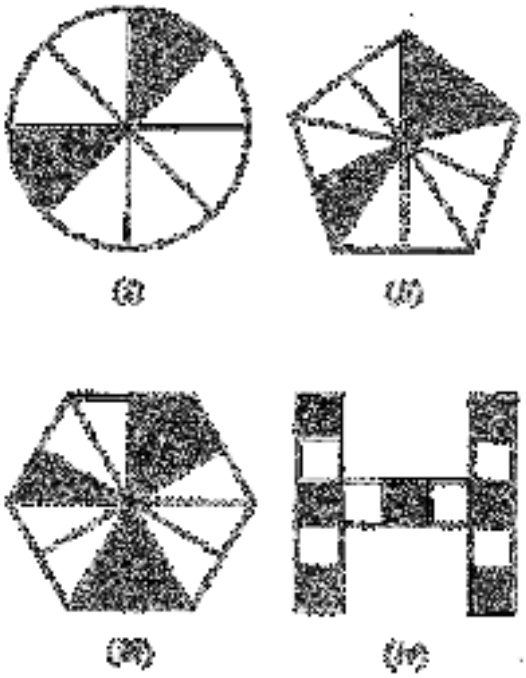
Chapter 2

Fractions and decimals

Exercise 2.1

Question 1.

What fraction of each of the following figure is shaded?



Solution :

(i) Fraction is $\frac{2}{4} = \frac{1}{8}$

(ii) Fraction is $\frac{3}{10}$

(iii) Fraction is $\frac{5}{12}$

(iv) Fraction is $= \frac{7}{3}$

Question 2.

What fraction of an hour is 35 minutes?

Solution :

(i) 1 hour = 60 minutes?

Fraction $= \frac{35}{60} = \frac{7}{12}$

Question 3.

Convert the following fractions into improper fractions:

(i) $2\frac{7}{9}$

(ii) $5\frac{4}{11}$

Solution :

(i) Improper fraction of $2\frac{7}{9}$

$= \frac{2\times9+7}{9}$

$= \frac{25}{9}$

(ii) Improper fraction of $5\frac{4}{11}$

$= \frac{5\times11+7}{11}$

$= \frac{59}{11}$

Question 4.

Convert the following fractions into mixed fractions:

(i) $\frac{73}{8}$

(ii) $\frac{94}{13}$

Solution :

(i) mixed fraction of $\frac{73}{8}$

$= 9\frac{1}{8}$

(ii) mixed fraction of $\frac{94}{13}$

$= 7\frac{3}{13}$

Question 5 .

Fill in the missing numbers in the following equivalent fraction:

(i) $\frac{3}{7} = \frac{5}{35}$

(ii) $\frac{5}{6} = \frac{30}{18}$

(iii) $\frac{8}{9} = \frac{56}{72}$

Solution

(i) $\frac{3}{7} = \frac{5}{35}$

The denominator in the second fraction is 35 to get 35 from 7 , we have to multiply 7 by 5 .

So, $\frac{3}{7}$

$= \frac{3\times5}{7\times5}$

$= \frac{15}{35}$

(ii) $\frac{5}{6} = \frac{30}{18}$

To make both fractions equal, we multiply the numerator of the first fractions by 5 .

The numerator it x the first fraction is 5 . to get 5 from 30 , we have to divide 30 ÷ 6.

To make both fractions equal, we divide denominator of the second fraction by 6 .

So

$\frac{30 \div 6}{18 \div 6} = \frac{5}{3}$

$\frac{5}{3} = \frac{30}{18}$

(iii) $\frac{8}{9} = \frac{56}{72}$

The denominator in the second fraction is 72 and the denominator in the first fraction is 9 .

To get 9 from 72, we have to divide 72 ÷ 8

To make both fractions equal, we divide the numerator of the second fraction by 8.

So

$$\frac{56 \div 8}{72 \div 8} = \frac{7}{9}$$

$$\frac{7}{9} = \frac{56}{72}$$

Question 6 .

Reduce the following fractions to their simplest form:

(i) $\frac{48}{72}$

(ii) $\frac{276}{115}$

(iii) $\frac{72}{336}$

Solution :

$\frac{48}{72}$

$= \frac{2\times2\times3\times4}{2\times2\times2\times3\times3}$ (Cancelling out the common factors)

$= \frac{2}{3}$

$\frac{276}{113}$

$= \frac{2\times2\times3\times23}{5\times23}$ (Cancelling out the common factors)

$= \frac{12}{15}$

(iii) $\frac{72}{336}$

$= \frac{2\times2\times2\times3\times3}{2\times2\times2\times2\times3\times7}$ (cancel the common factors)

$= \frac{3}{14}$

Question 7.

Convert the following fractions into equivalent like fractions :

(i) $\frac{3}{4}, \frac{5}{6}, \frac{7}{8}$

(ii) $\frac{7}{25}, \frac{9}{10}, \frac{19}{40}$

Solution

2	4, 6, 8,
2	2, 3, 4,
2	1, 3, 2
3	1, 3, 1
	1, 1, 1

L.C.M. = 2 × 2 × 2 × 3 = 24

$\frac{3}{4} = \frac{3\times6}{4\times6} = \frac{18}{24}$

$\frac{3}{4} = \frac{5\times4}{6\times4} = \frac{20}{24}$

$\frac{3}{4} = \frac{7\times3}{8\times3} = \frac{21}{24}$

Thus, the given fractions are equivalent to

$\frac{18}{24}$, $\frac{20}{24}$ and $\frac{21}{24}$ respectively

(ii) $\frac{7}{25}$, $\frac{9}{10}$. $\frac{19}{40}$

First , we find L.C.M 25, 10, 40

Solution

5	25, 40, 10
5	5, 2, 8
2	1, 2, 8
2	1, 1, 4
2	1, 1, 2

L.C.M. = 5 × 5 × 2 × 2 × 2 = 200

$\frac{7}{25} = \frac{3\times6}{4\times6} = \frac{56}{200}$

$\frac{9}{10} = \frac{5\times4}{6\times4} = \frac{108}{200}$

$\frac{19}{40} = \frac{19\times5}{40\times5} = \frac{95}{200}$

Thus, the given fractions are equivalent to

$\frac{56}{200}$, $\frac{108}{200}$ and $\frac{95}{200}$ respectively

Question 8.

Arrange the given fractions in descending order:

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

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

Solution. $\frac{2}{9}$, $\frac{2}{3}$, $\frac{8}{21}$ (First we find L.C.M 3 , 9, 21)

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

L.C.M. = $3 \times 3 \times 7 = 63$

Now, write the given fractions as equivalent like fractions.

$\frac{2}{9} = \frac{2\times7}{9\times7} = \frac{14}{63}$

$\frac{2}{3} = \frac{2\times21}{3\times21} = \frac{41}{63}$

$\frac{8}{21} = \frac{8\times3}{21\times3} = \frac{24}{63}$

$\frac{14}{63} > \frac{41}{63} > \frac{24}{63}$

$\frac{2}{3} > \frac{3}{7} > \frac{2}{9}$

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

Solution. (First we find L.C.M 5 , 7, 10)

5	5, 7, 10
3	1, 7, 2
7	1, 7, 1
	1, 1, 1

L.C.M. = 5 × 2 × 7 = 70

Now, write the given fractions as equivalent like fractions.

$\frac{1}{5} = \frac{1\times14}{5\times14} = \frac{14}{70}$

$\frac{3}{7} = \frac{3\times10}{7\times10} = \frac{30}{70}$

$\frac{7}{10} = \frac{7\times7}{10\times7} = \frac{49}{70}$

As 49 > 30 > 14

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

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

Question 9

Arrange the given fractions in ascending order:

(i) $\frac{5}{7}, \frac{3}{8}, \frac{9}{14}, \frac{20}{21}$

(ii) $\frac{13}{18}, \frac{8}{15}, \frac{17}{24}, \frac{7}{12}$

Solution.

(i) $\frac{5}{7}, \frac{3}{8}, \frac{9}{14}, \frac{20}{21}$

First we find L.C.M 7, 8, 14, 21

7	7, 8, 14, 21
2	1, 8, 2, 3
2	1, 4, 1, 3
2	1, 2, 1, 3
3	1, 1, 1, 3
	1, 1, 1, 1

L.C.M. = $7 \times 2 \times 2 \times 2 \times 3 = 168$

Now, write the given fractions as equivalent like fractions.

$\frac{5}{7} = \frac{5 \times 24}{7 \times 24} = \frac{120}{168}$

$\frac{3}{8} = \frac{3 \times 21}{8 \times 21} = \frac{63}{168}$

$\frac{9}{14} = \frac{9 \times 12}{14 \times 12} = \frac{108}{168}$

$\frac{7}{10} = \frac{20\times8}{21\times8} = \frac{160}{168}$

63 < 108 < 120 <160

$\frac{63}{168} > \frac{108}{168} > \frac{120}{168} > \frac{160}{168}$

$\frac{3}{8} < \frac{9}{14} < \frac{5}{7} < \frac{20}{21}$

(ii) $\frac{13}{18}, \frac{8}{15}, \frac{17}{24}, \frac{7}{12}$

Solution.

