WEEK 3:

TOPIC: DIVISION OF INTEGERS

When we divide two integers , we first divide as a whole number and then put the sign.

IMPORTANT POINTS FOR THE SIGN:

DIVISION OF TWO POSITIVE INTEGERS WILL BE POSITIVE

DIVISION OF TWO NEGATIVE INTEGERS WILL BE POSITIVE

DIVISION OF A POSITIVE AND A NEGATIVE INTEGER WILL BE

NEGATIVE

PROPERTIES OF DIVISION OF INTEGERS

- **Division is not commutative for integers**
  eg : (-10) ÷ (-2) ≠ (-2) ÷ (-10)
- **Any integer divided by zero is meaningless and zero divided by an integer or zero will be zero.**
  0÷ a = 0 and a ÷ 0 is not defined.
- **When we divide a negative integer with 1 the answer will be a negative integer**
- **When we divide any integer by -1 the answer will change.**
- **Division is not associative. Eg : (18 ÷ 2) ÷ 3 ≠ 18 ÷ (2 ÷ 3)**

COMPLETE THESE POINTS IN OLD COPY OR SHEETS . NOW START WITH EXERCISE 1.4

Lets start with the exercise 1.4

1. Evaluate each of the following:

(a) (–30) ÷ 10

Solution:-

= (–30) ÷ 10

= – 3

When we divide a negative integer by a positive integer, we first divide them as whole numbers and then put minus sign (-) before the quotient.

(b) 50 ÷ (–5)

Solution:-

= (50) ÷ (-5)

= – 10

When we divide a positive integer by a negative integer, we first divide them as whole numbers and then put minus sign (-) before the quotient.

(c) (–36) ÷ (–9)

Solution:-

= (-36) ÷ (-9)

= 4

When we divide a negative integer by a negative integer, we first divide them as whole numbers and then put positive sign (+) before the quotient.

(d) (– 49) ÷ (49)

Solution:-

= (–49) ÷ 49

= – 1

When we divide a negative integer by a positive integer, we first divide them as whole numbers and then put minus sign (-) before the quotient.

(e) 13 ÷ [(–2) + 1]

Solution:-

= 13 ÷ [(–2) + 1]

= 13 ÷ (-1)

= – 13

When we divide a positive integer by a negative integer, we first divide them as whole numbers and then put minus sign (-) before the quotient.

(f) 0 ÷ (–12)

Solution:-

= 0 ÷ (-12)

= 0

When we divide zero by a negative integer gives zero.

(g) (–31) ÷ [(–30) + (–1)]

Solution:-

= (–31) ÷ [(–30) + (–1)]

= (-31) ÷ [-30 – 1]

= (-31) ÷ (-31)

= 1

When we divide a negative integer by a negative integer, we first divide them as whole numbers and then put positive sign (+) before the quotient.

(h) [(–36) ÷ 12] ÷ 3

Solution:-

First we have to solve the integers with in the bracket,

= [(–36) ÷ 12]

= (–36) ÷ 12

= – 3

Then,

= (-3) ÷ 3

= -1

When we divide a negative integer by a positive integer, we first divide them as whole numbers and then put minus sign (-) before the quotient.

(i) [(– 6) + 5)] ÷ [(–2) + 1]

Solution:-

The given question can be written as,

= [-1] ÷ [-1]

= 1

When we divide a negative integer by a negative integer, we first divide them as whole numbers and then put positive sign (+) before the quotient.

2. Verify that a ÷ (b + c) ≠ (a ÷ b) + (a ÷ c) for each of the following values of a, b and c.

(a) a = 12, b = – 4, c = 2

Solution:-

From the question, a ÷ (b + c) ≠ (a ÷ b) + (a ÷ c)

Given, a = 12, b = – 4, c = 2

Now, consider LHS = a ÷ (b + c)

= 12 ÷ (-4 + 2)

= 12 ÷ (-2)

= -6

When we divide a positive integer by a negative integer, we first divide them as whole numbers and then put minus sign (-) before the quotient.

Then, consider RHS = (a ÷ b) + (a ÷ c)

= (12 ÷ (-4)) + (12 ÷ 2)

= (-3) + (6)

= 3

By comparing LHS and RHS

= -6 ≠ 3

= LHS ≠ RHS

Hence, the given values are verified.

(b) a = (–10), b = 1, c = 1

Solution:-

From the question, a ÷ (b + c) ≠ (a ÷ b) + (a ÷ c)

Given, a = (-10), b = 1, c = 1

Now, consider LHS = a ÷ (b + c)

= (-10) ÷ (1 + 1)

= (-10) ÷ (2)

= -5

When we divide a negative integer by a positive integer, we first divide them as whole numbers and then put minus sign (-) before the quotient.

Then, consider RHS = (a ÷ b) + (a ÷ c)

= ((-10) ÷ (1)) + ((-10) ÷ 1)

= (-10) + (-10)

= -10 – 10

= -20

By comparing LHS and RHS

= -5 ≠ -20

= LHS ≠ RHS

Hence, the given values are verified.

3. Fill in the blanks:

(a) 369 ÷ _____ = 369

Solution:-

Let us assume the missing integer be x,

Then,

= 369 ÷ x = 369

= x = (369/369)

= x = 1

Now, put the valve of x in the blank.

= 369 ÷ 1 = 369

(b) (–75) ÷ _____ = –1

Solution:-

Let us assume the missing integer be x,

Then,

= (-75) ÷ x = -1

= x = (-75/-1)

= x = 75

Now, put the valve of x in the blank.

= (-75) ÷ 75 = -1

(c) (–206) ÷ _____ = 1

Solution:-

Let us assume the missing integer be x,

Then,

= (-206) ÷ x = 1

= x = (-206/1)

= x = -206

Now, put the valve of x in the blank.

