) \text{km}$$

$$= 18 \text{ km}$$

Thus, it covered 18 km distance in one litre of petrol..

□□