

EXERCISE 2.3

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1. Find the reciprocal of each of the following fractions and classify them as proper, improper and whole numbers:

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

(ii) $\frac{5}{8}$

(iii) $\frac{9}{7}$

(iv) $\frac{6}{5}$

(v) $\frac{12}{7}$

(vi) $\frac{1}{8}$

Solution:

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

Reciprocal of $\frac{3}{7}$ is $\frac{7}{3}$

$\frac{7}{3}$ is improper fraction

(ii) Given $\frac{5}{8}$

Reciprocal of $\frac{5}{8}$ is $\frac{8}{5}$

It is improper fraction

(iii) Given $\frac{9}{7}$

Reciprocal of $\frac{9}{7}$ is $\frac{7}{9}$

It is proper fraction

(iv) Given $\frac{6}{5}$

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

It is proper fraction

(v) Given $\frac{12}{7}$

Reciprocal of $\frac{12}{7}$ is $\frac{7}{12}$

It is proper fraction

(vi) Given $\frac{1}{8}$

Reciprocal of $\frac{1}{8}$ is $\frac{8}{1} = 8$

It is whole number

2. Divide:

(i) $(3/8)$ by $(5/9)$

(ii) $3 \frac{1}{4}$ by $(2/3)$

(iii) $(7/8)$ by $4 \frac{1}{2}$

(iv) $6 \frac{1}{4}$ by $2 \frac{3}{5}$

Solution:

(i) Given $(3/8)$ by $(5/9)$

From the rule of division of fraction we know that $(a/b) \div (c/d) = (a/b) \times (d/c)$

$$\begin{aligned}(3/8) / (5/9) &= (3/8) \times (9/5) \\ &= (3 \times 9) / (8 \times 5) \\ &= (27/40)\end{aligned}$$

(ii) Given $3 \frac{1}{4}$ by $(2/3)$

Converting $3 \frac{1}{4}$ to improper fraction we get $(13/4)$

From the rule of division of fraction we know that $(a/b) \div (c/d) = (a/b) \times (d/c)$

$$\begin{aligned}(13/4) / (2/3) &= (13/4) \times (3/2) \\ &= (13 \times 3) / (4 \times 2) \\ &= (39/8) \\ &= 4 \frac{7}{8}\end{aligned}$$

(iii) Given $(7/8)$ by $4 \frac{1}{2}$

Converting $4 \frac{1}{2}$ to improper fraction we get $(9/2)$

From the rule of division of fraction we know that $(a/b) \div (c/d) = (a/b) \times (d/c)$

$$\begin{aligned}(7/8) / (9/2) &= (7/8) \times (2/9) \\ &= (7 \times 2) / (8 \times 9) \\ &= (14/72) \\ &= (7/36)\end{aligned}$$

(iv) Given $6 \frac{1}{4}$ by $2 \frac{3}{5}$

Converting $6 \frac{1}{4}$ and $2 \frac{3}{5}$ to improper fraction we get $(25/4)$ and $(13/5)$

From the rule of division of fraction we know that $(a/b) \div (c/d) = (a/b) \times (d/c)$

$$\begin{aligned}(25/4) / (13/5) &= (25/4) \times (5/13) \\ &= (25 \times 5) / (4 \times 13) \\ &= (125/52)\end{aligned}$$

$$= 2 \frac{21}{52}$$

3. Divide:

(i) $(\frac{3}{8})$ by 4

(ii) $(\frac{9}{16})$ by 6

(iii) 9 by $(\frac{3}{16})$

(iv) 10 by $(\frac{100}{3})$

Solution:

(i) Given $(\frac{3}{8})$ by 4

$$= (\frac{3}{8})/4$$

$$= (\frac{3}{8} \times 4)$$

$$= (\frac{3}{32})$$

(ii) Given $(\frac{9}{16})$ by 6

$$= (\frac{9}{16})/6$$

$$= (\frac{9}{16 \times 6})$$

$$= (\frac{9}{96})$$

$$= (\frac{3}{32})$$

(iii) Given 9 by $(\frac{3}{16})$

$$= 9/(\frac{3}{16})$$

$$= (9 \times 16)/3$$

$$= 16 \times 3$$

$$= 48$$

(iv) Given 10 by $(\frac{100}{3})$

$$= 10/(\frac{100}{3})$$

$$= (10 \times 3)/100$$

$$= (\frac{3}{10})$$

4. Simplify:

(i) $(\frac{3}{10}) \div (\frac{10}{3})$

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

(iii) $5 \frac{4}{7} \div 1 \frac{3}{10}$

(iv) $4 \div 2 \frac{2}{5}$

Solution:

(i) Given $(3/10) \div (10/3)$
 $= (3 \times 3) / (10 \times 10)$
 $= (9/100)$

(ii) Given $4 \frac{3}{5} \div (4/5)$
First convert the given mixed fraction into improper fractions
 $4 \frac{3}{5} = (23/5)$
 $(23/5) \div (4/5) = (23 \times 5) / (5 \times 4)$
 $= (23/4)$
 $= 5 \frac{3}{4}$

(iii) Given $5 \frac{4}{7} \div 1 \frac{3}{10}$
First convert the given mixed fractions into improper fractions
($39/7$) and ($13/10$)
 $(39/7) \div (13/10) = (39 \times 10) / (7 \times 13)$
 $= (390/91)$
 $= (30/7)$
 $= 4 \frac{2}{7}$

(iv) Given $4 \div 2 \frac{2}{5}$
First convert the given mixed fraction into improper fraction
 $2 \frac{2}{5} = (12/5)$
 $4 \div (12/5) = (4 \times 5) / 12$
 $= (20/12)$
 $= 1 \frac{2}{3}$

5. A wire of length $12 \frac{1}{2}$ m is cut into 10 pieces of equal length. Find the length of each piece.

Solution:

Given total length of the wire is = $12 \frac{1}{2} = (25/2)$ m
It is cut into 10 pieces, so length of one piece is

$$\begin{aligned} &= (25/2)/10 \\ &= (25/20) \\ &= (5/4) \\ &= 1 \frac{1}{4} \text{ m} \end{aligned}$$

6. The length of rectangular plot of area $65 \frac{1}{3} \text{ m}^2$ is $12 \frac{1}{4} \text{ m}$. What is the width of the plot?

Solution:

Given area of rectangular plot is $65 \frac{1}{3} \text{ m}^2 = (196/3) \text{ m}^2$

Length of the same plot is $12 \frac{1}{4} \text{ m} = (49/4) \text{ m}$

Width of the plot is

Area = length \times breadth

$$(196/3) = (49/4) \times \text{breadth}$$

$$\text{Breadth} = (196/3) / (49/4)$$

$$= (196 \times 4) / (49 \times 3)$$

$$= (784/147)$$

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

7. By what number should $6 \frac{2}{9}$ be multiplied to get $4 \frac{4}{9}$?

Solution:

Let x be the number which needs to be multiplied by $6 \frac{2}{9} = (56/9)$

$$x \times (56/9) = 4 \frac{4}{9}$$

$$x \times (56/9) = (40/9)$$

$$x = (40/9) \times (9/56)$$

$$x = (40/56)$$

$$x = (5/7)$$

8. The product of two numbers is $25 \frac{5}{6}$. If one of the numbers is $6 \frac{2}{3}$, find the other.

Solution:

Given product of two numbers is $25 \frac{5}{6} = (155/6)$

One of the number is $6 \frac{2}{3} = \frac{20}{3}$

Let the other number be x

$$\frac{155}{6} = x \times \frac{20}{3}$$

$$x = \frac{3}{20} \times \frac{155}{6}$$

$$x = \frac{31}{8}$$

$$x = 3 \frac{7}{8}$$

9. The cost of $6 \frac{1}{4}$ kg of apples is Rs 400. At what rate per kg are the apples being sold?

Solution:

The cost of $6 \frac{1}{4}$ kg = $\frac{25}{4}$ of apples is Rs 400

Cost of apple per kg is = $\frac{25}{4} / 400$

$$= \frac{4}{25} \times 400$$

$$= \text{Rs } 64$$

10. By selling oranges at the rate of Rs $5 \frac{1}{4}$ per orange, a fruit-seller gets Rs 630. How many dozens of oranges does he sell?

Solution:

Given cost of 1 orange is Rs $5 \frac{1}{4} = \frac{21}{4}$

He got Rs 630 by selling the oranges

Number of dozens of oranges sold by him for Rs 630 is = $\frac{4}{21} \times 630$

$$= 120 \text{ apples}$$

But we know that 1 dozen = 12

120 apples means 10 dozens

11. In mid-day meal scheme $\frac{3}{10}$ liter of milk is given to each student of a primary school. If 30 liters of milk is distributed every day in the school, how many students are there in the school?

Solution:

Given $\frac{3}{10}$ liter of milk is given to each student

Number of student given $\frac{3}{10}$ liter of milk = 1

Number of students giving 1 liter of milk = $\frac{10}{3}$

Numbers of students giving 30 liters of milk = $\frac{10}{3} \times 30 = 100$ students

12. In a charity show Rs 6496 were collected by selling some tickets. If the price of each ticket was Rs $50 \frac{3}{4}$, how many tickets were sold?

Solution:

Given amount collected by selling tickets = Rs 6496

The price of each ticket is = $50 \frac{3}{4} = \frac{203}{4}$

Number of ticket bought at Rs $\frac{203}{4}$ = 1

Number of tickets bought for Rs 6496 is = $\frac{4}{203} \times 6496$

= 4×32

= 128 tickets

