

EXERCISE 2.2

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1. Multiply:

(i) $(7/11)$ by $(3/5)$

(ii) $(3/5)$ by 25

(iii) $3 \frac{4}{15}$ by 24

(iv) $3 \frac{1}{8}$ by $4 \frac{10}{11}$

Solution:

(i) Given $(7/11)$ by $(3/5)$

We have to multiply the given number

$$(7/11) \times (3/5) = (21/55)$$

(ii) Given $(3/5)$ by 25

$$(3/5) \times 25 = 15 \text{ [dividing 25 by 5]}$$

(iii) Given $3 \frac{4}{15}$ by 24

First convert the given mixed fraction to improper fraction.

$$(49/15) \times 24 = (1176/15)$$

$$= 78 \frac{2}{5}$$

(iv) Given $3 \frac{1}{8}$ by $4 \frac{10}{11}$

First convert the given mixed fractions to improper fractions.

$$(25/8) \times (54/11) = (1350/88) = (675/44)$$

$$= 15 \frac{15}{44}$$

2. Find the product:

(i) $(4/7) \times (14/25)$

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

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

(iv) $6 \frac{11}{14} \times 3 \frac{1}{2}$

Solution:

(i) Given $(4/7) \times (14/25)$

$$(4/7) \times (14/25) = (4 \times 14) / (7 \times 25)$$
$$= (56/175)$$

Converting above fractions into simplest form
 $= (8/25)$

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

We have to convert mixed fractions into improper fractions
Then we get $(15/2)$ and $(34/15)$

$$7 \frac{1}{2} \times 2 \frac{4}{15} = (15/2) \times (34/15)$$
$$= (15 \times 34) / (2 \times 15)$$
$$= (510/30)$$
$$= 17$$

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

We have to convert mixed fractions into improper fractions
Then we get $(27/7)$ and $(14/3)$

$$3 \frac{6}{7} \times 4 \frac{2}{3} = (27/7) \times (14/3)$$

On simplifying

$$= 9 \times 2$$
$$= 18$$

(iv) Given $6 \frac{11}{14} \times 3 \frac{1}{2}$

We have to convert mixed fractions into improper fractions
Then we get $(95/14)$ and $(7/2)$

$$6 \frac{11}{14} \times 3 \frac{1}{2} = (95/14) \times (7/2)$$
$$= (95 \times 7) / 28$$
$$= (665/28)$$
$$= 23 \frac{3}{4}$$

3. Simplify:

- (i) $(12/25) \times (15/28) \times (35/36)$
(ii) $(10/27) \times (39/56) \times (28/65)$
(iii) $2 \frac{2}{17} \times 7 \frac{2}{9} \times 1 \frac{33}{52}$

Solution:

(i) Given $(12/25) \times (15/28) \times (35/36)$
 $= (12 \times 15 \times 35) / (25 \times 28 \times 36)$
 $= (6300/25200)$
On simplifying we get
 $= (1/4)$

(ii) Given $(10/27) \times (39/56) \times (28/65)$
 $= (10 \times 39 \times 28) / (27 \times 56 \times 65)$
 $= (10920/98280)$
On simplifying we get
 $= (1/9)$

(iii) Given $2 \frac{2}{17} \times 7 \frac{2}{9} \times 1 \frac{33}{52}$
First convert the given mixed fractions into improper fractions then we get
 $= (36/17) \times (65/9) \times (85/52)$
 $= (36 \times 65 \times 85) / (17 \times 9 \times 52)$
 $= (198900/7956)$
On simplifying we get
 $= 25$

4. Find:

- (i) $(1/2)$ of $4 \frac{2}{9}$
(ii) $(5/8)$ of $9 \frac{2}{3}$
(iii) $(2/3)$ of $(9/16)$

Solution:

(i) Given $(1/2)$ of $4 \frac{2}{9}$
First convert given mixed fraction into improper fraction then we get $(38/9)$
 $= (1/2) \times (38/9)$
 $= (1 \times 38) / (2 \times 9)$
 $= (38/18)$
 $= 2 \frac{1}{9}$

