NCERT Solutions of Fractions and Decimals

Exercise 2.1

Question 1

Solve

i. 2 – 3/5

ii. 4 + 7/8

iii. 3/5 + 2/7

iv. 9/11 – 4/15

v. 7/10 + 2/5 + 3/2

vi. $2\frac{2}{3} + 3\frac{1}{2}$

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

Solution

We have to convert them to like terms to perform these addition and subtraction

i. 2 – 3/5

= (2 × 5)/5 – 3/5

= 10/5 – 3/5

= (10 – 3) ÷ 5 = 7/5

ii. 4 + 7/8

= (4 × 8)/8 + 7/8

= 32/ 8 + 7/8

= (32 + 7)/8 = 39/8

iii. 3/5 + 2/7

= (3 × 7) ÷ (5 × 7) + (2 × 5) ÷ (7 × 5)

= 21/35 + 10/35

= (21 + 10) ÷ 35 = 31/35

iv. 9/11 – 4/15

= (9 × 15) ÷ (11 × 15) – (4 × 11) ÷ (15 × 11)

= 135/165 – 44/165

= (135 – 44) ÷ 165 = 91/ 165

v. 7/10 + 2/5 + 3/2

= 7/10 + (2 × 2) ÷ (5 × 2) + (3 × 5) ÷ (2 × 5)

= 7/ 10 + 4/ 10 + 15/10

= (7 + 4 + 15) ÷10

= 26/ 10 = 13/5 = 2 3/5

vi. $2\frac{2}{3} + 3\frac{1}{2}$

= 8/3 + 7/2

= (8 × 2) ÷ (3 × 2) + (7 × 3) ÷ (2 × 3)

= 16/6 + 21/ 6

= (16 + 21) ÷ 6 = 37/6 = $6\frac{1}{6}$

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

= 17/2 – 29/8

= (17 × 4) ÷ (2 × 4) – 29/ 8

= 68/8 – 29/8

= (68 – 29) ÷ 8 = 39/8 = $4\frac{7}{8}$

Question 2

Arrange the following in descending order:

i. 2/9, 2/3, 8/21

ii. 1/5, 3/7, 6/10

Solution

i. 2/9, 2/3, 8/21

Changing the fractions into like fractions, we get

(2 × 4) ÷ (9 × 4), (2 × 4) ÷ (3 × 4), 8/ 21

8/ 36, 8/12, 8/21

8/12 > 8/21 > 8/36

Therefore, 2/3 > 8/21 > 2/9

ii. 1/5, 3/7, 6/10

Changing the fractions into like fractions we get

(1 × 7 × 10) ÷ (5 × 7 × 10), (3 × 5 × 10) ÷ (7 × 5 × 10), (7 × 7 × 10) ÷ (10 × 7 × 5)

70/350, 150/350, 245/350

245/350 > 150/350 > 70/350

Therefore, 7/10 > 3/7 > 1/5

Question 3

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

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

Solution:

Sum, along first row = 4/11 + 9/11 + 2/11

= (4 + 9 + 2) ÷ 11 = 15/11

Sum, along second row = 3/11 + 5/11 + 7/11

= (3 + 5 + 7) ÷ 11 = 15/11

Sum, along third row = 8/11 + 1/11 + 6/11

= (8 + 1 + 6) ÷ 11 = 15/11

Sum, along first column = 4/11 + 3/11 + 8/11

= (4 + 3 + 8) ÷ 11 = 15/11

Sum, along second column = 9/11 + 5/11 + 1/11

= (9 + 5 + 1) ÷ 11 = 15/11

Sum, along third column = 2/11 + 7/11 + 6/11

= (2 + 7 + 6) ÷ 11 = 15/11

Sum, along first diagonal = 6/11 + 5/11 + 4/11

= (6 + 5 + 4) ÷ 11 = 15/11

Sum, along second diagonal = 8/11 + 5/11 + 2/11

= (8 + 5 + 2) ÷ 11 = 15/11

In this square, the sum of each row, column and diagonal are same. So, this is a magic square

Question 4

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

Solution:

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

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

Perimeter of the rectangular sheet of paper = 2 × (length + breadth)

$=2 \times [12\frac{1}{2} + 10\frac{2}{3}]$

= 2 × (25/2 + 32/3)

Converting into equivalent fractions

= 2 × (75/6 + 64/6)

= 2 × [(75 + 64) ÷ 6]

= 2 × (139/6)

= (2 × 139) ÷ 6 = 139/3 = $46\frac{1}{3}$ cm

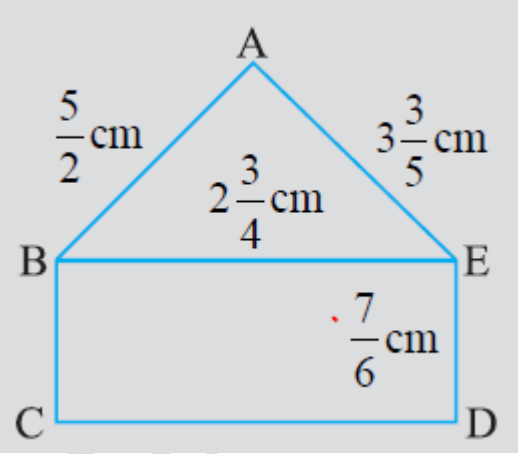
Therefore, the perimeter of the sheet of paper is $46\frac{1}{3}$ cm

Question 5

Find the perimeter of

i) Δ ABE

ii) the rectangle BCDE in this figure. Whose perimeter is greater?