= (-206) ÷ (-206) = 1

(d) – 87 ÷ _____ = 87

Solution:-

Let us assume the missing integer be x,

Then,

= (-87) ÷ x = 87

= x = (-87)/87

= x = -1

Now, put the valve of x in the blank.

= (-87) ÷ (-1) = 87

(e) _____ ÷ 1 = – 87

Solution:-

Let us assume the missing integer be x,

Then,

= (x) ÷ 1 = -87

= x = (-87) × 1

= x = -87

Now, put the valve of x in the blank.

= (-87) ÷ 1 = -87

(f) _____ ÷ 48 = –1

Solution:-

Let us assume the missing integer be x,

Then,

= (x) ÷ 48 = -1

= x = (-1) × 48

= x = -48

Now, put the valve of x in the blank.

= (-48) ÷ 48 = -1

(g) 20 ÷ _____ = –2

Solution:-

Let us assume the missing integer be x,

Then,

= 20 ÷ x = -2

= x = (20)/ (-2)

= x = -10

Now, put the valve of x in the blank.

= (20) ÷ (-10) = -2

(h) _____ ÷ (4) = –3

Solution:-

Let us assume the missing integer be x,

Then,

= (x) ÷ 4 = -3

= x = (-3) × 4

= x = -12

Now, put the valve of x in the blank.

= (-12) ÷ 4 = -3

4. Write five pairs of integers (a, b) such that a ÷ b = –3. One such pair is (6, –2) because 6 ÷ (–2) = (–3).

Solution:-

(i) (15, -5)

Because, 15 ÷ (–5) = (–3)

(ii) (-15, 5)

Because, (-15) ÷ (5) = (–3)

(iii) (18, -6)

Because, 18 ÷ (–6) = (–3)

(iv) (-18, 6)

Because, (-18) ÷ 6 = (–3)

(v) (21, -7)

Because, 21 ÷ (–7) = (–3)

5. The temperature at 12 noon was 10°C above zero. If it decreases at the rate of 2°C per hour until midnight, at what time would the temperature be 8°C below zero? What would be the temperature at mid-night?

Solution:-

From the question is given that,

Temperature at the beginning i.e., at 12 noon = 10°C

Rate of change of temperature = – 2°C per hour

Then,

Temperature at 1 PM = 10 + (-2) = 10 – 2 = 8°C

Temperature at 2 PM = 8 + (-2) = 8 – 2 = 6°C

Temperature at 3 PM = 6 + (-2) = 6 – 2 = 4°C

Temperature at 4 PM = 4 + (-2) = 4 – 2 = 2°C

Temperature at 5 PM = 2 + (-2) = 2 – 2 = 0°C

Temperature at 6 PM = 0 + (-2) = 0 – 2 = -2°C

Temperature at 7 PM = -2 + (-2) = -2 -2 = -4°C

Temperature at 8 PM = -4 + (-2) = -4 – 2 = -6°C

Temperature at 9 PM = -6 + (-2) = -6 – 2 = -8°C

∴At 9 PM the temperature will be 8°C below zero

Then,

The temperature at mid-night i.e., at 12 AM

Change in temperature in 12 hours = -2°C × 12 = – 24°C

So, at midnight temperature will be = 10 + (-24)

= – 14°C

So, at midnight temperature will be 14°C below 0.

6. In a class test (+ 3) marks are given for every correct answer and (–2) marks are given for every incorrect answer and no marks for not attempting any question. (i) Radhika scored 20 marks. If she has got 12 correct answers, how many questions has she attempted incorrectly? (ii) Mohini scores –5 marks in this test, though she has got 7 correct answers. How many questions has she attempted incorrectly?

Solution:-

From the question,

Marks awarded for 1 correct answer = + 3

Marks awarded for 1 wrong answer = -2

(i) Radhika scored 20 marks

Then,

Total marks awarded for 12 correct answers = 12 × 3 = 36

Marks awarded for incorrect answers = Total score – Total marks awarded for 12 correct

Answers

= 20 – 36

= – 16

So, the number of incorrect answers made by Radhika = (-16) ÷ (-2)

= 8

(ii) Mohini scored -5 marks

Then,

Total marks awarded for 7 correct answers = 7 × 3 = 21

Marks awarded for incorrect answers = Total score – Total marks awarded for 12 correct Answers

= – 5 – 21

= – 26

So, the number of incorrect answers made by Radhika = (-26) ÷ (-2) = 13

7. An elevator descends into a mine shaft at the rate of 6 m/min. If the descent starts from 10 m above the ground level, how long will it take to reach – 350 m.

Solution:-

From the question,

The initial height of the elevator = 10 m

Final depth of elevator = – 350 m … [∵distance descended is denoted by a negative integer]

The total distance to descended by the elevator = (-350) – (10)

= – 360 m

Then,

Time taken by the elevator to descend -6 m = 1 min

So, time taken by the elevator to descend – 360 m = (-360) ÷ (-6)

= 60 minutes

= 1 hour

DEAR CHILDREN THIS WEEK WE ARE GOING TO START WITH CHAPTER 2- FRACTIONS AND DECIMALS

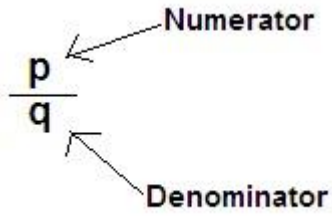
FRACTION: Fraction is a part of a whole.

Fractions

Fractions are numbers representing part of a whole.

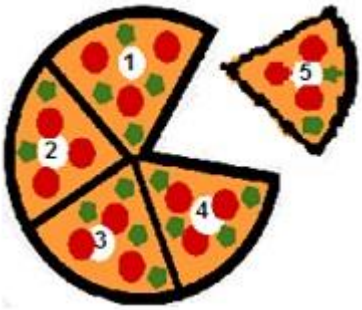
A fraction is a number of the form p/q, such that q is not equal to zero or one.