First we find L.C.M 18, 15, 24, and 12

2	18, 15, 24, 12
2	9, 15, 12, 6
3	9, 15, 6, 3
3	3, 5, 2, 1
5	1, 5, 2, 1
2	1, 1, 2, 1
	1, 1, 1, 1

L.C.M. = 2 × 2 × 2 × 3 × 3 × 5= 360

Now, write the given fractions as equivalent like fractions.

$\frac{13}{18} = \frac{13\times20}{18\times20} = \frac{260}{360}$

$\frac{8}{15} = \frac{8\times24}{15\times24} = \frac{192}{360}$

$$\frac{17}{24}=\frac{17\times15}{24\times15}=\frac{255}{360}$$

$$\frac{7}{12}=\frac{7\times30}{12\times30}=\frac{210}{360}$$

$$192<210<255<260$$

$$\frac{192}{360}<\frac{210}{360}<\frac{255}{360}<\frac{260}{360}$$

$$\frac{8}{15}<\frac{7}{12}<\frac{17}{24}<\frac{13}{18}$$

Exercise 2.2

Question 1.

Evaluate the following

(i) $\frac{4}{3} + \frac{7}{8}$

(ii) $8\frac{1}{2} - 3\frac{5}{8}$

(iii) $\frac{5}{12} + \frac{1}{18} - \frac{2}{9}$

Solution :

(i) $\frac{4}{3} + \frac{7}{8}$

$= \frac{32+21}{24}$ (L.C.M 3, 8, = 24)

$= \frac{53}{24}$

$= 2\frac{5}{24}$

(ii) $8\frac{1}{2} - 3\frac{5}{8}$

$= \frac{17}{2} - \frac{29}{8}$

$= \frac{68-29}{8}$ (L.C.M 2,8 = 8)

$= \frac{39}{8}$

$= 4\frac{7}{8}$

(iii) $\frac{5}{12} + \frac{1}{18} - \frac{2}{9}$

$= \frac{15+2-8}{36}$ (L.C.M of 12, 8, 9 = 36)

$= \frac{17-8}{36}$

$= \frac{9}{36}$

$= \frac{9-9}{36+9}$

$= \frac{1}{4}$

Question 2

Simplify the following .

(i) $7\frac{3}{4} - 3\frac{5}{6} + \frac{7}{8}$

(ii) $6\frac{1}{8} - 2\frac{1}{12} - 5\frac{1}{10} + 3\frac{7}{25}$

Solution :

(i) $7\frac{3}{4} - 3\frac{5}{6} + \frac{7}{8}$

$= \frac{31}{4} - \frac{23}{6} + \frac{7}{8}$

(L.C.M of 4,6,and 8 = 24)

$= \frac{31\times6-23\times4+7\times3}{24}$

$= \frac{186-92+21}{24}$

$= \frac{207-92}{24}$

$= \frac{115}{24}$

$= 4\ \frac{19}{24}$

(ii) $6\frac{1}{8} - 2\frac{1}{12} - 5\frac{1}{10} + 3\frac{7}{25}$

$= \frac{49}{8} - \frac{25}{12} - \frac{51}{10} + \frac{82}{25}$

(L.C.M of 8, 12, 10, and 25 is 600)

$= \frac{49\times75-25\times50-51\times60+82\times24}{600}$

$= \frac{3675-1250-3060+1968}{600}$

$= \frac{1333}{600}$

$= 2\frac{133}{600}$

Question 3.

Jaishree studies for $5\frac{2}{3}$ hours daily. She devotes $2\frac{4}{5}$ hours of her time for science and mathematics. How much time does she devote to other subjects?

Solution :

Time given to study = $5\frac{2}{3}$ hours daily

Time given to science and maths = $2\frac{4}{5}$ hours

Time given to other subject = $5\frac{2}{3} - 2\frac{4}{5}$

$= \frac{17}{3} - \frac{14}{5}$

$= \frac{85-42}{15}$

$= \frac{43}{15}$

$= 2\frac{13}{15}$

Question 4.

Ramesh solved $\frac{2}{7}$ part of an exercise while reshma solved

$\frac{4}{5}$ of it. Who solved the lesser part? By how much ?

Solution:

Ramesh solved $\frac{2}{7}$ part of an exercise

But reshma solved $\frac{4}{5}$ of it

Difference of them $= \frac{4}{5} - \frac{2}{7}$

$= \frac{28-10}{35}$

$= \frac{18}{35}$

So, reshma does $\frac{18}{35}$ part of it less then ramesh.

Question 5.

Sonali had $35\frac{3}{5}$ she got $16\frac{1}{15}$ from her mother and spent $28\frac{2}{3}$

On food. How much money is left with her?

Solution:

Sonali had = $35\frac{3}{5} = \frac{178}{5}$

She gets $16\frac{1}{15}$ from her mother

And spent $28\frac{2}{3}$ on food

Amount left with her

$\frac{178}{5} + 16\frac{1}{15} - 28\frac{2}{3}$

$= \frac{178}{5} + \frac{241}{15} - \frac{86}{3}$

$= \frac{534+241-430}{15}$ (L.C.M of 5,15,3 = 15)

$= \frac{775-430}{15}$

$= \frac{345}{15}$

$= 23$

Exercise 2.3

Question 1.

Evaluate the following :

(i) $7 \times \frac{3}{5}$

(ii) $21 \times \frac{3}{14}$

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

(iv) $5 \times 6\frac{3}{4}$

Solution:

(i) $7 \times \frac{3}{5}$

$= \frac{21}{5}$

$= \frac{4}{5}$

(ii) $21 \times \frac{3}{14}$

$= \frac{9}{2}$

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

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

$= \frac{17}{5} \times 8$

$= \frac{136}{5}$

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

(iv) $5 \times 6\frac{3}{4}$

$= 5 \times \frac{27}{4}$

$= \frac{135}{4}$

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

Question 2.

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

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

(iii) $\frac{5}{8}\ of\ 9\frac{2}{3}$

Solution .

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

$= \frac{2}{3} \times 18$

$= 12$

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

$= \frac{1}{2} \times \frac{38}{9}$

$= \frac{19}{9}$

$= 2\frac{1}{9}$

Question 3.

Evaluate the following :

(i) $\frac{3}{7} \times \frac{5}{9}$

(ii) $\frac{2}{5} \times 5\frac{1}{4}$

(iii) $2\frac{1}{3} \times 5\frac{4}{21}$

(iv) $3\frac{1}{6} \times 7\frac{4}{23}$

Solution :

(i) $\frac{3}{7} \times \frac{5}{9}$

$= \frac{5}{21}$

(ii) $\frac{2}{5} \times 5\frac{1}{4}$

$= \frac{21}{10}$

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

(iii) $2\frac{1}{3} \times 5\frac{4}{21}$

$= \frac{7}{3} \times \frac{119}{21}$

$= 12\frac{1}{9}$

(iv) $3\frac{1}{6} \times 7\frac{4}{23}$

$= \frac{19}{6} \times \frac{165}{23}$

$= \frac{1045}{46}$

$= 22\frac{33}{46}$

Question 4.

Find the value of:

(i) $\frac{1}{3}$ of 42

(ii) $\frac{3}{7}$ of $4\frac{2}{3}$kg

(iii) $4\frac{1}{2}$ times of $5\frac{1}{2}$meters.

Solution:

(i) $\frac{1}{3}$ of 42

$= \frac{1}{3} \times 42$

(ii) $\frac{3}{7}$ of $4\frac{2}{3}$ kg

$= \frac{3}{7} \times \frac{14}{3}$ kg

$= \frac{1}{2}$

= 2 kg

(iii) $4\frac{1}{2}$ times of $5\frac{1}{2}$

$= \frac{9}{2} \times \frac{11}{2}$

$= \frac{99}{4}$

$= 24\frac{3}{4}$

Question 5,

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

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

Solution .

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

$= \frac{2}{7} \times \frac{3}{4}$

$= \frac{3}{14}$

And

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

$= \frac{3}{8}$

Now in, $\frac{3}{14}$, $\frac{3}{8}$

L.C.M of 14,8 = 56

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

And

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

Here,

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

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

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

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

$= \frac{1}{2}\ of\ \frac{6}{7}$

$= \frac{1}{2} \times \frac{6}{7}$

$= \frac{3}{7}$

And

$\frac{2}{3}\ of\ \frac{3}{7}$

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

$= \frac{2}{7}$

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

$= \frac{1}{2} of \frac{6}{7} > \frac{2}{3} of \frac{3}{7}$

Question 6.