Solution

i. The perimeter of Δ ABE = AB + BE + EA

$=\frac{5}{2} + 2\frac{3}{4} + 3\frac{3}{5}$

= 5/2 + 11/4 + 18/5

Converting into equivalent fractions

= 100/40 + 144/40 + 110/40

= (100 + 144 + 110) ÷ 40

= 354/40 = 177/20 cm

ii. The length of rectangle = $2\frac{3}{4}$ cm

The breadth of rectangle = 7/6 cm

Perimeter of the rectangle = 2 × (length + breadth)

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

= 2 × (11/4 + 7/6)
= 2 × (66/24 + 28/24)

= 2 × [(66 + 28) ÷ 24]

= 2 × 94/24 = 47/6 cm

Therefore, the perimeter of the rectangle BCDE is 47/6 cm

Perimeter of the triangle Δ ABE = 177/20 cm

Perimeter of the rectangle BCDE = 47/6 cm

Changing the fractions into like fractions, we get

177/20, 47/6

(177 × 6) ÷ (20 × 6), (47 × 20) ÷ (6 × 20)

1062/120, 940/120

1062/ 120 > 940/120

Therefore, 177/20 or 8 17/20 is greater

So, the perimeter of Δ ABE is greater than the perimeter of rectangle BCDE.

Question 6

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

Solution

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

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

The picture should be trimmed by

$=7\frac{3}{5}-7\frac{3}{10}$

= 38/5 – 73/10

= 76/10 – 73/10 = (76 – 73) ÷ 10 = 3/10 cm

Question 7

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

Solution

The part of apple eaten by Ritu = 3/5

The part of apple eaten by Somu = 1 – part of apple eaten by Ritu

= 1 – 3/5

= 2/5

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

Since, 3/5 > 2/5 , Ritu had the larger share.

Difference between the two shares 3/2 – 2/5 = (3 – 2) ÷ 5 = 1/5

Question 8

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

Solution

Time taken by Michael = 7/12 hour

Time taken by Vaibhav = 3/4 hour

Changing the fractions into like fractions, we get

7/12, 3/4

7/12, (3 × 3) ÷ (4 × 3)

7/12, 9/12

Since, 9/12 > 7/12, Vaibhav worked longer.

Difference = 9/12 – 7/12 = (9 – 7) ÷ 12 = 2/12 = 1/6 hours longer

EXERCISE 2. 2

Question 1

1. Which of the drawings a) to d)

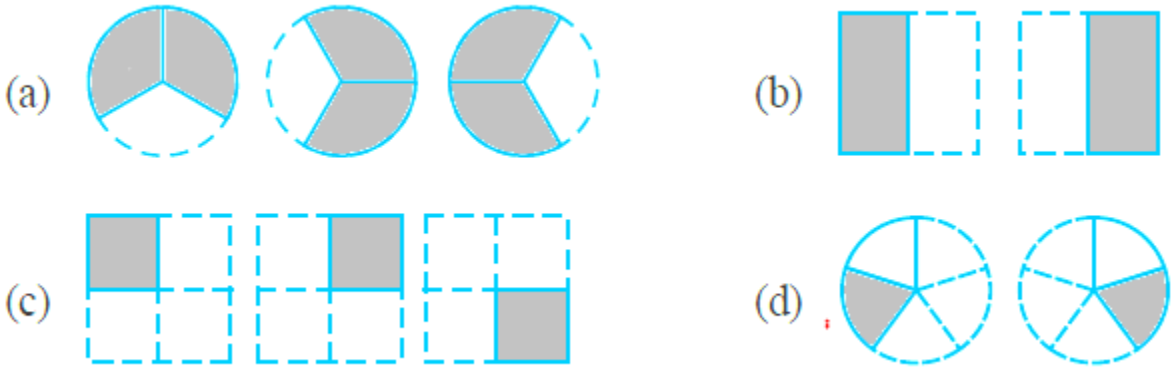
show:

i. 2 × (1/5)

ii. 2 × (1/2)

iii. 3 × (2/3)

iv. 3 × (1/5)



Solutions

i – d

ii – b

iii – a

iv – c

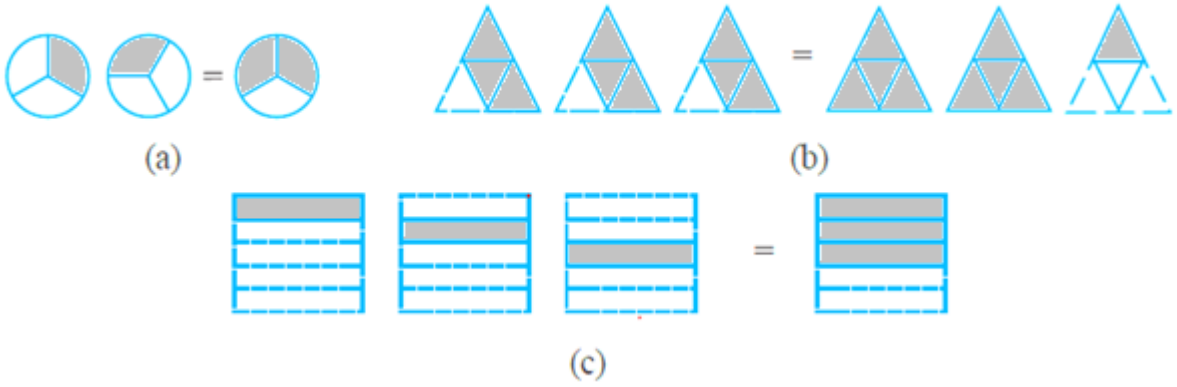
Question 2

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

i. 3 × (1/5) = 3/5

ii. 2 × (1/3) = 2/3

iii. 3 × (3/4) = 2 1/4



(a) (b) (c)

Solutions

i – c

ii – a

iii – b

Question 3

Multiply and reduce lowest form and convert into a mixed fraction.

i. 7 × (3/5)

ii. 4 × (1/3)

iii. 2 × (6/7)

iv. 5 × (2/9)

v. (2/3) × 4

vi. (5/2) × 6

vii. 11 × (4/7)

viii. 20 × (4/5)

ix. 13 × (1/3)

x. 15 × (3/5)