A fraction has two parts. The number on the top is numerator and the number below is the denominator.



The numerator can be greater or smaller than the denominator.

For e.g. 1/5th of a pizza is a fraction , that is, written as 1/5.



Types of Fractions

There are three major types of fractions:

- Proper Fraction
- Improper Fraction
- Mixed Fraction

Proper Fractions

Fractions where numerator is always less than the denominator.

It is called proper because the number of parts will always be lesser than the total number of parts. For e.g. 1/3, 1/6, 2/7, 9/10 and so on.

The value of a proper fraction will always be less than 1.

Improper Fractions

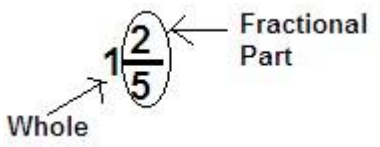
Fractions where numerator is always more than the denominator.

It is called improper because the number of parts will be greater than the total number of parts. For e.g. 5/3, 9/6, 8/7, 14/10 and so on.

The value of a proper fraction will always be greater than 1.

Mixed Fraction

Fractions where there is a combination of a whole and a fractional part. For e.g.



All Improper fractions can be expressed as mixed fractions

Like and Unlike Fractions

Like fractions are fractions with same denominator. For eg ½, 15/2, 19/2 and so on.

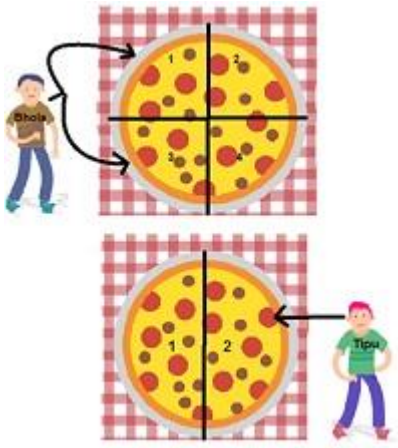
Unlike fractions are fractions with different denominators. For e.g. 16/5, 7/8, ½, 2/5, 2/10.

It is important to note that like and unlike fractions are decided only on the basis of denominator. The value of numerator does not matter.

Equivalent Fractions

Equivalent fractions are fractions which represent the same number.

For e.g. Tipu divides the pizza into 2 equal halves and eats one half of it. Bhola divides the same pizza into 4 equal halves and eats two parts of it.



Share of Pizza eaten by Bhola = 2 parts out of 4 = 2/4. This can be further reduced to get :

2/4 = ½ = 0.5

Share of Pizza eaten by Tipu = 1 part of out of 2 = ½.

½ = 0.5.

Thus, although the fractions are 2/4 and 1/2 but they represent the same numbers. Hence they are equivalent fractions.

In order to make equivalent number, we have to multiply both the numerator and the denominator by the same number. For eg we get the following fractions when we keep on dividing both the numerator and the denominator by the number 2.

$$\frac{1}{2}=\frac{2}{4}=\frac{4}{8}=\frac{8}{16}=\frac{16.}{32}$$

These fractions are equivalent since all of them can be reduced to the simplest fraction - ½.

Comparing Fractions

Comparing Like Fractions

In like fractions, the denominators are the same. So, only numerators are compared.

The one with bigger numerator is the bigger fractions.

For e.g. ¾>1/4

Comparing Unlike Fractions

In unlike fractions, denominators are different.

Firstly, we try and make the denominators same.

This is done by converting fractions into equivalent fractions. To do this, the LCM of different denominators.

Each fraction is converted into a form such that the LCM as the common denominator of both the fractions.

Addition and subtraction of Fractions

Addition of Like Fractions

Since like fractions have the same denominator, we retain the denominator in the final answer.

We add the numerator to get the numerator of the final fraction.

Subtraction of Like Fractions

Since like fractions have common denominator, we retain the denominator in the denominator.

The numerators are subtracted to get the numerator of the final fraction.

Addition of Unlike Fractions

These fractions have different denominators.

Firstly, the fractions are converted into equivalent fractions with a common denominator.

To do so, the LCM of denominators is calculated.

The fractions are converted into like fractions with a common denominator.

The common denominator is retained

The numerators are added.

Subtraction of Unlike Fractions

These fractions have different denominators.

Firstly, the fractions are converted into equivalent fractions with a common denominator.

To do so, the LCM of denominators is calculated.

The fractions are converted into like fractions with a common denominator.

The common denominator is retained

The numerators are subtracted.

DEAR CHILDREN THE ABOVE DEFINITIONS ARE ONLY THE STUDY MATERIAL DO NOT WRITE. NOW START WITH Exercise 2.1 IN OLD COPY OR SHEETS.

Question 1.

Solve :

(i) $2-\frac{3}{5}$ **(ii)** $4+\frac{7}{8}$ **(iii)** $\frac{3}{5}+\frac{2}{7}$

(iv) $\frac{9}{11}-\frac{4}{15}$ **(v)** $\frac{7}{10}+\frac{2}{5}+\frac{3}{2}$ **(vi)** $2\frac{2}{3}+3\frac{1}{2}$

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

(i) L.C.M. of the denominators 1 and 5 is 5

So, we convert the given fractions into equivalent fractions with denominator 5.

We have, $2=\frac{2}{1}=\frac{2\times 5}{1\times 5}=\frac{10}{5}$

and, $\frac{3}{5}=\frac{3}{5}$

$\therefore$ $2-\frac{3}{5}=\frac{10}{5}-\frac{3}{5}=\frac{10-3}{5}=\frac{7}{5}$

(ii) L.C.M. of the denominators 1 and 8 is 8

So, we convert the given fractions into equivalent fractions with denominator 8.