If 1 meter cloth costs $31\frac{3}{4}$ find the cost of $5\frac{1}{2}$ meter cloth .

Solution :

Price of 1 m cloth = $31\frac{3}{4} = \frac{127}{4}$

Cost of $5\frac{1}{2}$ m cloth = $\frac{127}{4} \times 5\frac{1}{2}$

$= \frac{127}{4} \times \frac{11}{2}$

$= \frac{1397}{8}$

$= 174\frac{5}{8}$

Question 7.

If the speed of a car is $105\frac{1}{5}$ km/h , find the distance covered by it in $3\frac{3}{5}$ hours.

Solution:

Speed of a car = $105\frac{1}{5}$ km/h = $\frac{526}{5}$ km /h

It will covered a distance in $3\frac{3}{5}$ hours

$= \frac{526}{5} \times 3\frac{3}{5}$

$= \frac{526}{5} \times \frac{18}{5}$

$= \frac{9468}{25}$

$= 378\frac{18}{25}$ km

Question 8.

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

$16 \times 2\frac{3}{4}$

$= 16 \times \frac{11}{4}$km

= 44 km

Question 9.

Sushant reads $\frac{1}{3}$ part of a book in 1 hour. How much part of the book will be read in $2\frac{1}{5}$ hours?

Solution :

Sushant reads a book in 1 hour $= \frac{1}{3}$ part

He will read it in $2\frac{1}{5}$ hours

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

$= \frac{1}{3} \times \frac{11}{5}$

$= \frac{11}{5}$ park of book

Question 10.

An ornament is made of gold and copper and weighs 52 grams. If $\frac{2}{13}$ of its part is copper, find the weight of pure gold in it.

Solution:

Weight of ornament = 52 grams

In it $\frac{2}{13}$ part is copper

Weight of copper $= 52 \times \frac{2}{13} = 8$ grams

Then weight of gold = 52 grams – 8 grams = 44grams

Question 11.

In a class of 40 students, $\frac{1}{5}$ of the total number of students like to study English and $\frac{2}{5}$ of the total number of students like to study mathematics and the remaining like to study science.

(i) how many students like to study English?

(ii) how many students like to study mathematics?

(iii) what fraction of the total number of students like to study science?

Solution:

The number of students in a class = 40

(i) number of students who like English = $\frac{1}{5}$ of 40 = 8 students

(ii) number of students who like mathematics = $\frac{2}{5}$ of 40 = 16 study

(iii) remaining students = 40 – (8+16) = 40 -24 = 16 students

Number of students who like science = 16

Fraction of students $\frac{16}{40} = \frac{2}{5}$

Question 12.

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

(i) perimeter

(ii) area

Solution :

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

and breadth = $10\frac{2}{3} = \frac{32}{3}$

(i) perimeter = 2 (length + breadth)

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

$= 2\left[\frac{75+64}{2}\right]$

$= 2 \times \frac{139}{6}$

$= \frac{139}{3}$ cm

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

Area of sheet = length × breadth

$= \frac{25}{2} \times \frac{32}{3}$

$= \frac{400}{3}$ sq. Cm

$= 133\frac{1}{3}$ sq. Cm

Question 13.

In a school, $\frac{25}{24}$ of the students are girls and the rest are boys. If the number of boys is 2030 , find the number of girls .

Solution :

In a school,

Number of girls = $\frac{25}{24}$

Then, number of boys = 1 - $\frac{25}{54} = \frac{29}{54}$

Number of boys = 2030

2954 of total students = 2030

Total number of students = 2030 × $\frac{54}{29}$ = 3780

Number of girls = 3780 – 2030 = 1750

Question 14.

In an orchard, $\frac{1}{5}$ are orange grees, $\frac{3}{13}$ are mango trees and the rest and banana trees. If the banana trees are 148 in number. Find the total number of trees in the orchard.

Solution:

In an orchard,

Orange trees $= \frac{1}{5}$ part

Mango trees $= \frac{3}{13}$ part

Banana trees = rest

$= 1 - \left[\frac{1}{5} + \frac{3}{13}\right]$

$= 1 - \left[\frac{13+15}{65}\right]$

$= 1 - \frac{28}{65}$

$= \frac{65-28}{65}$

$= \frac{37}{65}$

Number of banana trees = 148

Total number of tress $= 148 \times \frac{65}{37}$

$= 260$

Exercise 2.4

Question 1.

Find the reciprocal of each of the following:

(i) $\frac{3}{7}$

(ii) $\frac{13}{9}$

(iii) 8

Solution :

Reciprocal of:

(i) $\frac{3}{7}$ is $\frac{7}{3}$

(ii) $\frac{13}{9}$ is $\frac{9}{13}$

(iii) 8 is $\frac{1}{8}$

Question 2.

Evaluate the following :

(i) $14 \div \frac{5}{6}$

(ii) $5 \div 3\frac{4}{7}$

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

(iv) $2\frac{5}{8} \div 1\frac{1}{6}$

Solution:

(i) $14 \div \frac{5}{6}$

$= 14 \times \frac{6}{5}$

$= \frac{84}{5}$

$= 16\frac{4}{5}$

(ii) $5 \div 3\frac{4}{7}$

$= 5 \div \frac{25}{7}$

$= 5 \times \frac{7}{25}$

$= \frac{7}{5}$

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

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

$= \frac{16}{5} \div \frac{5}{3}$

$= \frac{16}{5} \times \frac{5}{3}$

$= \frac{48}{25}$

$= 1\frac{23}{25}$

(iv) $2\frac{5}{8} \div 1\frac{1}{6}$

$= \frac{21}{8} \div \frac{7}{6}$

$= \frac{21}{8} \times \frac{7}{6}$

$= \frac{9}{4}$

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

Question 3.

How many pieces each $5\frac{1}{6}$ metres long can be cut from a cloth $77\frac{1}{2}$ meters long?

Solution:

Total length of cloth = $77\frac{1}{2}$ m

Length of one piece = $5\frac{1}{6}$m

Total number of pieces = $77\frac{1}{2} \div 5\frac{1}{6}$

$= \frac{155}{2} \div \frac{31}{6}$

$= \frac{155}{2} \times \frac{31}{6}$

= 15 piece

Question 4.

By what number should $4\frac{7}{8}$ be multiplied to get $87\frac{3}{4}$?

Solution :

Product = $87\frac{3}{4} = \frac{351}{4}$

Multiplied number = $4\frac{7}{8}$

Now

$4\frac{7}{8} \times$ required number = $\frac{351}{4}$

Required number = $\frac{351}{4} \div 4\frac{7}{8}$

= $\frac{351}{4} \div \frac{39}{8}$

= $\frac{351}{4} \div \frac{8}{39}$

= 18

Question 5.

In a hostel's mess, each student gets $\frac{1}{3}$ litre of milk every day. If the total consumption of the milk is $57\frac{2}{3}$ litres per day, how many study are there in the hostel?

Solution :

Every students gets $\frac{1}{3}$ of milk per day

Total consumption of milk per day = $57\frac{2}{3}$

= $\frac{173}{3}$

= number of students = $\frac{173}{3} \div \frac{1}{3}$

= $\frac{173}{3} \times \frac{1}{3}$ = 173students

Question 6.

The cost of $5\frac{1}{4}$ kg apples is 336. What is the rate of apples per kg

Solution:

Cost of $5\frac{1}{4}$ kg apples = 336

Cost of one kg = 336 + $5\frac{1}{4}$

= 336 ÷ $\frac{21}{4}$

= 336 × $\frac{4}{21}$

= 64

Question 7.

The length of a rectangular plot of area $68\frac{3}{4}$ sq.m is $12\frac{1}{2}$m, find its width.

Solution:

Area of a rectangular field = 6834 sq.m

= $\frac{275}{4}$ sq.m

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

Width = area ÷ length

= $\frac{275}{4}$ ÷ $\frac{25}{2}$

= $\frac{275}{4}$ × $\frac{25}{2}$

= $\frac{11}{2}$m

$= 5\frac{1}{2}$m

Question 8.

If the cost of $5\frac{1}{2}$kg of sugar is $206\frac{1}{4}$, then find the cost of $8\frac{1}{4}$ kg or sugar.

Solution:

Cost of $5\frac{1}{2}$kg of sugar = $206\frac{1}{4}$

$= \frac{325}{4}$

Cost of 1kg sugar = $\frac{825}{4} \times \frac{11}{2} = \frac{75}{2}$

Cost of $8\frac{1}{4}$ kg of sugar $= \frac{75}{2} \times 8\frac{1}{4}$

$= \frac{75}{2} \times \frac{33}{4}$

$= \frac{2475}{8}$

$= 309\frac{3}{8}$

Question 9.

Renu completed $\frac{2}{3}$ part of her homework in 2 hours. How much part her homework had she completed in $1\frac{1}{4}$ hours?