Solutions

i. 7 × (3/5) = (3 × 7) ÷ 5 = 21/5 = $4\frac{1}{5}$

ii. 4 × (1/3) = (4 × 1) ÷ 3 = 4/3 = $1\frac{1}{3}$

iii. 2 × (6/7) = (2 × 6) ÷ 7 = 12/7 =$1\frac{5}{7}$

iv. 5 × (2/9) = (5 × 2) ÷ 9 = 10/9 =$1\frac{1}{9}$

v. (2/3) × 4 = (2 × 4) ÷ 3 = 8/3 = $2\frac{2}{3}$

vi. (5/2) × 6 = (5 × 6) ÷ 2 = 30/2 = 15

vii. 11 × (4/7) = (11 × 4) ÷ 7 = 44/7 =$6\frac{2}{7}$

viii. 20 × (4/5) = (20 × 4) ÷ 5 = 80/5 = 16

ix. 13 × (1/3) = (13 × 1) ÷ 3 = 13/3 = $4\frac{1}{3}$

x. 15 × (3/5) = (15 × 3) ÷ 5 = 45/5 = 9

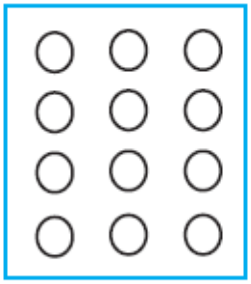
Question 4

Shade:

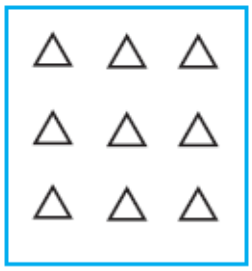
i. 1/2 of the circles in box a)

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

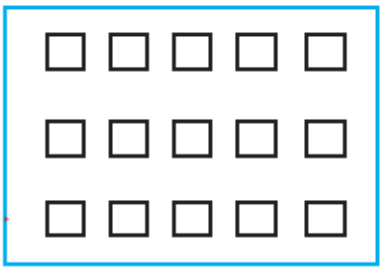
iii. 3/5 of the squares in box c)



(a)

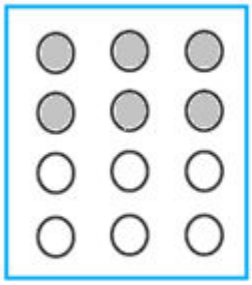


(b)

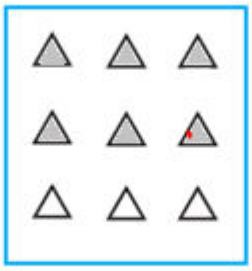


(c)

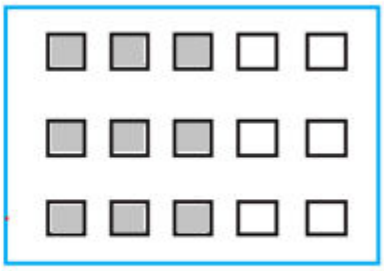
Solutions



(a)



(b)



(c)

Question 5

Find

a. 1/2 of i. 24, ii. 46

b. 2/3 of i. 18, ii. 27

c. 3/4 of i. 16, ii. 36

d. 4/5 of i. 20, ii. 35

Solutions

a. 1/2 of i. 24, ii. 46

i. 1/2 of 24 = (1/2) × 24 = 12

ii. 1/2 of 46 = (1/2) × 46 = 23

b. 2/3 of i. 18, ii. 27

i. 2/3 of 18 = (2/3) × 18 = 12

ii. 2/3 of 27 = (2/3) × 27 = 18

c. 3/4 of i. 16, ii. 36

i. 3/4 of 16 = (3/4) × 16 = 12

ii. 3/4 of 36 = (3/4) × 36 = 27

d. 4/5 of i. 20, ii. 35

i. 4/5 of 20 = (4/5) × 20 = 16

ii. 4/5 of 35 = (4/5) × 35 = 28

Question 6

Multiply and express as a mixed fraction

a. 3 × $5\frac{1}{5}$

b. 5 × $6\frac{3}{4}$

C. 7 × $2\frac{1}{4}$

d. 4 × $6\frac{1}{3}$

e. $3\frac{1}{4}$ × 6

f. $3\frac{2}{5}$ × 8

Solutions

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

b. 5 × $6\frac{3}{4}$= 5 × 27/4 = 135/4 = $33\frac{3}{4}$

C. 7 × $2\frac{1}{4}$= 7 × 9/4 = 63/4 = $15\frac{3}{4}$

d. 4 × $6\frac{1}{3}$= 4 × 19/3 = 76/3 = $25\frac{1}{3}$

e. $3\frac{1}{4}$ × 6 = 13/4 × 6 = 78/4 = $19\frac{2}{4}$

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

Question 7

7. Find

a. 1/2 of i. $2\frac{3}{4}$, ii. $4\frac{2}{9}$

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

Solutions

a. 1/2 of i. $2\frac{3}{4}$, ii. $4\frac{2}{9}$

i. 1/2 of $2\frac{3}{4} = 1/2 \times 11/4 = 11/8 = 1\frac{3}{8}$

ii. 1/2 of $4\frac{2}{9}$

$= 1/2 \times 38/9 = 38/18 = 19/9 = 2\frac{1}{9}$

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

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

ii. 5/8 of $9\frac{2}{3}$

$= 5/8 \times 29/3 = 145/24 = 6\frac{1}{24}$

Question 8

Vidya and Pratap went for a picnic. Their mother gave them a water bottle that contained 5 litres of water. Vidya consumed 2/3 of the water. Pratap consumed the remaining water.

i. How much water did Vidya drink?

ii. What fraction of the total quantity of water did Pratap drink?