We have, $4=\frac{4}{1}=\frac{4\times 8}{1\times 8}=\frac{32}{8}$

and, $\frac{7}{8}=\frac{7}{8}$

$\therefore$ $4+\frac{7}{8}=\frac{32}{8}+\frac{7}{8}=\frac{32+7}{8}$

$=\frac{39}{8}\left(=4\frac{7}{8}\right)$

(iii) L.C.M. of the denominators 5 and 7 is 35

So, we convert the given fractions into equivalent fractions with denominator 35.

We have, $\frac{3}{5} = \frac{3\times 7}{5\times 7} = \frac{21}{35}$

and, $\frac{2}{7} = \frac{2\times 5}{7\times 5} = \frac{10}{35}$

$\therefore \quad \frac{3}{5}+\frac{2}{7} = \frac{21}{35}+\frac{10}{35}$

$= \frac{21+10}{35} = \frac{31}{35}$

(iv) L.C.M. of the denominators 11 and 15 is 165

So, we convert the given fractions into equivalent fractions with denominator 165.

We have, $\frac{9}{11} = \frac{9\times 15}{11\times 15} = \frac{135}{165}$

and, $\frac{4}{15} = \frac{4\times 11}{15\times 11} = \frac{44}{165}$

$\therefore \quad \frac{9}{11}-\frac{4}{15} = \frac{135}{165}-\frac{44}{165}$

$= \frac{135-44}{165} = \frac{91}{165}$

(v) L.C.M. of the denominators 10, 5 and 2 is 10

So, we convert the given fractions into equivalent fractions with denominator 10.

We have, $\frac{7}{10} = \frac{7}{10}, \frac{2}{5} = \frac{2\times 2}{5\times 2} = \frac{4}{10}$

and, $\frac{3}{2} = \frac{3\times 5}{2\times 5} = \frac{15}{10}$

$\therefore \quad \frac{7}{10}+\frac{2}{5}+\frac{3}{2} = \frac{7}{10}+\frac{4}{10}+\frac{15}{10}$

$= \frac{7+4+15}{10} = \frac{26}{10}$

$= \frac{13}{5}\left(=2\frac{3}{5}\right)$

(vi) We have,

$2\frac{2}{3}+3\frac{1}{2} = 2+\frac{2}{3}+3+\frac{1}{2}$

$= (2+3)+\frac{2}{3}+\frac{1}{2}$

$= 5+\left(\frac{4}{6}+\frac{3}{6}\right)$

$\left[\because \frac{2}{3} = \frac{2\times 2}{3\times 2} = \frac{4}{6} \text{ and } \frac{1}{2} = \frac{1\times 3}{2\times 3} = \frac{3}{6}\right]$

$= 5+\frac{7}{6} = 5+\frac{6+1}{6}$

$$= 5 + \left(\frac{6}{6} + \frac{1}{6}\right) = 5 + 1 + \frac{1}{6} = 6\frac{1}{6}$$

Alternative Method, we have :

$$2\frac{2}{3} + 3\frac{1}{2} = \frac{8}{3} + \frac{7}{2}$$

$$\left[\because 2\frac{2}{3} = \frac{2\times 3+2}{3} = \frac{6+2}{3} = \frac{8}{3} \text{ and } 3\frac{1}{2} = \frac{3\times 2+1}{2} = \frac{6+1}{2} = \frac{7}{2}\right]$$

$$= \frac{8\times 2}{3\times 2} + \frac{7\times 3}{2\times 3}$$

[$\because$ L.C.M of 3 and 2 is 6. So, we convert each fraction into an equivalent fraction with denominator 6]

$$= \frac{16}{6} + \frac{21}{6} = \frac{16+21}{6}$$

$$= \frac{37}{6} = \left(= 6\frac{1}{6}\right)$$

$$6\overline{)37}(6$$
$$\underline{-36}$$
$$1$$

(viii) $$8\frac{1}{2} - 3\frac{5}{8} = \frac{17}{2} - \frac{29}{8}$$

$$\left[\because 8\frac{1}{2} = \frac{8\times 2+1}{2} = \frac{16+1}{2} = \frac{17}{2} \text{ and } 3\frac{5}{8} = \frac{3\times 8+5}{8} = \frac{29}{8}\right]$$

$$= \frac{17\times 4}{2\times 4} - \frac{29\times 1}{8\times 1}$$

[$\because$ L.C.M. of 2 and 8 = 8]

$$= \frac{68}{8} - \frac{29}{8} = \frac{68-29}{8} = \frac{39}{8}\left(= 4\frac{7}{8}\right)$$

Question 2.

2. Arrange the following in descending order :

(i) $\frac{2}{9}, \frac{2}{3}, \frac{8}{21}$ **(ii)** $\frac{1}{5}, \frac{3}{7}, \frac{7}{10}$

Solution:

We observe that the given fractions neither have a common denominator nor a common numerator. So, first we convert them into like fractions, i.e., fractions having common denominator. For this, we first find the L.C.M. of the denominators of the given fractions.

(i) Denominators are 9, 3, 21.