Solution :

In 2 hours, homework in completed = $\frac{2}{3}$

In 1 hour it will be completed

$= \frac{2}{3} \div 2$

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

$= \frac{1}{3}$

In $1\frac{1}{4}$

$= \frac{5}{4}$

$= \frac{5}{12}$ part

Exercise 2.5

Question 1.

Write the following numbers in the expanded from:

(i) 20.03

(ii) 200.03

(iii) 2.034

Solution:

(i) 20.03

(ii) 200.03

(iii) 2.034

Solution:

(i) 20.03

$= 2 \times 10 + 0 \times 1 + 0 \times \frac{1}{10} + 3 \times \frac{1}{100}$

(ii) 200.03

$= 2 \times 100 + 0 \times 10 + 0 \times 1 + 0 \times \frac{1}{10} + 3 \times \frac{1}{100}$

(iii) 2.034

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

Question 2.

Write the place value of digit 2 in the following decimal numbers:

(i) 2.56

(ii) 21.37

(iii) 10.25

(iv) 63.352

Solution :

(i) 2.56, place value of 2 = 2 × 1 = 2

(ii) 21.37 , place value of 2 = 2 × 10 = 20

(iii) 10.25 , place value of 2 = 2 × $\frac{1}{10} = \frac{2}{10}$

(iv) 63.352, place value of 2 = 2 × $\frac{1}{1000} = \frac{2}{1000}$

Question 3.

Convert the following decimal numbers to fractions (in simplest form) :

(i) 0.8

(ii) 0.225

(iii) 0.0092

(iv) 3.025

Solution :

(i) 0.8

$= \frac{8}{10}$

$= \frac{8 \div 2}{10 \div 2}$

$= \frac{4}{5}$

(ii) 0 . 225

$= \frac{225 \div 25}{1000 \div 25}$

$= \frac{9}{40}$

(iii) 0.0092

$= \frac{92}{10000}$

$= \frac{92 \div 4}{10000 \div 4}$

$= \frac{23}{2500}$

(iv) 3.025

$= \frac{3025}{1000}$

$= \frac{3025 \div 25}{1000 \div 25}$

$= \frac{121}{40}$

Question 4.

Convert the following decimals to mixed fraction:

(i) 5.05

(ii) 63.125

(iii) 17.075

(iv) 317.0006

Solution :

(i) 0.05

$= 5\frac{5}{100}$

$= 5\frac{1}{20}$ (Dividing by 5)

(ii) 63.125

$= 63\frac{125}{1000}$

$= 63\frac{1}{8}$ (Dividing by 125)

(iii) 17.075

$= 17\frac{75}{1000}$

$= 17\frac{3}{10}$ (Dividing by 25)

(iv) 317.0006

$= 317\frac{6}{10000}$

$= 317\frac{3}{5000}$ (dividing by 2)

Question 5.

Convert the following fractions into decimal numbers:

(i) $\frac{3}{5}$

(ii) $\frac{7}{8}$

(iii) $3\frac{5}{16}$

(iv) $137\frac{13}{62}$

Solution:

(i) $\frac{3}{5}$

$= \frac{3\times2}{5\times2}$

$= \frac{6}{10}$

= 0 .6

(ii) $\frac{7}{8}$

$= \frac{7\times125}{7\times125}$

$= \frac{875}{1000}$

= 0.875

(iii) $3\frac{5}{16}$ = 3.3125

$16\overline{)50000}\,.3125$

48

20

16

40

32

80

80

×

(iv) $137\frac{13}{625} = 137.0208$

$625\overline{)1300}\,.0208$

1250

5000

5000

×

Question 6.

Which is greater?

(i) 0.5 or 0.05

(ii) 7 or 0.7

(iii) 2.03 or 2.30

(iv) 0.8 or 0.88

Solution :

Which is greater

(i) 0.5 or 0.05

Converting into like decimals

0.50 and 0.05

$50 > 05$

$0.5 > 0.05$

(ii) 7 or 0.07

Comparing integral parts

$7 > 0$

$7 > 0.7$

(iii) 2.03 or 2.30

Integral numbers are same

But in decimal part

$03 < 30$ or $30 > 03$

$2.30 > 2.03$

(iv) 0.8 or 0.88

Converting into like decimal

$0.8 = 0.80$

$88 > 80$

$0.88 > 0.8$

Question 7.

Arrange the following decimal numbers in ascending order:

(i) 38.02, 38.021, 3.802, 83.02, 38,002

(ii) 46.542, 46.452, 46.254, 46.05, 64.542, 46.0542

Solution:

(i) 38.02, 38.021, 3.802, 83.02, 38,002

Converting into like decimal (upto 3 decimals)

38.020, 38.021, 3.802, 83.020, 38.002

Now arranging in ascending order,

3.802, 38.020, 38.020, 38.021, 83.020

(ii) 46.542, 46.452, 46.254, 46.05, 64.542, 46.0542

Converting into like decimals (upto 4 decimals)

46.5420, 46.46.4520, 46.2540, 46.0500, 64.5420, 46.0542

Now arranging into ascending order,

46.0500, 46.0542, 46.2540, 46.5420, 46.05420, 64.5420

= 46.05, 46.0542, 46.254, 46.452, 46.542, 64.542

Question 8.

Arrange the following decimal number in descending order:

(i) 5.6, 0.93, 1.87, 1.9, 1.78, 0.39

(ii) 71.201, 20.1, 2.01, 3.1, 2.14, 0.652

Solution :

(i) 5.6, 0.93, 1.87, 1.9, 1.78, 0.39

Converting into like decimals (up two place)

5.60, 0.93, 1.87, 1.90, 1.78, 0.39

Arranging into descending order,

5.60, 1.90, 1.87, 1.78, 0.93, 0.39

= 5.6, 1.9, 1.87, 1.78, 0.93, 0.39

(ii) 71.201, 20.1, 2.01, 3.1, 2.14, 0.652

Converting into like decimals (upto 3 pleces)

71.201, 20.100, 2.010, 3.100, 2.140, 0.652

= 71.201, 20.01, 3.1, 2.14, 2.01, 0.652

Question 9.

Express as rupees using decimals:

(i) 7 paise

(ii) 77 rupees 77 paise

(iii) 235 paise

Solution :

(i) 7 paise

$= \frac{7}{100}$

= 0.07

(ii) 77 rupees 77 paise

$= 77\frac{77}{100}$

= 77.77

(iii) 235 paise

$= \frac{235}{100}$

= 2.35

Question 10.

Express 5cm in meter and kilometre.

Solution :

5cm = $\frac{5}{1000}$m = 0.05 meter

$= \frac{5}{100 \times 1000}$

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

= 0.00005 km

Question 11.

Express in kg using decimals:

(i) 200g

(ii) 3470 g

(iii) 4kg 8g

Solution :

(i) 200g

$= \frac{200}{1000}$

= 0.2 kg

(ii) 3470 g

$= \frac{3470}{1000}$

= 3.470 kg

(iii) 4kg 8g

$= 4\frac{8}{1000}$kg

Question 12.

Add:

(i) 5.765, 9.2, 3.08

(ii) 15.49, 8.3572, 0.903, 7.8

Solution :

(i) 5.765, 9.2, 3.08

Converting into like decimal (up to 3 places)

5.765, 9.200, 3.080

= 5.765f+9.200+3.080

= 18.045

$$\begin{array}{r} 5.765 \\ 9.200 \\ +\ 3.080 \\ \hline 18.045 \end{array}$$

(ii) 15.49, 8.3572, 0.903, 7.8

Converting into like decimals (up to 4 places)

= 15.4900 + 8.3572 + 0.9030, 7.8000

$$\begin{array}{r} 15.4900 \\ 8.\ 3572 \\ 0.9030 \\ +7.80000 \\ \hline 32.5502 \end{array}$$

Question 13.

Workout the following :

(i) 72.53 – 46.782

(ii) 18.376 – 5.43 – 8.897

(iii) 28.5 – 9.708 – 6.234

(iv) 8.2 – 4.56 – 0.7912 + 2.67

Solution :

(i) 72.53 – 46.782

= 72.530 - 46.782

= 25.748

$$\begin{array}{r} 72.530 \\ -\ 46.782 \\ \hline 25.748 \end{array}$$

(ii) 18.376 – 5.43 – 8.8976

= 18.3760 – 5.4300 – 8.8976 (converting into like decimals)

= 18.3760 – 14.3276

= 4.0484

18.3760

-14.3276

4.0484

(iii) 28.5 – 9.708 – 6.234

= 28.500 – 9.708 – 6.234

= 28.500 – 15.942

= 12.558

28.500

-15.942

12.558

(iv) 8.2 – 4.56 – 0.7912 + 2.67

= 8.2000 – 4.5600 – 0.7912 + 2.6700 (Converting into like decimal)

= 8.2000 + 2.6700 – 4.5600 – 0.7912

= 10.8700 – 5.3512

= 5.5188

8.2000

2.6700

10.8700

-5.3512

5.5188

Question 14.