Solution

i. Water consumed by Vidya = 2/5 of 5 litres = $2/5 \times 5 = 2$ litres

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

Therefore, the fraction of total quantity of water = 3/5

EXERCISE 2.3

Question 1

1. i. 1/4 of a. 1/4, b. 3/5, c. 4/3

ii. 1/7 of a. 2/9, b. 6/5, c. 3/10

Solution

1. i. a.1/4 of 1/4

1/4 × 1/4 = (1 × 1) ÷ (4 × 4) = 1/16

b. 1/4 of 3/5

1/4 × 3/5 = (1 × 3) ÷ (4 × 5) = 3/20

c. 1/4 of 4/3

1/4 × 4/3 = (1 × 4) ÷ (4 × 3) = 1/3

ii. a. 1/7 0f 2/9

1/7 × 2/9 = (1 × 2) ÷ (7 × 9) = 2/63

b. 1/7 of 6/5 = (1 × 6) ÷ (7 × 5) = 6/35

c. 1/7 of 3/10

1/7 × 3/10 = (1 × 3) ÷ (7 × 10) = 3/70

Question 2

Multiply and reduce to lowest form (if possible);

i. 2/3 × $2\frac{2}{3}$

ii. 2/7 × 7/9

iii. 3/8 × 6/4

iv. 9/5 × 3/5

v. 1/3 × 15/8

vi. 11/2 × 3/10,

vii. 4/5 × 12/7

Solutions

i. 2/3 × $2\frac{2}{3}$

=2/3 × 8/3 = (2 × 8) ÷ (3 × 3) = 16/9 = $1\frac{7}{9}$

ii. 2/7 × 7/9

2/7 × 7/9 = (2 × 7) ÷ (7 × 9) = 2/9

iii. 3/8 × 6/4

3/8 × 6/4 = (3 × 6) ÷ (8 × 4) = (3 × 3) ÷ (4 × 4) = 9/16

iv. 9/5 × 3/5

9/5 × 3/5 = (9 × 3) ÷ (5 × 5) = 27/25 = 1 2/25

v. 1/3 × 15/8

1/3 × 15/8 = (1 × 15) ÷ (3 × 8) = (1 × 5) ÷ (1 × 8) = 5/8

vi. 11/2 × 3/10

11/2 × 3/10 = (11 × 3) ÷ (2 × 10) = 33/20 =$1\frac{13}{20}$

vii. 4/5 × 12/7

4/5 × 12/7 = (4 × 12) ÷ (5 × 7) = 48/35 = $1\frac{13}{35}$

Question 3

Multiply the following fractions

i. 2/5 × 5 ¼

ii. $6\frac{2}{5}$ × 7/9

iii. 3/2 × $5\frac{1}{3}$

vi. 5/6 × $2\frac{3}{7}$

v. $3\frac{2}{5}$ × 4/7

vi. $2\frac{3}{5}$ × 3,

vii. $3\frac{4}{7}$ × 3/5

Solutions

i. 2/5 × 5 ¼

=2/5 × 21/4 = (2 × 21) ÷ (5 × 4) = (1 × 21) ÷ (5 × 2) = 21/10 =$2\frac{1}{10}$

ii. $6\frac{2}{5}$ × 7/9

=32/5 × 7/9 = (32 × 7) ÷ (5 × 9) = 224/45 = $4\frac{44}{45}$

iii. 3/2 × $5\frac{1}{3}$

= (3 × 16) ÷ (2 × 3) = (1 × 8) ÷ (1 × 1) = 8

iv. 5/6 × $2\frac{3}{7}$

5/6 × 17/7 = (5 × 17) ÷ (6 × 7) = 85/42 = $2\frac{1}{42}$

v. $3\frac{2}{5}$ × 4/7= 17/5 × 4/7 = (17 × 4) ÷ (5 × 7) = 68/35 = $1\frac{33}{35}$

vi. $2\frac{3}{5}$ × 3

=13/5 × 3 = (13 × 3) ÷ 5 = 39/5 = $7\frac{4}{5}$

vii. $3\frac{4}{7}$ × 3/5

=25/7 × 3/5 = (25 × 3) ÷ (7 × 8) = (5 × 3) ÷ (7 × 1) = 15/7 =$2\frac{1}{7}$

Question 4

4. Which is greater:

i. 2/7 of 3/4 or 3/5 of 5/8

ii. 1/2 of 6/7 or 2/3 of 3/7

Solutions

i. 2/7 of 3/4 or 3/5 of 5/8

2/7 of 3/4

2/7 × 3/4 = (2 × 3) ÷ (7 × 4) = (1 × 3) ÷ (7 × 2) = 3/14

3/5 of 5/8

3/5 × 5/8 = (3 × 5) ÷ (5 × 8) = (3 × 1) ÷ (1 × 8) = 3/8

3/14, 3/8

3/8 > 3/14

Therefore, 3/5 of 5/8 > 2/7 of 3/4

ii. 1/2 of 6/7 or 2/3 of 3/7

1/3 of 6/7

1/2 × 6/7 = (1 × 6) ÷ (2 × 7) = 3/7

2/3 of 3/7

2/3 × 3/7 = (2 × 3) ÷ (3 × 7) = 2/7

3/7. 2/7

3/7 > 2/7

Therefore, 1/2 of 6/7 > 2/3 of 3/7

Question 5

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

Solution:

Gaps between first and last saplings = 3 times Length of one gap

Therefore, distance between first and last sapling = 3 × 3/4 = 9/4 = $2\frac{1}{4}$ m

Question 6

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

Solution:

Number of hours Lupica reads the book per day = $1\frac{3}{4}$

Number of days = 6

Total number of hours required by Lipika to read the book = $1\frac{3}{4}$ × 6 = 7/4 × 6 = 42/4 = 21/2 = $10\frac{1}{2}$ hours.

Question 7

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

Solution:

Car can run one-liter petrol = 16 Km

Number of Km a car can run for $2\frac{3}{4}$ litres petrol =$2\frac{3}{4}$ X 16 = 11/4 × 16 = 11 × 4 = 44 km

Question 8

a.

i. Provide the number in the box, such that 2/3 × _____ = 10/30.

ii. The simplest form of the number obtained in box above is _____

b.

i. Provide the number in the box , such that 3/5 × _____ = 24/75

ii. The simplest form of the number obtained in box is _____

Solution

a. i. 2/3 × 5/10 = 10/30.

ii. The simplest form of the number obtained in 5/10 is 1/2

b. i. 3/5 × 8/15 = 24/75

ii. The simplest form of the number obtained in 8/15 is 8/15.