(ii) Given $(5/8)$ of $9 \frac{2}{3}$
First convert given mixed fraction into improper fraction then we get $(29/3)$

$$\begin{aligned} &= (5/8) \times (29/3) \\ &= (5 \times 29) / (8 \times 3) \\ &= (145 / 24) \\ &= 6 \frac{1}{24} \end{aligned}$$

(iii) Given $(2/3)$ of $(9/16)$

$$\begin{aligned} &= (2/3) \times (9/16) \\ &= (2 \times 9) / (3 \times 16) \\ &= (18 / 48) \\ &= (3/8) \end{aligned}$$

5. Which is greater? $(1/2)$ of $(6/7)$ or $(2/3)$ of $(3/7)$

Solution:

Given $(1/2)$ of $(6/7)$

$$\begin{aligned} &= (1/2) \times (6/7) \\ &= (1 \times 6) / (2 \times 7) \\ &= (6 / 14) \end{aligned}$$

Also given that $(2/3)$ of $(3/7)$

$$\begin{aligned} &= (2/3) \times (3/7) \\ &= (2 \times 3) / (3 \times 7) \\ &= (6 / 21) \end{aligned}$$

While comparing two fractions, if numerators of both the fractions are same, then the denominator having higher value shows the fraction has lower value.

Therefore $(6/14)$ is greater.

Hence $(1/2)$ of $(6/7)$ is greater.

6. Find:

- (i) $(7/11)$ of Rs 330
- (ii) $(5/9)$ of 108 meters
- (iii) $(3/7)$ of 42 liters
- (iv) $(1/12)$ of an hour
- (v) $(5/6)$ of an year
- (vi) $(3/20)$ of a kg
- (vii) $(7/20)$ of a liter
- (viii) $(5/6)$ of a day
- (ix) $(2/7)$ of a week

Solution:

(i) Given $(\frac{7}{11})$ of Rs 330

$$= (\frac{7}{11}) \times 330$$

On dividing by 11 we get

$$= 7 \times 30$$

$$= 210$$

$(\frac{7}{11})$ of Rs 330 is Rs 210

(ii) Given $(\frac{5}{9})$ of 108 meters

$$= (\frac{5}{9}) \times 108$$

Dividing 108 by 9 we get

$$= 5 \times 12$$

$$= 60$$

$(\frac{5}{9})$ of 108 meters is 60 meters

(iii) Given $(\frac{3}{7})$ of 42 liters

$$= (\frac{3}{7}) \times 42$$

Dividing 42 by 7 we get

$$= 3 \times 6$$

$$= 18$$

$(\frac{3}{7})$ of 42 liters is 18 liters

(iv) Given $(\frac{1}{12})$ of an hour

An hour = 60 minutes

$$= (\frac{1}{12}) \times 60$$

Dividing 60 by 12 we get

$$= 1 \times 5$$

$$= 5$$

$(\frac{1}{12})$ of an hour is 5 minutes

(v) Given $(\frac{5}{6})$ of an year

1 year = 12 months

$$= (\frac{5}{6}) \times 12$$

Dividing 12 by 6 we get

$$= 5 \times 2$$

$$= 10$$

$(\frac{5}{6})$ of an year is 10 months

(vi) Given $(\frac{3}{20})$ of a kg

$$1 \text{ kg} = 1000 \text{ grams}$$

$$= (\frac{3}{20}) \times 1000$$

$$= 3 \times 50$$

$$= 150$$

$(\frac{3}{20})$ of a kg is 150 grams

(vii) Given $(\frac{7}{20})$ of a liter

$$1 \text{ liter} = 1000 \text{ ml}$$

$$= (\frac{7}{20}) \times 1000$$

$$= 7 \times 50$$

$$= 350$$

$(\frac{7}{20})$ of a liter is 350ml

(viii) Given $(\frac{5}{6})$ of a day

$$1 \text{ day} = 24 \text{ hours}$$

$$= (\frac{5}{6}) \times 24$$

$$= 5 \times 4$$

$$= 20$$

$(\frac{5}{6})$ of a day is 20 hours

(ix) Given $(\frac{2}{7})$ of a week

$$1 \text{ week} = 7 \text{ days}$$

$$= (\frac{2}{7}) \times 7$$

$$= 2 \times 1$$

$$= 2$$

$(\frac{2}{7})$ of a week is 2 days

7. Shikha plants 5 saplings in a row in her garden. The distance between two adjacent saplings is $\frac{3}{4}$ m. Find the distance between the first and the last sapling.