(i) what number added to 3.56 gives 13.016?

(ii) what number should be subtracted from 30 to get 23.709?

(iii) what is the excess of 20.4 over 9.7403?

Solution :

(i) the required number = 13.016 – 3.56 = 13.016 – 3.560 = 9.456

13.016

-3. 560

9.456

(ii) The required number = 30 – 23.709 = 23.709 = 6.291

30.000

-23.709

6.291

(iii) The required number = 20.4 – 9.7403 = 20.4000 – 9.7403 = 10.6597

20.4000

-9.7403

10.6597

Exercise 2.6

Question 1.

Find the following :

(i) 2.7×4

(ii) 2.71×5

(iii) 2.5×0.3

(iv) 2.3×4.35

(v) 238.06×7.5

(vi) 0.79×32.4

(vii) 1.07×0.02

(viii) 10.05×1.05

Solution :

(ii) 2.71×5

$= \frac{271}{100} \times 5$

$= \frac{1355}{100}$

$= 13.55$

(iii) 2.5×0.3

$= \frac{25}{10} \times \frac{3}{10}$

$= \frac{75}{100}$

$= 0.75$

(iv) 2.3×4.35

$= \frac{23}{10} \times \frac{435}{100}$

$= \frac{10005}{1000}$

$= 10.005$

(v) 238.06×7.5

$= \frac{23806}{100} \times \frac{75}{10}$

$$\begin{array}{r} 23806 \\ \times\ 75 \\ \hline 119030 \\ 1666420 \\ \hline 1785450 \end{array}$$

$\frac{1785450}{1000} = 1785.450$

(vi) 0.79×32.4

$= \frac{79}{100} \times \frac{324}{10}$

$$\begin{array}{r} 324 \\ \times 79 \\ \hline 2916 \\ 22680 \\ \hline 25596 \end{array}$$

$\frac{25596}{1000} = 25.596$

(vii) 1.07×0.02

$= \frac{107}{100} \times \frac{2}{100}$

$= \frac{214}{10000}$

$= 0.0214$

(viii) 10.05×1.05

$= \frac{1005}{100} \times \frac{105}{100}$

$$\begin{array}{r} 1005 \\ \times 105 \\ \hline 5025 \\ 100500 \\ \hline 105525 \end{array}$$

Question 2.

Find the following :

(i) $10.8 \div 4$

(ii) $126.35 \div 7$

(iii) $22.5 \div 1.5$

(iv) 4.28 ÷ 0.02

(v) 3.645 ÷ 1.35

(vi) 0.728 ÷ 0.04

(vii) 13.06 ÷ 0.08

(viii) 58.635 ÷ 4.5

Solution :

(i) 10.8 ÷ 4

$= \frac{10.8}{4}$

= 2.7

(ii) 126.35 ÷ 7

$= \frac{126.35}{7}$

= 18.05

(iii) 22.5 ÷ 1.5

$= \frac{225}{10} \times \frac{10}{15}$

$= \frac{225}{15}$

= 15

(iv) 4.28 ÷ 0.02

$= \frac{428}{100} \times \frac{100}{2}$

$= \frac{428}{2}$

$= 2.7$

(vi) $0.728 \div 0.04$

$= 0.728 \div 0.040$

$= \frac{728}{40}$

$= 18.2$

(vii) $13.06 \div 0.08$

$= \frac{1306}{100} \times \frac{100}{8}$

$= \frac{1306}{8}$

$= 163.25$

(viii) 58.635×4.5

$= 58.635 \div 4.500$

$= \frac{58635}{1000} \times \frac{1000}{4500}$

$= \frac{58635}{4500}$

$= 13.03$

Question 3.

Multiply each of the following numbers by 10, 100 and 1000 (orally):

(i) 5.9

(ii) 3.76

(iii) 0.549

Solution :

(i) $5.9 \times 10 = 59$

$5.9 \times 100 = 590$

$5.9 \times 1000 = 5900$

(ii) $3.76 \times 10 = 37.6$

$3.76 \times 100 = 376$

$3.76 \times 1000 = 3760$

(iii) $0.549 \times 10 = 5.49$

$0.549 \times 100 = 54.9$

$0.549 \times 1000 = 549$

Question 4. Divide each of the following numbers by 10, 100 and 1000 (orally)

(i) 4.8

(ii) 38.53

(iii) 128.9

Solution :

(i) $4.8 \div 10 = 0.48$

4.8 ÷ 100 = 0.048

4.8÷ 1000 = 0.0048

(ii) 38.53

38.53 ÷ 10 = 3.853

38.53 ÷ 100 = 0.3853

38.53 ÷ 1000 = 0.03853

(iii) 128.9

128.9÷ 10 = 12.89

128.9 ÷ 100 = 1.289

128.9 ÷ 1000 = 0.1289

Question 5.

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

Solution:

Length of a rectangle = 5.7 cm

And Breadth = 3.5 cm

Area = length × breadth

5.7

×3.5

285

1710

19.95

= 5.7 × 3.5 sq.cm

= 19.95 sq.cm

Question 6.

The cost of one metre cloth is 38.50 find the cost of 3.6 m cloth

Solution:

Cost of one metre of cloth = 38.50

Cost of 3.6m of cloth = 38.50 × 3.6

38.50

×3.6

23100

115500

138.600

= 138.600

= 138.60

Question 7.

A two wheeler covers a distance of 45.3 km in one litre of petrol. How much distance will it cover in 5.9 litres of petrol?

Solution: in 1 litre of petrol, a two – wheeler cover = 45.3

In 3.9 litre of petrol, it will cover a distance of = 45.3 × 3.9 = 176km

45.3

×3.9

4077

13590

176.67

Question 8.

If 1 kg of pure milk contains 0.245 kg of fat. How much fat is there 12.8 kg of milk ?

Solution :

In 1 kg of milk, fats is = 0.245 kg

Then in 12.8 kg of milk, fats will be

= 0.245 × 12.8 kg

= 3.1360 kg

= 3.136 kg

12.8

× .245

640

5128

25600

31360

Question 9.

If 242 .46 are to be distributed among 6 children equally, find the share of each.

Solution:

6 children gets = 242.46

one child will get = 242.46 ÷ 6 = 40.41

Question 10.

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:

In 2.4 litres of petrol, a vehicle covers a distance = 43.2km

It will cover a distance in one try of petrol = 43.2 ÷ 2.4km

$= \frac{43.2}{2.4} = \frac{432}{24}$km = 18km

Question 11.

How many ice cream cones can be filled from 8.4 litres of ice cream if one cone can be filled with 35 millilitres of ice cream?

Solution:

In one cone, 35 millilitres of ice cream is filled in 8.4 litres of ice cream will be filled

(8.4 = 8.4 × 100 ml)

$= \frac{8.4 \times 100}{35}$ cones

$= \frac{840}{35}$ cones

= 24

Question 12.

If the product of two decimal number is 38.745 and one of the numbers is 2.7 find the other.

Solution:

Product of two decimal numbers = 38.745

One number = 2.7

Second number = 38.745 ÷ 2.7

$= \frac{38745}{2700} = 14.35$

Question 13.

If $\frac{2}{3}$ of a number is 10, then what is 1.75 times of that number?

Solution:

$\frac{2}{3}$ of a number = 10

Number = $\frac{10 \times 3}{2} = 15$

And 1.75 times of the number = 15 × 1.75 = 26.25

Exercise 2.7

Question 1.

(i) $\frac{3}{5}\ of\ 1\frac{1}{9}+3\frac{1}{2}$

(ii) $\frac{4}{5}\times 2\frac{3}{8}-2\times\frac{3}{5}$

(iii) $\left[\frac{4}{5}+2\right]\left[3-\frac{2}{3}\right]$

Solution :

(i) $\frac{3}{5}\ of\ 1\frac{1}{9}+3\frac{1}{2}$

$=\frac{3}{5}\ of\ \frac{10}{9}+\frac{7}{2}$

$=\frac{3}{5}\times\frac{10}{9}+\frac{7}{2}$

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

$=\frac{4+21}{6}$

$=\frac{25}{6}$

$=4\frac{1}{6}$

(ii) $\frac{4}{5}\times 2\frac{3}{8}-2\times\frac{3}{5}$

$=\frac{4}{5}\times\frac{19}{8}-2\frac{3}{5}$

$=\frac{19}{10}-\frac{6}{5}$

$=\frac{19-12}{10}$

$= \frac{7}{10}$

(iii) $\left[\frac{4}{5} + 2\right]\left[3 - \frac{2}{3}\right]$

$= \frac{4+10}{5} \times \frac{9-2}{3}$

$= \frac{14}{5} \times \frac{7}{3}$

$= \frac{14 \times 7}{5 \times 3}$

$= \frac{98}{15}$

$= 6\frac{8}{15}$

Question 2.

