

EXERCISE 2.3**PAGE: 41****1. Find:****(i) $\frac{1}{4}$ of (a) $\frac{1}{4}$ (b) $\frac{3}{5}$ (c) $\frac{4}{3}$** **Solution:-****(a) $\frac{1}{4}$**

We have,

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

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

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

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

$$= \frac{1}{16}$$

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

We have,

$$= \frac{1}{4} \times \frac{3}{5}$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= \frac{1}{4} \times \frac{3}{5}$$

$$= \frac{(1 \times 3)}{(4 \times 5)}$$

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

(c) $\frac{4}{3}$

We have,

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

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

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

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

$$= \frac{4}{12}$$

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

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

Solution:-(a) $2/9$

We have,

$$= (1/7) \times (2/9)$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (1/7) \times (2/9)$$

$$= (1 \times 2)/ (7 \times 9)$$

$$= (2/63)$$

(b) $6/5$

We have,

$$= (1/7) \times (6/5)$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (1/7) \times (6/5)$$

$$= (1 \times 6)/ (7 \times 5)$$

$$= (6/35)$$

(c) $3/10$

We have,

$$= (1/7) \times (3/10)$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (1/7) \times (3/10)$$

$$= (1 \times 3)/ (7 \times 10)$$

$$= (3/70)$$

2. Multiply and reduce to lowest form (if possible):(i) $(2/3) \times 2\frac{2}{3}$ **Solution:-**

First convert the given mixed fraction into improper fraction.

$$= 2\frac{2}{3} = 8/3$$

Now,

$$= (2/3) \times (8/3)$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (2 \times 8)/ (3 \times 3)$$

$$= (16/9)$$

$$= 1\frac{7}{9}$$

(ii) $(2/7) \times (7/9)$

Solution:-

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (2 \times 7)/ (7 \times 9)$$

$$= (2 \times 1)/ (1 \times 9)$$

$$= (2/9)$$

(iii) $(3/8) \times (6/4)$

Solution:-

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (3 \times 6)/ (8 \times 4)$$

$$= (3 \times 3)/ (4 \times 4)$$

$$= (9/16)$$

(iv) $(9/5) \times (3/5)$

Solution:-

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (9 \times 3)/ (5 \times 5)$$

$$= (27/25)$$

$$= 1\frac{2}{25}$$

(v) $(1/3) \times (15/8)$

Solution:-

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (1 \times 15)/ (3 \times 8)$$

$$= (1 \times 5)/ (1 \times 8)$$

$$= (5/8)$$

(vi) $(11/2) \times (3/10)$ **Solution:-**

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (11 \times 3)/ (2 \times 10)$$

$$= (33/20)$$

$$= 1\frac{13}{20}$$

(vii) $(4/5) \times (12/7)$ **Solution:-**

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (4 \times 12)/ (5 \times 7)$$

$$= (48/35)$$

$$= 1\frac{13}{35}$$

3. Multiply the following fractions:**(i) $(2/5) \times 5\frac{1}{4}$** **Solution:-**

First convert the given mixed fraction into improper fraction.

$$= 5\frac{1}{4} = 21/4$$

Now,

$$= (2/5) \times (21/4)$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$\begin{aligned} &= (2 \times 21) / (5 \times 4) \\ &= (1 \times 21) / (5 \times 2) \\ &= (21/10) \\ &= 2\frac{1}{10} \end{aligned}$$

(ii) $6\frac{2}{5} \times (7/9)$

Solution:-

First convert the given mixed fraction into improper fraction.

$$= 6\frac{2}{5} = 32/5$$

Now,

$$= (32/5) \times (7/9)$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator) / (product of denominator)

Then,

$$\begin{aligned} &= (32 \times 7) / (5 \times 9) \\ &= (224/45) \\ &= 4\frac{44}{45} \end{aligned}$$

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

Solution:-

First convert the given mixed fraction into improper fraction.

$$= 5\frac{1}{3} = 16/3$$

Now,

$$= (3/2) \times (16/3)$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator) / (product of denominator)

Then,

$$\begin{aligned} &= (3 \times 16) / (2 \times 3) \\ &= (1 \times 8) / (1 \times 1) \\ &= 8 \end{aligned}$$

(iv) $(5/6) \times 2\frac{3}{7}$

Solution:-

First convert the given mixed fraction into improper fraction.

$$= 2\frac{3}{7} = 17/7$$

Now,

$$= (5/6) \times (17/7)$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (5 \times 17)/ (6 \times 7)$$

$$= (85/42)$$

$$= 2\frac{1}{42}$$

(v) $3\frac{2}{5} \times (4/7)$

Solution:-

First convert the given mixed fraction into improper fraction.

$$= 3\frac{2}{5} = 17/5$$

Now,

$$= (17/5) \times (4/7)$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (17 \times 4)/ (5 \times 7)$$

$$= (68/35)$$

$$= 1\frac{33}{35}$$

(vi) $2\frac{3}{5} \times 3$

Solution:-

First convert the given mixed fraction into improper fraction.