We have,

$$\begin{array}{r|l} 3 & 9,\ 3,\ 21 \\ \hline & 3,\ 1,\ 7 \end{array}$$

$\therefore$ L.C.M. $= 3 \times 3 \times 7 = 63$

Thus,

$$\frac{2}{9} = \frac{2 \times 7}{9 \times 7} = \frac{14}{63} \qquad [\because 63 \div 9 = 7]$$

$$\frac{2}{3} = \frac{2 \times 21}{3 \times 21} = \frac{42}{63} \qquad [\because 63 \div 3 = 21]$$

and,

$$\frac{8}{21} = \frac{8 \times 3}{21 \times 3} = \frac{24}{63} \qquad [\because 63 \div 21 = 3]$$

We have, $42 > 24 > 14$

$$\Rightarrow \quad \frac{42}{63} > \frac{24}{63} > \frac{14}{63} \Rightarrow \frac{2}{3} > \frac{8}{21} > \frac{2}{9}$$

(ii) Denominators are 5, 7, 10

We have,

$$\begin{array}{r|l} 5 & 5,\ 7,\ 10 \\ \hline & 1,\ 7,\ 2 \end{array}$$

$\therefore$ L.C.M. $= 5 \times 7 \times 2 = 70$

Thus,

$$\frac{1}{5} = \frac{1 \times 14}{5 \times 14} = \frac{14}{70} \qquad [\because 70 \div 5 = 14]$$

$$\frac{3}{7} = \frac{3 \times 10}{7 \times 10} = \frac{30}{70} \qquad [\because 70 \div 7 = 10]$$

and,

$$\frac{7}{10} = \frac{7 \times 7}{10 \times 7} = \frac{49}{70} \qquad [\because 70 \div 10 = 7]$$

We have, $49 > 30 > 14$

$$\Rightarrow \quad \frac{49}{70} > \frac{30}{70} > \frac{14}{70} \Rightarrow \frac{7}{10} > \frac{3}{7} > \frac{1}{5}$$

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?

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

(Along the first row $\frac{4}{11} + \frac{9}{11} + \frac{2}{11} = \frac{15}{11}$)

Solution:

$$\text{Row 1 :}\quad \frac{4}{11}+\frac{9}{11}+\frac{2}{11}=\frac{4+9+2}{11}=\frac{15}{11}$$

$$\text{Row 2 :}\quad \frac{3}{11}+\frac{5}{11}+\frac{7}{11}=\frac{3+5+7}{11}=\frac{15}{11}$$

$$\text{Row 3 :}\quad \frac{8}{11}+\frac{1}{11}+\frac{6}{11}=\frac{8+1+6}{11}=\frac{15}{11}$$

$$\text{Col. 1 :}\quad \frac{4}{11}+\frac{3}{11}+\frac{8}{11}=\frac{4+3+8}{11}=\frac{15}{11}$$

$$\text{Col. 2 :}\quad \frac{9}{11}+\frac{5}{11}+\frac{1}{11}=\frac{9+5+1}{11}=\frac{15}{11}$$

$$\text{Col. 3 :}\quad \frac{2}{11}+\frac{7}{11}+\frac{6}{11}=\frac{2+7+6}{11}=\frac{15}{11}$$

$$\text{Diagonal 1 :}\quad \frac{4}{11}+\frac{5}{11}+\frac{6}{11}=\frac{4+5+6}{11}=\frac{15}{11}$$

$$\text{Diagonal 2 :}\quad \frac{2}{11}+\frac{5}{11}+\frac{8}{11}=\frac{2+5+8}{11}=\frac{15}{11}$$

⇒ The sum of the numbers in each row, in each column and along the diagonals is the same.
So, the given square is a magic square.

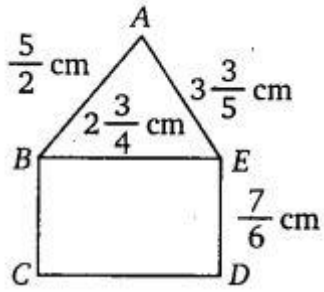
Question 4.
A rectangular sheet of paper is $12\frac{1}{2}$ cm long and $10\frac{2}{3}$ cm wide. Find its perimeter.
Solution:

$$\begin{aligned}\text{Perimeter} &= 2\times(\text{Length}+\text{Breadth})\\ &= 2\times\left(12\frac{1}{2}+10\frac{2}{3}\right)\text{cm}\\ &= 2\times\left(\frac{25}{2}+\frac{32}{3}\right)\text{cm}\\ &= 2\times\left(\frac{25\times3}{2\times3}+\frac{32\times2}{3\times2}\right)\text{cm}\\ &= 2\times\left(\frac{75}{6}+\frac{64}{6}\right)\text{cm}\\ &= 2\times\frac{75+64}{6}\text{ cm}=\frac{139}{3}\text{ cm}\\ &= 46\frac{1}{3}\text{ cm}\end{aligned}$$

$$\begin{array}{r|l} 3 & 139 \\ & -12 \\ \hline & 19 \\ & -18 \\ \hline & 1 \end{array}\quad 46$$

Question 5.
Find the perimeters of (i) Δ ABE (ii) the rectangle BCDE in this figure. Whose

perimeter is greater?



Solution:

(i) Perimeter of $\Delta\ ABE$

$$= (AB + BE + EA) = \left(\frac{5}{2} + \frac{11}{4} + \frac{18}{5}\right) \text{cm}$$

$$\left[\because\ 2\frac{3}{4} = \frac{2\times 4+3}{4} = \frac{8+3}{4} = \frac{11}{4};\ 3\frac{3}{5} = \frac{3\times 5+3}{5} = \frac{15+3}{5} = \frac{18}{5}\right]$$

$$= \left(\frac{50}{20} + \frac{55}{20} + \frac{72}{20}\right) \text{cm}$$

$$\left[\because\ \text{L.C.M. of } 2, 4, 5 = 20\right.$$

$$\left.\text{Now, } \frac{5}{2} = \frac{5\times 10}{2\times 10} = \frac{55}{20};\ \frac{11}{4} = \frac{11\times 5}{4\times 5} = \frac{55}{20};\ \frac{18}{5} = \frac{18\times 4}{5\times 4} = \frac{72}{20}\right]$$

$$= \frac{50+55+72}{20} \text{cm} = \frac{177}{20} \text{cm} = 8\frac{17}{20} \text{cm}$$