(i) $\left[\frac{1}{4}\ of\ 2\frac{2}{7}\right] \div \frac{3}{5}$

(ii) $\left[\frac{3}{7} \div \frac{1}{2}\right] \div \frac{7}{8}$

(iii) $\frac{5}{8} \div \frac{3}{4} + \frac{2}{5}$

Solution

(i) $\left[\frac{1}{4}\ of\ 2\frac{2}{7}\right] \div \frac{3}{5}$

$= \left[\frac{1}{4}\ of\ \frac{16}{7}\right] \div \frac{3}{5}$

$= \frac{1}{4} \times \frac{16}{7} \div \frac{3}{5}$

$= \frac{4}{7} \div \frac{3}{5}$

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

$= \frac{20}{21}$

(ii) $\left[\frac{3}{7} \div \frac{1}{2}\right] \div \frac{7}{8}$

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

$= \frac{5}{6} + \frac{2}{5}$

$= \frac{25+12}{30}$

$= \frac{37}{30}$

$= 1\frac{7}{30}$

Question 3.

(i) $\left[4\frac{1}{2} - 2\frac{2}{3}\right] \div \frac{7}{12} + 5\frac{1}{2} of 3\frac{5}{6}$

(ii) $\left[\frac{1}{2} + \frac{1}{3}\right] \div \left[\frac{1}{4} - \frac{1}{6}\right] - \left[8 - \{5\frac{1}{3} - (3 - 2\frac{1}{2}\}\right]$

Solution :

(i) $\left[4\frac{1}{2} - 2\frac{2}{3}\right] \div \frac{7}{12} + 5\frac{1}{2} of 3\frac{5}{6}$

$= \left[\frac{9}{2} - \frac{8}{3}\right] \div \frac{7}{12} + \frac{11}{2} of \frac{23}{6}$

$= \frac{27-16}{6} \div \frac{7}{12} + \frac{11}{2} \times \frac{23}{6}$

$= \frac{11}{6} \div \frac{7}{12} + \frac{253}{12}$

$= \frac{22}{7} + \frac{253}{12}$

$= \frac{264+1771}{84}$

$= \frac{2035}{84}$

$= 24\frac{19}{84}$

(ii) $\left[\frac{1}{2} + \frac{1}{3}\right] \div \left[\frac{1}{4} - \frac{1}{6}\right] - \left[8 - \{5\frac{1}{3} - (3 - 2\frac{1}{2}\}\right]$

$= \left[\frac{5}{6}\right] \div \left[\frac{1}{12}\right] - \left[8 - \{\frac{16}{3} - (3 - \frac{5}{2}\}\right]$

$= \frac{5}{6} \div \frac{1}{12} - \left[8 - \{\frac{16}{3} - (\frac{6-5}{2}\}\right]$

$= \frac{5}{6} \times \frac{12}{1}$ - $- \left[8 - \{\frac{16}{3} - (\frac{1}{2}\}\right]$

$= \frac{5}{6} \times \frac{12}{1}$ - $- \left[8 - \{\frac{32-3}{6}\}\right]$

$= 10$ - $\left[8 - \frac{29}{6}\right]$

$= 10 - \left[\frac{48-29}{6}\right]$

$= 10$ - $\frac{19}{6}$

$= \frac{60-19}{6}$

$= \frac{41}{6}$

$= 6\frac{5}{6}$

Question 4.

Simplify the following:

(i) $2.3 - [\ 1.89 - \{3.6\ (\ 2.7 - \overline{0.8 - 0.03}\ \}]$

(ii) $4.5 - \frac{1}{2}$ of $(\ 7.6 - 3.5) + 2.3 \times 4.05$

Solution :

$2.3 - [\ 1.89 - \{3.6\ (\ 2.7 - \overline{0.8 - 0.03}\ \}]$

$= 2.3 - [\ 1.89 - \{3.6\ (\ 2.7 - \overline{0.8 - 0.03}\ \}]$

$= 2.3 - [\ 1.89 - \{3.6 - 1.93\ \}]$

$= 2.3 - [\ 1.89 - 1.67]$

$= 2.3 - 0.22$

$= 2.30 - 0.22$

$= 2.08$

(ii) $4.5 - \frac{1}{2}$ of $(\ 7.6 - 3.5) + 2.3 \times 4.05$

$= 4.5 - \frac{1}{2}$ of $4.1 + 2.3 \times 4.05$

$= 4.5 - 2.05 + 9.315$

$= 11.765$

4.05

2.3

1215

8100

9315

4.500

13.815

-2.0550

11.765

Question 5.

Simplify the following :

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

(ii) $\frac{3.5\times0.24}{0.21}$ - 0.037

Solution :

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

$= \frac{\frac{5}{2}+\frac{1}{5}}{\frac{5}{2}\div\frac{1}{5}}$

$= \frac{\frac{25+2}{10}}{\frac{5}{2}\times\frac{5}{1}}$

$$= \frac{\frac{27}{10}}{\frac{25}{2}}$$

$$= \frac{27}{10} \times \frac{2}{25}$$

$$= \frac{27}{125}$$

(ii) $\frac{3.5 \times 0.24}{0.21} - 0.037$

$$= \frac{35 \times 24 \times 100}{10 \times 100 \times 21} - 0.037$$

$$= 4 - 0.037$$

$$= 3.963$$

Fraction and decimal objective type question

Question 1.

Fill in the blanks.

(i) In fractions with same numerator, the fraction with greater denominator is .....

(ii) $\frac{114}{138}$ reduced to simplest form is .....

(iii) $\frac{154}{286}$ = ... 13

(iv) the reciprocal of the fraction $2\frac{3}{8}$ is .....

(v) There are ..... Minutes in 25 the of 2 hours.

(vi) $2\frac{3}{7} \times 4\frac{2}{3}$ = ...

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

(viii) If the price of 7 similar pens is 37.80, then the price of each pen is .....

(ix) 5.4 × 2.35 = ...

(x) 0.32÷ 8 = ...

(xi) 45 mg = ... g

(xii) 5.06kg = ... kg .....g

(xiii) 7.035m = ...m .....cm.....mm

(xiv) the product of a proper fraction and an improper fraction is .... the improper fraction.

(xv) the lowest form of the product $2\frac{3}{7} \times \frac{7}{9}$ is .....

(xvi) Ravi ate $\frac{2}{7}$ part of a cake while his sister rani ate $\frac{4}{5}$ of the remaining. Part of the cake left is....

Solution :

(i) In fractions with same numerator, the fraction with greater denominator is smaller.

(ii) $\frac{114}{138}$ reduced to simplest form is $\frac{19}{23}$.{ Dividing each by 6 }

(iii) $\frac{154}{286} = \frac{7}{13}$ { Dividing each by 22 }

(iv) the reciprocal of the fraction $2\frac{3}{8}$ is $\frac{8}{19}$ { $2\frac{3}{8} = \frac{19}{8}$}

(v) There are 48 Minutes in $\frac{2}{5}$ the of 2 hours.

$\left(\frac{2}{5} \times 2 = \frac{4}{5} hour = \frac{4}{5} \times 60 = 48\, minutes\right)$

(vi) $2\frac{3}{7} \times 4\frac{2}{3} = \frac{34}{3}$ $\left\{\frac{17}{9} \times \frac{14}{3} = \frac{34}{3}\right\}$

(vii) $1\frac{2}{3} \div 2\frac{1}{5} = \frac{25}{33}$ $\left\{\frac{5}{3} \div \frac{11}{5} = \frac{5}{3} \times \frac{5}{11} = \frac{25}{33}\right\}$

(viii) If the price of 7 similar pens is 37.80, then the price of each pen is 5.40

(ix) 5.4 × 2.35 = 12.690 or 12.69

$$\begin{array}{r} 2.35 \\ \times\ 5.4 \\ \hline 940 \\ 11750 \\ \hline 1269 \end{array}$$

(x) 0.32÷ 8

$= \frac{32}{100} \div 8$

$= \frac{32}{100 \times 8}$

$= \frac{4}{100} = 0.04$

(xi) 45 mg = ... g

$= \frac{45}{100} = 0.045$g

(xii) 5.06kg = 5 kg 6 g

(xiii) 7.035m = 7m 3cm 3mm

(xiv) the product of a proper fraction and an improper fraction

is less than the improper fraction.

(xv) the lowest form of the product $2\frac{3}{7} \times \frac{7}{9}$ is .....

$= \frac{17}{7} \times \frac{7}{9} = \frac{17}{9}$

(xvi) Ravi ate $\frac{2}{7}$ part of a cake while his sister

rani ate $\frac{4}{5}$ of the remaining. Part of the cake left is....

