CHAPTER 2
FRACTIONS

1. How many 2/3 kg pieces can be cut from a cake of weight 4 kg?

Solution:

Let p be the number 2/3 kg pieces that are cut from a 4 kg cake.

So, $p \times (2/3) = 4$

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

$= 2 \times 3$

$= 6$

Therefore, six 2/3 kg pieces can be cut from a cake of weight 4 kg.

Properties of Fractions:

- The product of two proper fractions is less than each of the fractions that are multiplied.
- The product of a proper and an improper fraction is less than the improper fraction and greater than the proper fraction.
- The product of two improper fractions is greater than the two fractions.
- A reciprocal of a fraction is obtained by inverting it upside down.

2. What is the product of 5/129 and its reciprocal?

Solution:

Given fraction: 5/129

Here, numerator = 5

Denominator = 129

Reciprocal of 5/129 = 129/5

The product of 5/129 and its reciprocal = $(5/129) \times (129/5) = 1$.

3. Sunita and Rehana want to make dresses for their dolls. Sunita has 3/4 m of cloth, and she gave 1/3 of it to Rehana. How much did Rehana have?

Solution:

Length of cloth Sunita has = 3/4 m

According to the given,

Sunita has 3/4 m of cloth, and she gave 1/3 of it to Rehana.

Therefore, the length of cloth Rehana has

= 1/3 of 3/4 m

= (1/3) x (3/4) m

= 1/4 m

4. Anuradha can do a piece of work in 6 hours. What part of the work can she do in 1 hour, in 5 hours, in 6 hours?

Solution:

Let m be the whole work to be done.

The part of work done by Anuradha in 6 hours = m

Thus, the part of work done by her in 1 hour = m/6

The part of work done by her in 5 hours = (m/6) x 5 = 5m/6

The part of work done by her in 6 hours = (m/6) x 6 = m

Therefore, Anuradha can do 1/6 part of work in 1 hour, 5/6 part of work in 5 hours and the complete work in 6 hours.

Division of Fractions

- While dividing a whole number by a fraction, we multiply the whole number with the reciprocal of that fraction.
- While dividing a fraction by a whole number, we multiply the fraction by the reciprocal of the whole number.
- While dividing one fraction by another fraction, we multiply the first fraction by the reciprocal of the other.

5. Multiply the following fractions.

(i) (⅖) × 5 ¼

(ii) 2 ⅗ × 3

Solution:

(i) (⅖) × 5 ¼

Here, 5 ¼ is a mixed fraction.

Let us convert this mixed fraction into an improper fraction.

5 ¼ = [(5 × 4) + 1]/4 = 21/4

Thus, (⅖) × 5 ¼ = (⅖) × (21/4) = 21/10

(ii) 2 ⅗ × 3

Here, 2 ⅗ is a mixed fraction.

Let us convert this mixed fraction into an improper fraction.

2 ⅗ = [(2 × 5) + 3]/5 = 13/5

Therefore, 2 ⅗ × 3 = (13/5) × 3 = 39/5

6. Divide 3/10 by (1/4 of 3/5).

Solution:

1/4 od 3/5 = (1/4) × (3/5) = 3/(4 × 5) = 3/20

3/10 ÷ (1/4 of 3/5)

= 3/10 ÷ 3/20

= (3/10) × (20/3)

= 2

7. Find the value of 1427+131113159.

Solution:

1427+131113+159

First, simplify the denominators.

427=4×7+27=307

and

31113=3×13+1113=5013

Now,

1427+131113+159=1307+15013+159

= (7/30) + (13/50) + (9/5)

= (35 + 39 + 270)/150 {since the LCM of 30, 50 and 5 is 150}

= 344/150

= 172/75

8. Evaluate the following:

(i) 3 ½ ÷ 4

(ii) 4 ⅓ ÷ 3

Solution:

(i) 3 ½ ÷ 4

Here, 3 ½ is a mixed fraction.

3 ½ = (3 × 2 + 1)/2 = 7/2

3 ½ ÷ 4 = 7/2 ÷ 4 = (7/2) × (¼) = 7/8

(ii) 4 ⅓ ÷ 3

Here, 4 ⅓ is a mixed fraction.

4 ⅓ = (4 × 3 + 1)/3 = 13/3

4 ⅓ ÷ 3 = 13/3 ÷ 3 = (13/3) × (⅓) = 13/9

9. 1/8 of a number equals 2/5 ÷ 1/20. What is the number?

Solution:

Let p be the number.

According to the given,

(1/8) × p = 2/5 ÷ 1/20

p/8 = (2/5) × (20/1)

p/8 = 2 × 4

p = 8 × 8

p = 64

Hence, 64 is the required number.

10. Raj travels 360 km on three-fifths of his petrol tank. How far would he travel at the same rate with a full tank of petrol?

Solution:

Distance travelled by Raj with three-fifths (i.e. ⅗) of petrol tank = 360 km

Distance travelled by him with a full petrol tank = (360 ÷ 3/5) km

= (360 x 5)/3 km

= 120 x 5 km

= 600 km.