(ii) Perimeter of rectangle $BCDE$

$$= 2\left(2\frac{3}{4} + \frac{7}{6}\right) \text{cm} = 2\left(\frac{11}{4} + \frac{7}{6}\right) \text{cm}$$

$$= 2\left(\frac{33}{12} + \frac{14}{12}\right) \text{cm} \qquad \left[\because\ 2\frac{3}{4} = \frac{2\times 4+3}{4} = \frac{11}{4}\right]$$

$$\left[\because \text{L.C.M. of 4 and 6 is 12}\right.$$

$$\left.\therefore\ \frac{11}{4} = \frac{11\times 3}{4\times 3} = \frac{33}{12} \text{ and } \frac{7}{6} = \frac{7\times 2}{6\times 2} = \frac{14}{12}\right]$$

$$= 2\times \frac{47}{12} \text{cm}$$

$$= \frac{47}{6} \text{cm} = 7\frac{5}{6} \text{cm}$$

Since, $8\frac{17}{20} > 7\frac{5}{6}$

Hence, the perimeter of the triangle is greater than that of the rectangle.

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 the picture $= 7\frac{3}{5}$ cm

Width of the frame $= 7\frac{3}{10}$ cm

To fit in the frame, picture should be trimmed in width by

$$\left[7\frac{3}{5} - 7\frac{3}{10}\right]\text{cm} = \left(7 + \frac{3}{5} - 7 - \frac{3}{10}\right)\text{cm} = \left[\frac{3}{5} - \frac{3}{10}\right]\text{cm}$$

$$= \left(\frac{6}{10} - \frac{3}{10}\right)\text{cm} = \frac{3}{10}\text{ cm}$$

Question 7.

Ritu ate $\frac{3}{5}$ 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:

Part of the apple eaten by Somu $= 1 - \frac{3}{5} = \frac{5}{5} - \frac{3}{5} = \frac{2}{5}$

Since, $\frac{3}{5} > \frac{2}{5}$, therefore, Ritu had the larger share.

Ritu had taken $\left(\frac{3}{5} - \frac{2}{5}\right) = \frac{1}{5}$ part of apple more than her brother Somu.

Question 8.

Michael finished colouring a picture in $\frac{7}{12}$ hour. Vaibhav finished colouring the same picture in $\frac{3}{4}$ hour. Who worked longer? By what fraction was it longer?

Solution:

Michael finished colouring the picture in $\frac{7}{12}$ hour.

Vaibhav finished colouring the picture in $\frac{3}{4}$ hour,

i.e., $\frac{9}{12}$ hour.

Since, $\frac{9}{12} > \frac{7}{12}$, therefore, Vaibhav worked longer for $\frac{9}{12} - \frac{7}{12} = \frac{2}{12} = \frac{1}{6}$ hour.

Multiplication of fractions

Multiplication of a Fraction by a Whole Number

To multiply a whole number with a proper or an improper fraction, we multiply the whole number with the numerator of the fraction, keeping the denominator same.

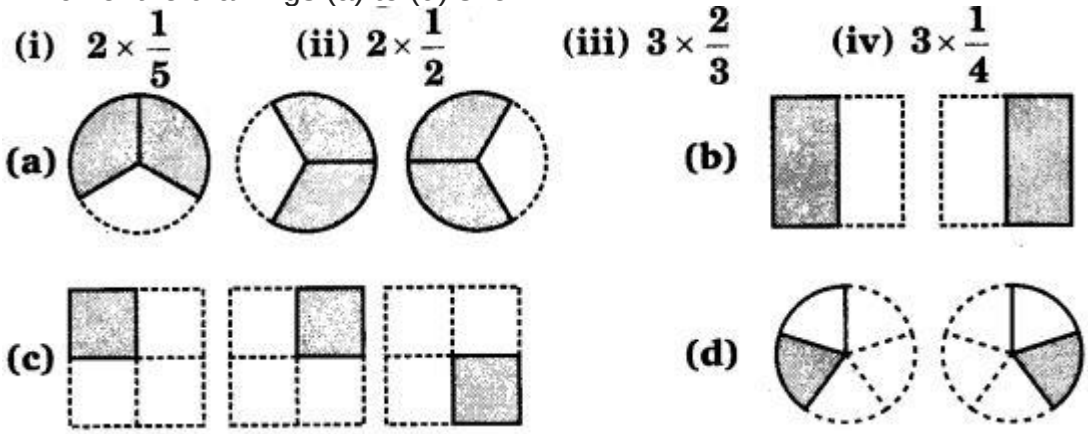
To multiply a mixed fraction to a whole number, first convert the mixed fraction to an improper fraction and then multiply.

NOW LET US START WITH Exercise 2.2

Question 1.

Which of the drawings (a) to (d) show :

(i) $2 \times \frac{1}{5}$ (ii) $2 \times \frac{1}{2}$ (iii) $3 \times \frac{2}{3}$ (iv) $3 \times \frac{1}{4}$