EXERCISE 2. 4

Question 1

1. Find:

i. 12 ÷ (3/4)

ii. 14 ÷ (5/6)

iii. 8 ÷ (7/3)

iv. 4 ÷ 8/3

v. 3 ÷ $2\frac{1}{3}$

vi. 5 ÷ $3\frac{4}{7}$

Solution

i. 12 ÷ (3/4)

12 × 4/3 = (12 × 4) ÷ 3 = 4 × 4 = 16

ii. 14 ÷ (5/6)

14 × 6/5 = (14 × 6) ÷ 5 = 84 ÷ 5 = 84/5 =16 4/5

iii. 8 ÷ (7/3)

8 × 3/7 = (8 × 3) ÷ 7 = 24 ÷ 7 = 24/7 =3 3/7

iv. 4 ÷ 8/3

4 × 3/8 = (4 × 3) ÷ 8 = 3 ÷ 2 = 3/2 =1 1/2

v. 3 ÷ $2\frac{1}{3}$ = 3 ÷ 7/3

3 × 3/7 = (3 × 3) ÷ 7 = 9 ÷ 7 = 9/7 =1 2/7

vi. 5 ÷ $3\frac{4}{7}$= 5 ÷ 25/7

5 × 7/25 = (5 × 7) ÷ 25 = (1 × 7) ÷ 5 = 7/5 =1 2/5

Question 2

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

i. 3 ÷ 7

ii. 5 ÷ 8

iii. 9 ÷ 7

iv. 6 ÷ 5

v. 12 ÷ 7

vi. 1 ÷ 8

vii. 1 ÷ 11

Solution

i. 3 ÷ 7 = 3/7

Reciprocal of 3/7 is 7/3. 7/3 is an improper fraction.

ii. 5 ÷ 8 = 5/8

Reciprocal of 5/8 is 8/5. 8/5 is an improper fraction.

iii. 9 ÷ 7 = 9/7

Reciprocal of 9/7 is 7/9. 7/9 is a proper fraction.

iv. 6 ÷ 5 = 6/5

Reciprocal of 6/5 is 5/6. 5/6 is a proper fraction.

v. 12 ÷ 7 = 12/7

Reciprocal of 12/7 is 7/12. 7/12 is a proper fraction.

vi. 1 ÷ 8 = 1/8

Reciprocal of 1/8 is 8. 8 is a whole number.

vii. 1 ÷ 11 = 1/11

Reciprocal of 1/11 is 11. 11 is a whole number.

Question 3

Find

i. 7/3 ÷ 2

ii. 4/9 ÷ 5

iii. 6/13 ÷ 7

iv. $4\frac{1}{3}$÷ 3

v. $3\frac{1}{2}$÷ 4

vi. $4\frac{3}{7}$÷ 7

Solutions

i. 7/3 ÷ 2

7/3 ÷ 2/1 = 7/3 × 1/2 = (7 × 1) ÷ (3 × 2) = 7/6

ii. 4/9 ÷ 5

4/9 ÷ 5/1 = 4/9 × 1/5 = (4 × 1) ÷ (9 × 5) = 4/45

iii. 6/13 ÷ 7

6/13 ÷ 7/1 = 6/13 × 1/7 = (6 × 1) ÷ (13 × 7) = 6/91

iv $4\frac{1}{3}$÷ 3 = 13/3 ÷ 3

13/3 ÷ 3/1 = 13/3 × 1/3 = (13 × 1) ÷ (3 × 3) = 13/9

v. $3\frac{1}{2}$ ÷ 4 = 7/2 ÷ 4

7/2 ÷ 4/1 = 7/3 × 1/4 = (7 × 1) ÷ (2 × 4) = 7/8

vi. $4\frac{3}{7}$ ÷ 7 = 31/7 ÷ 7

31/7 ÷ 7/1 = 31/7 × 1/7 = (31 × 1) ÷ (7 × 7) = 31/49

Question 4

Find

i. 2/5 ÷ ½

ii. 4/9 ÷ 2/3

iii. 3/7 ÷ 8/7

iv. $2\frac{1}{3}$÷ 3/5

v. $3\frac{1}{2}$÷ 8/3

vi. 2/5 ÷ $1\frac{1}{2}$

vii. $3\frac{1}{5}$÷ $1\frac{2}{3}$

viii. $2\frac{1}{5}$ ÷ $1\frac{1}{5}$

Solution

i. 2/5 ÷ 1/2

2/5 × 2/1 = (2 × 2) ÷ (5 × 1) = 4//5

ii. 4/9 ÷ 2/3

4/9 × 3/2 = (4 × 3) ÷ (9 × 2) = 2/3

iii. 3/7 ÷ 8/7

3/7 × 7/8 = (3 × 7) ÷ (7 × 8) = 3/8

iv. $2\frac{1}{3}$÷ 3/5= 7/3 ÷ 3/5

7/3 × 5/3 = (7 × 5) ÷ (3 × 3) = 35/9 = 3 8/9

v. $3\frac{1}{2}$÷ 8/3 = 7/2 ÷ 8/3

7/2 × 3/8 = (7 × 3) ÷ (2 × 8) = 21/16 = 1 5/6

vi. 2/5 ÷ $1\frac{1}{2}$

= 2/5 ÷ 3/2

2/5 × 2/3 = (2 × 2) ÷ (5 × 3) = 4//15

vii. $3\frac{1}{5}$÷ $1\frac{2}{3}$

= 16/5 ÷ 5/3

16/5 × 3/5= (16 × 3) ÷ (5 × 5) = 48/25 = 1 23/25

viii. $2\frac{1}{5} \div 1\frac{1}{5}$

= 11/5 ÷ 6/5

11/5 × 5/6 = (11 × 5) ÷ (5 × 6) = 11/6 = 1 5/6

EXERCISE 2.5

Question 1

Which is greater?