$$= 2\frac{3}{5} = 13/5$$

Now,

$$= (13/5) \times (3/1)$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (13 \times 3)/ (5 \times 1)$$

$$= (39/5)$$

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

(vi) $3\frac{4}{7} \times (3/5)$

Solution:-

First convert the given mixed fraction into improper fraction.

$$= 3\frac{4}{7} = 25/7$$

Now,

$$= (25/7) \times (3/5)$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (25 \times 3)/ (7 \times 5)$$

$$= (5 \times 3)/ (7 \times 1)$$

$$= (15/7)$$

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

4. Which is greater:

(i) $(2/7)$ of $(3/4)$ or $(3/5)$ of $(5/8)$

Solution:-

We have,

$$= (2/7) \times (3/4) \text{ and } (3/5) \times (5/8)$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (2/7) \times (3/4)$$

$$= (2 \times 3)/ (7 \times 4)$$

$$= (1 \times 3)/ (7 \times 2)$$

$$= (3/14) \quad \dots [i]$$

And,

$$= (3/5) \times (5/8)$$

$$= (3 \times 5)/ (5 \times 8)$$

$$= (3 \times 1)/ (1 \times 8)$$

$$= (3/8) \quad \dots [ii]$$

Now, convert [i] and [ii] into like fractions,

LCM of 14 and 8 is 56

Now, let us change each of the given fraction into an equivalent fraction having 56 as the denominator.

$$[(3/14) \times (4/4)] = (12/56)$$

$$[(3/8) \times (7/7)] = (21/56)$$

Clearly,

$$(12/56) < (21/56)$$

Hence,

$$(3/14) < (3/8)$$

(ii) $(1/2)$ of $(6/7)$ or $(2/3)$ of $(3/7)$

Solution:-

We have,

$$= (1/2) \times (6/7) \text{ and } (2/3) \times (3/7)$$

By the rule Multiplication of fraction,

Product of fraction = (product of numerator)/ (product of denominator)

Then,

$$= (1/2) \times (6/7)$$

$$= (1 \times 6)/ (2 \times 7)$$

$$= (1 \times 3)/ (1 \times 7)$$

$$= (3/7) \quad \dots [i]$$

And,

$$= (2/3) \times (3/7)$$

$$= (2 \times 3)/ (3 \times 7)$$

$$= (2 \times 1)/ (1 \times 7)$$

$$= (2/7) \quad \dots [ii]$$

By comparing [i] and [ii],

Clearly,

$$(3/7) < (2/7)$$

5. Saili plants 4 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:-

From the question, it is given that,

The distance between two adjacent saplings = $\frac{3}{4}$ m

Number of saplings planted by Saili in a row = 4

Then, number of gap in saplings = $\frac{3}{4} \times 4$
= 3

∴ The distance between the first and the last saplings = $3 \times \frac{3}{4}$
= $(\frac{9}{4})$ m
= $2 \frac{1}{4}$ m

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

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:-

From the question, it is given that,

Lipika reads the book for = $1 \frac{3}{4}$ hours every day = $\frac{7}{4}$ hours

Number of days she took to read the entire book = 6 days

∴ Total number of hours required by her to complete the book = $(\frac{7}{4}) \times 6$
= $(\frac{7}{2}) \times 3$
= $\frac{21}{2}$
= $10 \frac{1}{2}$ hours

Hence, the total number of hours required by her to complete the book is $10 \frac{1}{2}$ hours.

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:-

From the question, it is given that,

The total number of distance travelled by a car in 1 liter of petrol = 16 km

Then,

Total quantity of petrol = $2 \frac{3}{4}$ liter = $\frac{11}{4}$ liters

Total number of distance travelled by car in $\frac{11}{4}$ liters of petrol = $(\frac{11}{4}) \times 16$
= 11×4
= 44 km

∴ Total number of distance travelled by car in $\frac{11}{4}$ liters of petrol is 44 km.

8. (a) (i) provide the number in the box [], such that $(\frac{2}{3}) \times [] = (\frac{10}{30})$

Solution:-

Let the required number be x,

Then,

$$= (\frac{2}{3}) \times (x) = (\frac{10}{30})$$

By cross multiplication,

$$\begin{aligned} &= x = (10/30) \times (3/2) \\ &= x = (10 \times 3) / (30 \times 2) \\ &= x = (5 \times 1) / (10 \times 1) \\ &= x = 5/10 \end{aligned}$$

∴ The required number in the box is $(5/20)$

(ii) The simplest form of the number obtained in [] is

Solution:-

The number in the box is $5/10$

Then,

The simplest form of $5/10$ is $\frac{1}{2}$

(b) (i) provide the number in the box [], such that $(3/5) \times [] = (24/75)$

Solution:-

Let the required number be x ,

Then,

$$= (3/5) \times (x) = (24/75)$$

By cross multiplication,

$$\begin{aligned} &= x = (24/75) \times (5/3) \\ &= x = (24 \times 5) / (75 \times 3) \\ &= x = (8 \times 1) / (15 \times 1) \\ &= x = 8/15 \end{aligned}$$

∴ The required number in the box is $(8/15)$

(ii) The simplest form of the number obtained in [] is

Solution:-

The number in the box is $8/15$

Then,

The simplest form of $8/15$ is $8/15$