Ravi ate = $\frac{2}{7}$ part

Remaining = 1 - $\frac{2}{7} = \frac{7-2}{7} = \frac{5}{7}$

His sister ate = $\frac{4}{5}$ of $\frac{5}{7} = \frac{4}{5} \times \frac{5}{7} = \frac{4}{7}$

Remaining part = $\frac{5}{7} - \frac{4}{7} = \frac{1}{7}$

Question 2.

State whether the following statements are true (T) or false (F)

(i) The reciprocal of 1 is 0.

(ii) The reciprocal of a proper fraction is a proper fraction.

(iii) The reciprocal of an improper fraction is an improper fraction.

(iv) Product of two fractions

$= \frac{product\ of\ their\ denominotors}{product\ of\ their\ numerators}$

(v) $\frac{3}{20}$ of 2 kg = 300 g.

(vi) the multiplicative inverse of $3\frac{5}{7}$ is $\frac{7}{26}$

(vii) The multiplicative inverse of $3\frac{5}{7}$ is $\frac{7}{26}$

(viii) $\frac{11}{15} - \frac{7}{20} = \frac{23}{60}$

(ix) $\frac{2}{3}$ of 8 is same as $\frac{2}{3} \div 8$

(x) the product of two proper fractions is greater than each of the two fractions.

(xi) to multiply a decimal number by 10, move the decimal point to the left by one place.

(xii) to divide a decimal number by 100, move the decimal point to the left by two places.

Solution :

(i) The reciprocal of 1 is 0. **(False)**

Correct:

Reciprocal of 1 is 1

(ii) The reciprocal of a proper fraction is a proper fraction. **(False)**

Correct:

It is an improper fraction.

(iii) The reciprocal of an improper fraction is an improper fraction. **(False)**

Correct:

It is a proper fraction.

(iv) Product of two fractions

$= \frac{product\ of\ their\ denominotors}{product\ of\ their\ numerators}$ **(False)**

Correct:

As it is $= \frac{product\ of\ their\ numerators}{product\ of\ their\ denominators}$

(v) $\frac{3}{20}$ of 2 kg = 300 g. **(True)**

(vi) the multiplicative inverse of $3\frac{5}{7}$ is $\frac{7}{26}$ **(True)**

(vii) The multiplicative inverse of $3\frac{5}{7}$ is $\frac{7}{26}$ **(True)**

(viii) $\frac{11}{15} - \frac{7}{20} = \frac{23}{60}$ **(True)**

(ix) $\frac{2}{3}$ of 8 is same as $\frac{2}{3} \div 8$ **(False)**

Correct:

$\frac{2}{3}$ of 8 $= \frac{2}{3} \div \frac{1}{8}$

(x) the product of two proper fractions is greater than each of the two fractions. **(False)**

Correct:

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

But $\frac{1}{2}$ is not greater than $\frac{2}{3} or \frac{3}{4}$

(xi) to multiply a decimal number by 10, move the decimal point to the left by one place. **(False)**

Correct:

(move one point to the right not left)

(xii) to divide a decimal number by 100, move the decimal point to the left by two places. **(True)**

Multiple Choice Questions

Choose the correct answer from the given four options (3 to 20)

Question 3.

$\frac{5}{6}$ of 480 is

(a) 400

(b) 576

(c) 480

(d) none of these

Solution :

$\frac{5}{6}$ of 480

$= \frac{5}{6} \times 480 = 400$ (a)

Question 5.

The fraction $\frac{11}{7}$ lies between

(a) 11 and 7

(b) 1 and 2

(c) 0 and 1

(d) 2 and 3

Solution :

The fraction $\frac{11}{7} = 1\frac{4}{7}$ lies between 1 and 2 (b)

Question 6.

If the cost of 1 kg almonds is 460 , then the cost of $\frac{2}{5}$ kg of almonds is

(a) 92

(b) 184

(c) 230

(d) 1200

Solution:

Cost of 1 kg almonds = 460

Cost of $\frac{2}{5}$ kg = $460 \times \frac{2}{5} = 184$

Question 7.

$2\frac{1}{5} \div 1\frac{1}{5}$ is equal to

(a) 2

(b) $1\frac{1}{5}$

(c) $2\frac{1}{6}$

(d) $1\frac{5}{6}$

Solution .

$= 2\frac{1}{5} \div 1\frac{1}{5} = \frac{11}{5} \div \frac{6}{5}$

$= \frac{11}{5} \times \frac{5}{6} = \frac{11}{6} = 1\frac{5}{6}$

Question 8.

$5\frac{1}{6} \div 4\frac{1}{2}$ is equal to

(a) $\frac{31}{6}$

(b) $\frac{1}{27}$

(c) $5\frac{1}{27}$

(d) $1\frac{4}{27}$

Solution :

$5\frac{1}{6} \div 4\frac{1}{2}$

$= \frac{31}{6} \div \frac{9}{2}$

$= \frac{31}{6} \times \frac{2}{9}$

$= \frac{31}{27}$

$= 1\frac{4}{27}$

Question 9.

If $\frac{3}{4}$ of a number is 12, then the number is

(a) 9

(b) 16

(c) 18

(d) 32

Solution:

If 34 of a number = 12

Then number = $12 \times \frac{4}{3} = 16$ (b)

Question 10.

Arif bought 3 dozen eggs. He found 19 of them were rotten . the number of rotten eggs was

(a) 4

(b) 3

(c) 6

(d) 8

Solution :

Total eggs = 3 dozen $= 3 \times 12 = 36$

Number of rotten = $\frac{1}{9}$ of 36 = 4 (a)

Question 11.

Shruti reads a novel for $1\frac{3}{4}$ hours daily, if she reads the entire novel in 6 days , then the time she takes to read the entire novel is

(a) $7\frac{1}{2}$ hours

(b) $9\frac{1}{2}$ hours

(c) $10\frac{1}{2}$ hours

(d) $11\frac{1}{2}$ hours

Solution :

A novel is read in 6 days

Total time = $\frac{7}{6} \times 6 = \frac{21}{2} = 10\frac{1}{2}$ (c)

Question 12.

The place value of the digit 7 in the decimal number 35.0471 is

(a) 7

(b) $\frac{7}{100}$

(c) $\frac{1}{1000}$

(d) $\frac{7}{1000}$

Solution :

Place value of 7 in 35.0471 = $\frac{7}{1000}$

Question 13.

0.002×0.3 is

(a) 0.6

(b) 0.06

(c) 0.006

(d) 0.006

Solution :

$0.002 \times 0.3 = 0.006$ (d)

Question 14.

The value of the mixed fraction $5\frac{3}{8}$ is

(a) 5.735

(b) 5.375

(c) 5.625

(d) 5.875

Solution :

$5\frac{3}{8} = 5.375$

Question 15.

$0.35 \div 0.7$ is

(a) 50

(b) 5

(c) 0.5

(d) 0.05

Solution :

$0.35 \div 0.7 = 0.5$ (c)

Question 16

30m 5cm is same as

(a) 30.5m

(b) 3.05 m

(c) 30.05 m

(d) 30.005 m

Solution :

30m 5cm = 30.05 (c)

Question 17.

0.05309×1000 is

(a) 5.309

(b) 53.09

(c) 530.9

(d) none of these

Solution :

$0.05309 \times 1000 = 53.09$ (b)

Question 18.

2.305 ÷ 1000 is

(a) 0.2305

(b) 0.02305

(c) 0.002305

(d) none of these

Solution :

2.305 ÷ 1000 = 0.002305 (c)

Question 19.

If each side of a regular hexagon is 3.5 cm, then the perimeter of the hexagon is

(a) 17.5cm

(b) 21 cm

(c) 18.5 cm

(d) 24.5 cm

Solution :

Each side of a regular hexagon = 3.5 cm

Its perimeter = 3.5 × 6 = 21 cm (b)

Question 20 .

Which of the following numbers has the smallest value?

(a) 0.0002

(b) $\frac{2}{1000}$

(c) 0.02×0.001

(d) $\frac{2}{1000} \div 0.01$

Solution :

(a) 0.0002

(b) $\frac{2}{1000} = 0.002$

$0.02 \times 0.001 = 0.00002$

And $\frac{2}{1000} \div 0.01 = \frac{2}{1000} \times \frac{100}{1} = 0.2$

Last value = 0.00002 or 0.02×0.001

Fraction and decimals check your progress

Question 1.

What fraction is 270 gram of 3 kilograms ?

Solution:

$\frac{270g}{3kg}$

$= \frac{270}{3\times1000}$

$= \frac{9}{100}$

Question 2 .