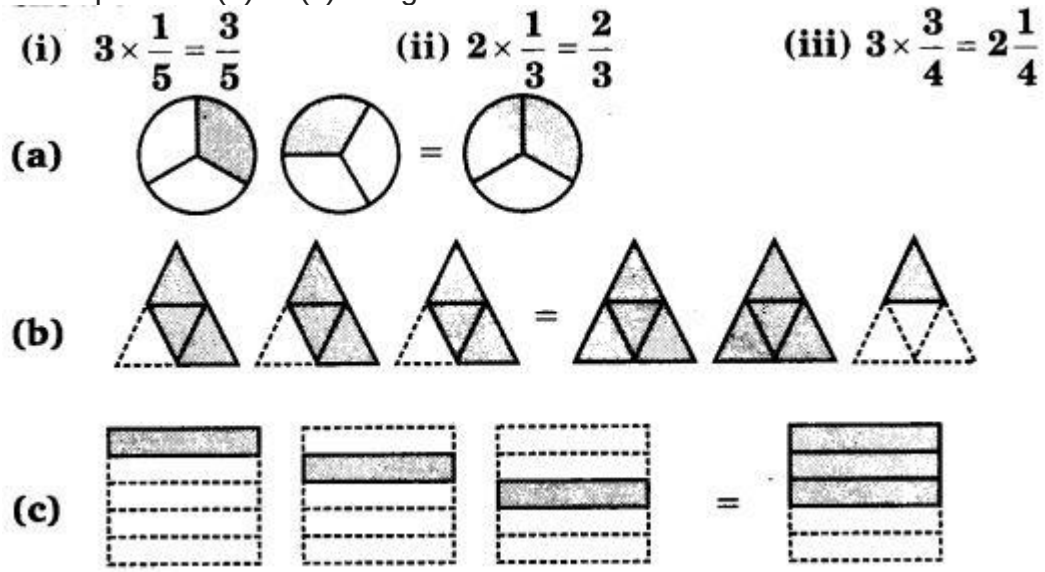
Solution:

(i) → (d)
(ii) → (b)
(iii) → (a)
(iv) → (c)

Question 2.

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

(i) $3 \times \frac{1}{5} = \frac{3}{5}$ (ii) $2 \times \frac{1}{3} = \frac{2}{3}$ (iii) $3 \times \frac{3}{4} = 2\frac{1}{4}$



Solution:

(i) → (c)
(ii) → (a)
(iii) → (b)

Question 3.

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

(i) $7 \times \frac{3}{5}$ **(ii)** $4 \times \frac{1}{3}$ **(iii)** $2 \times \frac{6}{7}$ **(iv)** $5 \times \frac{2}{9}$

(v) $\frac{2}{3} \times 4$ **(vi)** $\frac{5}{2} \times 6$ **(vii)** $11 \times \frac{4}{7}$ **(viii)** $20 \times \frac{4}{5}$

(ix) $13 \times \frac{1}{3}$ **(x)** $15 \times \frac{3}{5}$

Solution:

(i) $7 \times \frac{3}{5} = \frac{7 \times 3}{5} = \frac{21}{5} = 4\frac{1}{5}$

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

(iii) $2 \times \frac{6}{7} = \frac{2 \times 6}{7} = \frac{12}{7} = 1\frac{5}{7}$

(iv) $5 \times \frac{2}{9} = \frac{5 \times 2}{9} = \frac{10}{9} = 1\frac{1}{9}$

(v) $\frac{2}{3} \times 4 = \frac{2 \times 4}{3} = \frac{8}{3} = 2\frac{2}{3}$

(vi) $\frac{5}{2} \times 6 = \frac{5 \times 6}{2} = \frac{30}{2} = 15$

(vii) $11 \times \frac{4}{7} = \frac{11 \times 4}{7} = \frac{44}{7} = 6\frac{2}{7}$

(viii) $20 \times \frac{4}{5} = \frac{20 \times 4}{5} = \frac{80}{5} = 16$

(ix) $13 \times \frac{1}{3} = \frac{13 \times 1}{3} = \frac{13}{3} = 4\frac{1}{3}$

(x) $15 \times \frac{3}{5} = \frac{15 \times 3}{5} = \frac{45}{5} = 9$

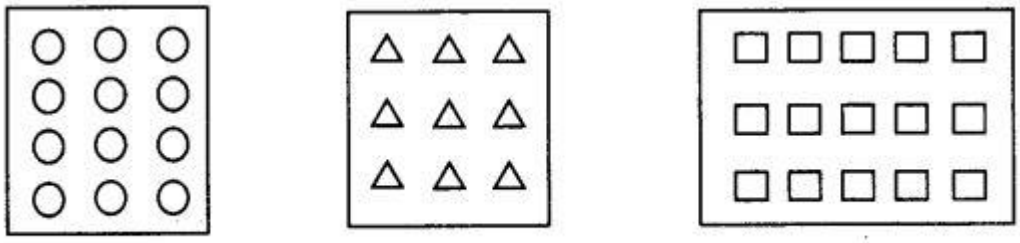
Question 4.

Shade :

(i) $\frac{1}{2}$ of the circles in box (a)

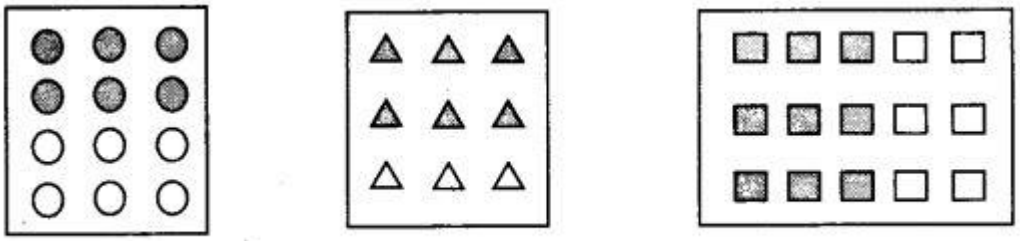
(ii) $\frac{2}{3}$ of the triangles in box (b)

(iii) $\frac{3}{5}$ of the squares in box (c).



(a) **(b)** **(c)**

Solution:



(a) (b) (c)

Question 5.