i. 0.5 or 0.05

ii. 0.7 or 0.5

iii. 7 or 0.7

iv. 1.37 or 1.49

v. 2.03 or 2.30

vi. 0.8 or 0.88

Solutions

i. 0.5 or 0.05

0.5 = 5/10

0.05 = 5/100

Therefore, the denominator has less value is the greater one. Hence 0.5 is greater.

ii. 0.7 or 0.5

0.7 = 7/10

0.5 = 5/10

Therefore, the numerator has more value is the greater one. Hence 0.7 is greater.

iii. 7 or 0.7

7 = 70/10

0.7 = 7/10

Therefore, the numerator has more value is the greater one. Hence 7 is greater.

iv.1.37 or 1.49

1.37= 137/100

1.49= 149/100

Therefore, the numerator has more value is the greater one. Hence 1.49 is greater.

v.2.03 or 2.30

2.03 = 203/100

2.30= 230/100

Therefore, the numerator has more value is the greater one. Hence 2.30 is greater.

vi. 0.8 or 0.88

0.8 = 80/100

0.88 = 88/100

Therefore, the numerator has more value is the greater one. Hence 0.88 is greater.

Question 2

Express as rupees using decimals:

i. 7 paise

ii. 7 rupees 7 paise

iii. 77. Rupees 77 paise

iv. 50 paise,

v. 235 paise

Solution

We need to remember that

1Rs =100 paise

i. 7 paise

7 paise = Rs. 7/100 = Rs. 0.07

ii. 7 rupees 7 paise

7 rupees + 7 paise

Rs. 7 + Rs. 7/100 = Rs. 7 + Rs. 0.07 = Rs. 7.07

iii. 77. Rupees 77 paise

= 77 rupees + 77 paise

= Rs. 77 + Rs. 77/100 = Rs. 7 + Rs. 0.77 = Rs. 77.77

iv. 50 paise = Rs.50/100 = Rs. 0.50

v. 235 paise = Rs. 235/100 = Rs. 2.35

Question 3

i. Express 5 cm in metre and kilometer

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

Solution

We need to remember that

1Km =1000m

1m =100 cm

1cm =10 mm

i. Express 5 cm in metre and kilometer

5 cm in metre

5 cm = 5/100 m = 0.05 m

5 cm in kilometer

5 cm = 5/100000 = 0.00005 km

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

35 mm in cm

35 mm = 35/10 cm = 3.5 cm

35 mm in m

35 mm = 35/1000 m = 0.035 cm

35 mm in km

35 mm = 35/1000000 cm = 0.000035 km

Question 4

Express in Kg:

i. 200 g

ii. 3470 g

iii. 4 kg 8 g

Solution

i)	200g	200/1000kg=.2 Kg
ii)	3470 g	3470 g = 3470/1000 kg = 3.470 kg
iii)	4 kg 8 g	This is typical question which is tricky 4 kg + 8 g = 4 kg + 8/1000 g = 4 kg + 0.008 = 4.008 kg

Question 5

Write the following decimal numbers in the expanded form:

i. 20.03

ii. 2.03

iii. 200.03

Solution

i. 20.03

20.03 = (2 × 10) + (0 × 1) + [0 × (1/10)] + [3 × (1/100)]

ii. 2.03

2.03 = (2 × 1) + [0 × (1/10)] + [3 × (1/100)]

iii. 200.03

200.03 = (2 × 100) + (0 × 10) + (0 × 1) + [0 × (1/10)] + [3 × (1/100)]

Question 5

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

i. 2.56

ii. 21.37

iii. 10.25

iv. 9.42

v. 63.352

Solution:

i)	2.56	Ones
ii)	21.37	Tens
iii)	10.25	Tenth
iv)	9.42	Hundredths
v)	63.352	thousandths

Question 7

Dinesh went from place A to place B and from there to place C. A is 7.5 km from B and B is 12.7 km from C. Ayyub went from place A to place D and there to place C. D is 9.3 km from A and C is 11.8 km from D. Who travelled more and how much?

Solution:

Distance travelled by Dinesh = A to B + B to C = 7.5 km + 12.7 km = 20.2 km

Distance travelled by Ayyub = A to D + D to C = 9.3 km + 11.8 km = 21.1 km

Difference between their travelled distances = 21.1 km – 20.2 km = 0.9 km

Therefore, Ayyub travelled 0.9 km distance more than Dinesh.

Question 8

Shyama bought 5 kg 300 g apples and 3 kg 350 g mangoes. Sarala bought 5 kg 800 g oranges and 4 kg 150 g bananas. Who bought more fruits?

Solution:

Total fruits bought by Shyama = Apple + mangoes

5 kg 300 grams + 3 kg 250 g = 5 kg + 300 g + 3 kg + 250 g

= 8 kg + 550 g = 8 kg + 550/1000 kg = 8 kg + 0.550 kg = 8.550 kg

Total fruits bought by Sarala = oranges + bananas

4 kg 800 grams + 4 kg 150 g = 4 kg + 800 g + 8 kg + 950 g

= 8 kg + 950 g = 8 kg + 950/1000 kg = 8 kg + 0.950 kg = 8.950 kg

Therefore, Sarala bought more fruits.

Question 9

How much less is 28 km than 42.6 km?

Solution:

42.6 km – 28 km = 14.6 km

EXERCISE 2.6

Question 1

i. 0.2 × 6

ii. 8 × 4.6

iii. 2.71 5

iv. 20.1 × 4

v. 0.05 × 7

vi. 211.02 × 4

vii. 2 × 0.86

Solution

i. 0.2 × 6

0.2 × 6 = (2/10) × 6 = (2 × 6) ÷ 10 = 12/10 = 1.2

ii. 8 × 4.6

8 × 4.6 = 8 × (46/10) = (8 × 46) ÷ 10 = 368/10 = 36.8

iii. 2.71 × 5

2.71 × 5 = (271/100) × 5 = (271 × 5) ÷ 100 = 1355/100 = 13.55

iv. 20.1 × 4

20.1 × 4 = (201/10) × 4 = (201 × 4) ÷ 10 = 804/10 = 80.4

v. 0.05 × 7

0.05 × 7 = (5/100) × 7 = (5 × 7) ÷ 100 = 35/100 = 0.35

vi. 211.02 × 4

211.02 × 4 = (211.03/100) × 4 = (211.02 × 4) ÷ 100 = 84408/100 = 844.08

vii. 2 × 0.86

2 × 0.86 = 2 × (86/100) = (2 × 86) ÷ 100 = 172/100 = 1.72

Question 3

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

Solution:

Length of a rectangle = 5.7 cm

Breadth of the rectangle = 3 cm

We know that Area of rectangle = length × breadth

So

A= 5.7 cm × 3 cm = (57/10) × 3 = (57 × 3) ÷ 10= 171/10 = 17.1 cm

Question 3

i. 1.3 × 10

ii. 36.8 × 10

iii.153.7 × 10

iv. 168.07 × 10

v. 31.1 × 100

vi. 156.1 × 100

vii. 3.62 × 100

viii. 43.07 × 100

ix. 0.5 × 10

x. 0.08 × 10

xi. 0.9 × 100

xii. 0.03 × 1000

Solution

i. 1.3 × 10

1.3 × 10 = (13/10) × 10 = 13

ii. 36.8 × 10

36.8 × 10 = (368/10) × 10 = 368

iii. 153.7 × 10

153.7 × 10 = (1537/10) × 10 = 1537

iv. 168.07 × 10

168.07 × 10 = (16807/100) × 10 = 16807/10 = 1680.7

v. 31.1 × 100

31.1 × 100 = (311/10) × 100 = 311 × 10 = 3110

vi. 156.1 × 100

156.1 × 100 = (1561/10) × 100 =1561 × 10 = 15610

vii. 3.62 × 100

3.62 × 100 = (362/100) × 100 = 362

viii. 43.07 × 100

43.07 × 100 = (4307/100) × 100 = 4307

ix. 0.5 × 10

0.5 × 10 = (5/10) × 10 = 5

x. 0.08 × 10

0.08 × 10 = (8/100) × 10 = 8/10 = 0.8

xi. 0.9 × 100

0.9 × 100 = (9/10) × 100 = 9 × 10 = 90

xii. 0.03 × 1000

0.03 × 1000 = (3/100) × 1000 = 3 × 10 =30

Question 4

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

Solution

The distance covered by a two-wheeler for one litre of petrol = 55.3 km

The distance covered by the two-wheeler for ten litres of petrol = 55.3 km × 10 = 553 km

Question 5

Find:

i. 2.5 × 0.3

ii. 0.1 × 51.7

iii. 0.2 × 316.8

iv. 1.3 × 3.1

v. 0.5 × 0.05

vi. 11.2 × 0.15

vii. 1.07 × 0.02

viii. 10.05 × 1.05

ix. 101.01 × 0.01

x. 100.01 × 1.1

Solution

This can be solved converting decimals into fractions and then multiplying the numerator and denominator and again converting into decimals

i. 2.5 × 0.3

2.5 × 0.3 = (25/10) × (3/10) = (25 × 3) ÷ 100 = 75/100 = 0.75

ii. 0.1 × 51.7

0.1 × 51.7 = (1/10) × (517/10) = (1 × 517) ÷ 100 = 517/100 = 5.17

iii. 0.2 × 316.8

0.2 × 316.8 = (2/10) × (3168/10) = (2 × 3168) ÷ 100 = 6336/100 = 63.36

iv. 1.3 × 3.1

1.3 × 3.1 = (13/10) × (31/10) = (13 × 31) ÷ 100 = 403/100 = 4.03

v. 0.5 × 0.05

0.5 × 0.05 = (5/10) × (5/100) = (5 × 5) ÷ 1000 = 25/1000 = 0.025

vi. 11.2 × 0.15

11.2 × 0.15 = (112/10) × (15/100) = (112 × 15) ÷ 1000 = 1680/1000 = 1.68

vii. 1.07 × 0.02

1.07 × 0.02 = (107/100) × (2/100) = (107 × 2) ÷ 10000 = 214/10000 = 0.0214

viii. 10.05 × 1.05

10.05 × 1.05 = (10.05/100) × (1.05/100) = (10.05 × 1.05) ÷ 10000 = 105525/100 = 10.5525

ix. 101.01 × 0.01

101.01 × 0.01 = (10101/100) × (1/100) = (10101 × 1) ÷ 10000 = 10101/10000 = 1.0101

x. 100.01 × 1.1

100.01 × 1.1 = (10001/100) × (11/10) = (10001 × 11) ÷ 1000 = 110011/1000 = 110.011