Solution:

Given that the distance between two adjacent saplings is $(\frac{3}{4})$ m

There are 4 adjacent spacing for 5 sapling

Therefore, distance between the first and the last sapling is

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

= 3

The distance between them is 3m

8. Ravish reads $(1/3)$ part of a book in 1 hour. How much part of the book will he read in $2 \frac{1}{5}$ hours?

Solution:

Given Ravish takes 1 hour to read $(1/3)$ part of the book

Then we have to calculate how much part he will read in $2 \frac{1}{5}$ hours

First convert the given mixed fraction into improper fraction i.e. $(11/5)$

Now let x be the full part of book

1 hour = $(1/3) x$

Remaining part of the book, he will read in

= $(11/5) \times (1/3) x$

= $(11/15)$ part of the book

9. 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:

Given time taken by Lipika to read a book per day = $1 \frac{3}{4} = (7/4)$ hours

Time taken by Lipika to read a book in 6 days = $(7/4) \times 6$

= $(42/4)$

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

10. Find the area of a rectangular park which is $41 \frac{2}{3}$ m along and $18 \frac{3}{5}$ m broad.

Solution:

Given length of rectangular park is = $41 \frac{2}{3} = (125/3)$

Breadth of rectangular park is = $18 \frac{3}{5} = (93/5)$

Area of rectangular park = length \times breadth

= $(125/3) \times (93/5)$

= $(125 \times 93)/15$

= $(11625/15)$

= 775 m^2

11. If milk is available at Rs $17 \frac{3}{4}$ per liter, find the cost of $7 \frac{2}{5}$ liters of milk.

Solution:

Given the cost of milk per liter is = $17 \frac{3}{4} = \text{Rs } (71/4)$

And the cost of $7 \frac{2}{5} = (37/5)$ is

$$= (37/5) \times (71/4)$$

$$= (37 \times 71)/20$$

$$= (2627/20)$$

$$= \text{Rs } 131 \frac{7}{20}$$

12. Sharada can walk $8 \frac{1}{3}$ km in one hour. How much distance will she cover in $2 \frac{2}{5}$ hours?

Solution:

Given distance covered by Sharada in one hour = $8 \frac{1}{3} = (25/3)$ km

Distance covered by her in $2 \frac{2}{5}$ hours = $(12/5)$ is

$$= (25/3) \times (12/5)$$

$$= (25 \times 12)/15$$

$$= (300/15)$$

$$= 20 \text{ km}$$

13. A sugar bag contains 30kg of sugar. After consuming $(2/3)$ of it, how much sugar is left in the bag?

Solution:

A sugar bag contains 30kg of sugar.

After consuming, the left sugar in the bag is = $30 - (2/3) \times 30$

$$= 30 - 2 \times 10$$

$$= 30 - 20$$

$$= 10\text{kg}$$

14. Each side of a square is $6 \frac{2}{3}$ m long. Find its area.

Solution:

$$\text{Side of a square} = 6 \frac{2}{3} = \frac{20}{3} \text{ m}$$

$$\text{Area of square} = \text{side} \times \text{side}$$

$$= \frac{20}{3} \times \frac{20}{3}$$

$$= \frac{400}{9}$$

$$= 44 \frac{4}{9} \text{ m}^2$$

15. There are 45 students in a class and $\frac{3}{5}$ of them are boys. How many girls are there in the class?

Solution:

$$\text{Total number of students} = 45$$

$$\text{Number of boys out of 45 is} = \frac{3}{5}$$

$$\text{Number of girls} = 45 - \frac{3}{5} \times 45$$

$$= 45 - 3 \times 9$$

$$= 45 - 27$$

$$= 18 \text{ girls}$$