Simplify the following :

(i) $7\frac{1}{2} \times 2\frac{4}{15}$

(ii) $3\frac{6}{7} \times 4\frac{2}{3}$

(iii) $3\frac{3}{7} \div \frac{16}{21}$

(iv) $15\frac{3}{7} \div 1\frac{23}{49}$

Solution :

(i) $7\frac{1}{2} \times 2\frac{4}{15}$

$= \frac{15}{2} \times \frac{34}{15}$

$= 17$

(ii) $3\frac{6}{7} \times 4\frac{2}{3}$

$= \frac{27}{7} \times \frac{14}{3}$

$= 18$

(iii) $3\frac{3}{7} \div \frac{16}{21}$

$= \frac{24}{7} \div \frac{16}{21}$

$= \frac{24}{7} \times \frac{21}{16}$

$= \frac{9}{2}$

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

(iv) $15\frac{3}{7} \div 1\frac{23}{49}$

$= \frac{108}{7} \div \frac{72}{49}$

$= \frac{108}{7} \times \frac{49}{72}$

$= \frac{21}{2}$

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

Question 3.

A shirt was market at 540 . it was sold at $\frac{3}{4}$ of the marked what was the sale price ?

Solution:

List price of the shirt = 540

Selling price = $\frac{3}{4}$ of 540 = $\frac{3}{4} \times 540 = 405$

Question 4.

In a class of 56 students, $\frac{1}{4}$ are in blue house and $\frac{3}{14}$ are in yellow house. Out of the remaining,$\frac{1}{3}$ are in the greenhouse rest are in the red house . find the number of students in each house.

Solution:

Number of total students of a class = 56

Number of students of blue house = $\frac{1}{4} of$ 56 = 14

Number of students of yellow house = 314 of 56 = 12

Remaining students = 56 – (14+12) = 56 – 26 = 30

Number of students of green house = $\frac{1}{3}$ of 30 = 10

And remaining students who are of red house = 30-10 = 20

Question 5.

Rohit bought a motorcycle for 36000 . he paid $\frac{1}{6}$ of the price and the rest in 12 equal monthly instalments. Find the amount to pay every month .

Solution:

Cost price of motor cycle = 36000

Cash paid = $\frac{1}{6}$ of 36000 = 6000

Remaining amount = 36000 – 6000 = 30000

Number of instalments = 12

Amount of each instalment = 30000 ÷ 12 = 2500

Rohit had to pay 2500 every month.

Question 6.

Mr mukerjee gave $\frac{5}{14}$ of his money to his son, $\frac{2}{3}$ of the remaining daughter and the rest to his wife. If his wife got 36000, what was that total amount?

Solution:

Let total money = 1

Mr mukerjee to his son = $\frac{5}{14}$ part of his money

Then remaining money = 1 - $\frac{5}{14}$

= $\frac{14-5}{14}$

= $\frac{9}{14}$

He gives to his daughter = $\frac{2}{3}$ of $\frac{9}{14} = \frac{3}{7}$ part

Rest money to his wife = $\frac{9}{14} - \frac{3}{7}$

= $\frac{9-6}{14} = \frac{3}{14}$

$\frac{3}{14}$ of total money = 36000

Total money = $\frac{36000 \times 14}{3}$ = 168000

Question 7.

Find the value of ; $\frac{1}{4\frac{2}{7}}+\frac{1}{1\frac{11}{13}}+\frac{1}{\frac{5}{9}}$

Solution .

$\frac{1}{4\frac{2}{7}}+\frac{1}{1\frac{11}{13}}+\frac{1}{\frac{5}{9}}$

$=\frac{1}{\frac{30}{7}}+\frac{1}{\frac{24}{13}}+\frac{1}{\frac{5}{9}}$

$=\frac{7}{30}+\frac{13}{24}+\frac{9}{5}$

$=\frac{28+65+216}{120}$

$=\frac{309}{120}$

$=\frac{103}{40}$

$=2\frac{23}{40}$

Question 8.

Convert the following numbers to fractions (in simplest form)

(i) 0.025

(ii) 0.876

(iii) 4.3125

Solution :

(i) 0.025

$=\frac{25}{100}$

$= \frac{1}{40}$

(ii) 0.876

$= \frac{876}{1000}$

$= \frac{219}{250}$

(iii) 4.3125

$= 4\frac{3125}{10000}$

$= 4\frac{5}{16}$ (dividing both by 625)

Question 9.

Write the following fractions as decimals:

(i) $1\frac{3}{8}$

(ii) $\frac{47}{125}$

(iii) $\frac{9}{40}$

Solution:

(i) $1\frac{3}{8} = 1.375$

(ii) $\frac{47}{125} = 0.376$

(iii) $\frac{9}{40} = 2.225$

Question 10.

By how much does the sum of 17.443 and 29.657 exceed the sum of 13.687 and 18.548?

Solution :

Sum of 17.443 and 29.567 = 17.443 + 29.657 = 47.100

And sum of 13.687 and 18.548 = 13.687 + 18.548 = 32.235

Difference = 47.100 – 32.235 = 14.865

Question 11.

Simplify the following.

(i) 4.27 × 0.036

(ii) 0.09 × 1.04

(iii) 1.32 ÷ 0.8

(iv) 0.7038 ÷ 0.34

Solution:

(i) 4.27 × 0.036 = 0.15372

427

×36

2562

12810

15372

(ii) $0.09 \times 1.04 = 0.0936$

(iii) $1.32 \div 0.8$

$= 1.32 \div 0.80$

$\frac{132}{80} = 1.65$

(iv) $0.7038 \div 0.34$

$= 0.7038 \div 0.3400$

$= \frac{7038}{3400}$

$= 2.07$

Question 12.

If one kg of rice costs 52.70 then find the cost of 12.5 kg rice.

Solution:

Cost of 1kg of rice = 52.70

$$\begin{array}{r} 5270 \\ \times\ 125 \\ \hline 26350 \\ 105400 \\ 527000 \\ \hline 658750 \end{array}$$

Question 13.

A piece of cloth is 24.5 m long. How many pieces, each of length 1.75m, can be cut from it?

Solution:

Length of a piece of cloth = 24.5

Length of one piece of cloth cut from it = 1.75 m

Number of piece = 24.5÷ 1.75 = 24.50÷ 1.75 = 14pieces

Question 14.

The product of two decimal number is 1.599 and one of them is 0.65 find the other.

Solution :

Product of two decimal number = 1.599

One number = 0.65

Second number = $\frac{1.599}{0.65} = \frac{1599}{650} = 2.46$

Question 15

Simplify the following:

(i) $\left[\frac{4}{5} - \frac{1}{3}\right] \div 4\frac{1}{5} + \frac{2}{3} of \left[5\frac{1}{6} - 4\frac{3}{8}\right]$

(ii) $1\frac{2}{3} of \left[\frac{3}{8} - \frac{1}{12}\right] - \left[4\frac{2}{3} - \left\{6 - \left(2\frac{2}{3} - \overline{4\frac{1}{2} - 3\frac{1}{3}}\right)\right\}\right]$

Solution :

(i) $\left[\frac{4}{5}-\frac{1}{3}\right] \div 4\frac{1}{5}+\frac{2}{3} of \left[5\frac{1}{6}-4\frac{3}{8}\right]$

$=\frac{12-5}{15} \div \frac{21}{5}+\frac{2}{3} of \left[\frac{31}{6}-\frac{35}{8}\right] \frac{124-105}{24}$

$=\frac{7}{15} \div \frac{21}{5}+\frac{2}{3} of \ \frac{19}{24}$

$=\frac{7}{15} \div \frac{21}{5}+\frac{19}{36}$

$=\frac{7}{15} \times \frac{5}{21}+\frac{19}{36}$

$=\frac{1}{9}+\frac{19}{36}$

$=\frac{4+19}{36}$

$=\frac{23}{36}$

(ii) $1\frac{2}{3} of \left[\frac{3}{8}-\frac{1}{12}\right]-\left[4\frac{2}{3}-\left\{6-\left(2\frac{2}{3}-\overline{4\frac{1}{2}-3\frac{1}{3}}\right)\right\}\right]$

$=\frac{5}{3} of \left[\frac{9-2}{24}\right]-\left[\frac{14}{3}-\left\{6-\left(\frac{8}{3}-\overline{\frac{9}{2}-\frac{10}{3}}\right)\right\}\right]$

$=\frac{5}{3} of \left[\frac{7}{24}\right]-\left[\frac{14}{3}-\left\{6-\left(\frac{8}{3}-\frac{7}{6}\right)\right\}\right]$

$=\frac{5}{3} of \left[\frac{7}{24}\right]-\left[\frac{14}{3}-\left\{6-\left(\frac{16-7}{6}\right)\right\}\right]$

$=\frac{35}{72}-\left[\frac{14}{3}-\left\{6-\frac{9}{6}\right\}\right]$

$=\frac{35}{72}-\left[\frac{14}{3}-\frac{36-9}{6}\right]$

$=\frac{35}{72}-\left[\frac{14}{3}-\frac{27}{6}\right]$

$=\frac{35}{72}-\left[\frac{28-27}{6}\right]$

$$= \frac{35}{72} - \frac{1}{6}$$

$$= \frac{35-12}{72}$$

$$= \frac{23}{72}$$