EXERCISE 2.7

Question 1

Find

i. 0.4 ÷ 2

ii. 0.35 ÷ 5

iii. 2.48 ÷ 4,

iv. 65.4 ÷ 6

v. 651.2 ÷ 4

vi. 14.49 ÷ 7,

vii. 3.96 ÷ 4

viii. 0.80 ÷ 5

Solution

i. 0.4 ÷ 2

0.4 ÷ 2 = 4/10 ÷ 2 = 4/10 × 1/2 = 2/10 = 0.2

ii. 0.35 ÷ 5

0.35 ÷ 5 = 35/100 ÷ 5 = 35/100 × 1/5 = 7/100 = 0.07

iii. 2.48 ÷ 4

2.48 ÷ 4 = 247/100 ÷ 4 = 248/100 × 1/4 = 62/100 = 0.62

iv. 65.4 ÷ 6

65.4 ÷ 6 = 654/10 ÷ 6 = 654/10 × 1/6 = 109/10 = 10.9

v. 651.2 ÷ 4

651.2 ÷ 4 = 6512/10 ÷ 4 = 6512/10 × 1/4 = 1628/10 = 162.8

vi. 14.49 ÷ 7

1449 ÷ 7 = 1449/100 ÷ 7 = 1449/100 × 1/7 = 207/100 = 2.07

vii. 3.96 ÷ 4

3.96 ÷ 4 = 396/100 ÷ 4 = 396/100 × 1/4 = 99/100 = 0.99

viii. 0.80 ÷ 5

0.80 ÷ 5 = 80/100 ÷ 5 = 80/100 × 1/5 = 16/100 = 0.16

Question 2

Find

i. 4.8 ÷ 10

ii. 52.5 ÷ 10

iii. 0.7 ÷ 10,

vi. 33.1 ÷ 10

v. 272.23 ÷ 10,

vi. 0.56 ÷ 10

vii. 3.97 ÷ 10

Solution

i. 4.8 ÷ 10

4.8 ÷ 10 = 48/10 ÷ 10 = 48/10 × 1/10 = 48/100 = 0.48

ii. 52.5 ÷ 10

52.5 ÷ 10 = 525/10 ÷ 10 = 525/10 × 1/10 = 525/100 = 5.25

iii. 0.7 ÷ 10

0.7 ÷ 10 = 7/10 ÷ 10 = 7/10 × 1/10 = 7/100 = 0.07

vi. 33.1 ÷ 10

33.1 ÷ 10 = 331/10 ÷ 10 = 331/10 × 1/10 = 331/100 = 3.31

v. 272.23 ÷ 10

272.23 ÷ 10 = 27223/100 ÷ 10 = 27223/100 × 1/10 = 27223/1000 = 27.223

vi. 0.56 ÷ 10

0.56 ÷ 10 = 56/100 ÷ 10 = 56/100 × 1/10 = 56/1000 = 0.056

vii. 3.97 ÷ 10

3.97 ÷ 10 = 397/100 ÷ 10 = 397/100 × 1/10 = 397/1000 = 0.397

Question 3

Find

i. 2.7 ÷ 100

ii. 0.3 ÷ 100

iii. 0.78 ÷ 100

iv. 432.6 ÷ 100

v. 23.6 ÷ 100

vi. 98.53 ÷ 100

Solution

i. 2.7 ÷ 100

2.7 ÷ 100 = 27/10 ÷ 100 = 27/10 × 1/100 = 27/1000 = 0.027

ii. 0.3 ÷ 100

0.3 ÷ 100 = 3/10 ÷ 100 = 3/10 × 1/100 = 3/1000 = 0.003

iii. 0.78 ÷ 100

0.78 ÷ 100 = 78/100 ÷ 100 = 78/100 × 1/100 = 78/10000 = 0.0078

iv. 432.6 ÷ 100

432.6 ÷ 100 = 4326/10 ÷ 100 = 4326/10 × 1/100 = 4326/1000 = 4.326

v. 23.6 ÷ 100

23.6 ÷ 100 = 236/10 ÷ 100 = 236/10 × 1/100 = 236/1000 = 0.236

vi. 98.53 ÷ 100

98.53 ÷ 100 = 9853/100 ÷ 100 = 9853/100 × 1/100 = 9853/10000 = 0.9853

Question 4

Find

i. 7.9 ÷ 1000

ii. 26.3 ÷ 1000

iii. 38.53 ÷ 1000

iv. 128.9 ÷ 1000

v. 0.5 ÷ 1000

Solution

1. 7.9 ÷ 1000

7.9 ÷ 1000 = 79/10 ÷ 1000 = 79/10 × 1/1000 = 79/10000 = 0. 0079

ii. 26.3 ÷ 1000

26.3 ÷ 1000 = 263/10 ÷ 1000 = 263/10 × 1/1000 = 263/10000 = 0. 0263

iii. 38.53 ÷ 1000

38.53 ÷ 1000 = 3853/100 ÷ 1000 = 3853/100 × 1/1000 = 3853/100000 = 0. 03853

iv. 128.9 ÷ 1000

128.9 ÷ 1000 = 1289/10 ÷ 1000 = 1289/10 × 1/1000 = 1289/10000 = 0. 1289

v. 0.5 ÷ 1000

0.5 ÷ 1000 = 5/10 ÷ 1000 = 5/10 × 1/1000 = 5/10000 = 0. 0005

Question 5

Find

i 7 ÷ 3.5

ii. 36 ÷ 0.2

iii. 3.25 ÷ 0.5

iv. 30.94 ÷ 0.7

v. 0.5 ÷ 0.25

vi. 7.75 ÷ 0.25

vii. 76.5 ÷ 0.15

viii. 37.8 ÷ 1.4

ix. 2.73 ÷ 1.3

Solution

i 7 ÷ 3.5

7 ÷ 3.5 = 7 ÷ 35/10 = 7 × 10/35 = 10/5 = 2

ii. 36 ÷ 0.2

36 ÷ 0.2 = 36 ÷ 2/10 = 36 × 10/2 = 18 × 10 = 180

iii. 3.25 ÷ 0.5

3.25 ÷ 0.5 = 325/100 ÷ 5/10 = 325/100 × 10/5 = 65/10 = 6.5

iv. 30.94 ÷ 0.7

30.94 ÷ 0.7 = 3094/100 ÷ 7/10 = 3094/100 × 10/7 = 442/10 = 44.2

v. 0.5 ÷ 0.25

0.5 ÷ 0.25 = 5/10 ÷ 25/100 = 5/10 × 100/25 = 10/5 = 2

vi. 7.75 ÷ 0.25

7.75 ÷ 0.25 = 775/100 ÷ 25/100 = 775/100 × 100/25 = 31

vii. 76.5 ÷ 0.15

76.5 ÷ 0.15 = 765/10 ÷ 15/100 = 775/10 × 100/15 = 51 × 10 = 510

viii. 37.8 ÷ 1.4

37.8 ÷ 1.4 = 378/10 ÷ 14/10 = 378/10 × 10/14 = 27

ix. 2.73 ÷ 1.3

2.73 ÷ 1.3 = 273/100 ÷ 13/10 = 273/100 × 10/13 = 21/10 = 2.1

Question 6

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

Solution:

Distance covered by a vehicle = 43.2 km

Petrol required to cover this distance = 2.4 litres

So, distance covered by the vehicle in one litre of petrol = 43.2/2.4 = 18 km