Find :

(a) $\frac{1}{2}$ **of (i) 24 (ii) 46** **(b)** $\frac{2}{3}$ **of (i) 18 (ii) 27**

(c) $\frac{3}{4}$ **of (i) 16 (ii) 36** **(d)** $\frac{4}{5}$ **of (i) 20 (ii) 35**

Solution:

(a) (i) $\frac{1}{2}$ of $24 = \frac{1}{2} \times 24 = \frac{24}{2} = 12$

(ii) $\frac{1}{2}$ of $46 = \frac{1}{2} \times 46 = \frac{46}{2} = 23$

(b) (i) $\frac{2}{3}$ of $18 = \frac{2}{3} \times 18 = \frac{2 \times 18}{3} = \frac{36}{3} = 12$

(ii) $\frac{2}{3}$ of $27 = \frac{2}{3} \times 27 = \frac{2 \times 27}{3} = \frac{54}{3} = 18$

(c) (i) $\frac{3}{4}$ of $16 = \frac{3}{4} \times 16 = \frac{3 \times 16}{4} = \frac{48}{4} = 12$

(ii) $\frac{3}{4}$ of $36 = \frac{3}{4} \times 36 = \frac{3 \times 36}{4} = \frac{108}{4} = 27$

(d) (i) $\frac{4}{5}$ of $20 = \frac{4}{5} \times 20 = \frac{4 \times 20}{5} = \frac{80}{5} = 16$

(ii) $\frac{4}{5}$ of $35 = \frac{4}{5} \times 35 = \frac{4 \times 35}{5} = \frac{140}{5} = 28$

Question 6.

Multiply and express as a mixed fraction :

(a) $3 \times 5\frac{1}{5}$ **(b)** $5 \times 6\frac{3}{4}$ **(c)** $7 \times 2\frac{1}{4}$

(d) $4 \times 6\frac{1}{3}$ **(e)** $3\frac{1}{4} \times 6$ **(f)** $3\frac{2}{5} \times 8$

Solution:

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

$= 3 \times \frac{25 + 1}{5}$

$= \frac{3 \times 26}{5}$

$= \frac{78}{5} = 15\frac{3}{5}$

$5\overline{)78}(15$

-5

28

-25

3

(b) $5 \times 6\frac{3}{4} = 5 \times \frac{6 \times 4 + 3}{4}$

$= 5 \times \frac{24 + 3}{4}$

$= \frac{5 \times 27}{4}$

$= \frac{135}{4} = 33\frac{3}{4}$

$4\overline{)135}(33$

-12

15

-12

3

(c) $7 \times 2\frac{1}{4} = 7 \times \frac{2 \times 4 + 1}{4}$

$= 7 \times \frac{8 + 1}{4}$

$= \frac{7 \times 9}{4} = \frac{63}{4} = 15\frac{3}{4}$

$4\overline{)63}(15$

-4

23

-20

3

(d) $4 \times 6\frac{1}{3} = 4 \times \frac{6 \times 3 + 1}{3}$

$= 4 \times \frac{18 + 1}{3}$

$= 4 \times \frac{19}{3} = \frac{4 \times 19}{3} = \frac{76}{3} = 25\frac{1}{3}$

$3\overline{)76}(25$

-6

16

-15

1

(e) $3\frac{1}{4} \times 6 = \frac{3 \times 4 + 1}{4} \times 6$

$= \frac{12 + 1}{2} \times 3 = \frac{13 \times 3}{2} = \frac{39}{2} = 19\frac{1}{2}$

(f) $3\frac{2}{5} \times 8 = \frac{3 \times 5 + 2}{5} \times 8$

$= \frac{15 + 2}{5} \times 8$

$= \frac{17 \times 8}{5} = \frac{136}{5} = 27\frac{1}{5}$

$5\overline{)136}(27$
-10
36
-35
1

Question 7.

Find :

(a) $\frac{1}{2}$ **of** **(i)** $2\frac{3}{4}$ **(ii)** $4\frac{2}{9}$

(b) $\frac{5}{8}$ **of** **(i)** $3\frac{5}{6}$ **(ii)** $9\frac{2}{3}$

Solution:

(a) (i) $\frac{1}{2}$ of $2\frac{3}{4} = \frac{1}{2} \times 2\frac{3}{4} = \frac{1}{2} \times \frac{2 \times 4 + 3}{4}$

$= \frac{1}{2} \times \frac{8 + 3}{4} = \frac{1}{2} \times \frac{11}{4}$

$= \frac{1 \times 11}{2 \times 4} = \frac{11}{8} = 1\frac{3}{8}$

(ii) $\frac{1}{2}$ of $4\frac{2}{9} = \frac{1}{2} \times 4\frac{2}{9} = \frac{1}{2} \times \frac{4 \times 9 + 2}{9}$

$= \frac{1}{2} \times \frac{36 + 2}{9} = \frac{1}{2} \times \frac{38}{9} = \frac{19}{9} = 2\frac{1}{9}$

(b) (i) $\frac{5}{8}$ of $3\frac{5}{6} = \frac{5}{8} \times 3\frac{5}{6} = \frac{5}{8} \times \frac{3 \times 6 + 5}{6}$

$= \frac{5}{8} \times \frac{18 + 5}{6} = \frac{5}{8} \times \frac{23}{6}$

$= \frac{115}{48} = 2\frac{19}{48}$

$48\overline{)115}(2$
-96
19

(ii) $\frac{5}{8}$ of $9\frac{2}{3} = \frac{5}{8} \times 9\frac{2}{3} = \frac{5}{8} \times \frac{9 \times 3 + 2}{3}$

$= \frac{5}{8} \times \frac{27 + 2}{3}$

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

$24\overline{)145}(6$
-144
1

Question 8.

Vidya and Pratap went for a picnic. Their mother gave them water bottle that contained 5 litres of water. Vidya consumed $\frac{2}{5}$ 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:

Total water = 5 litres

(i) Water consumed by Vidya $= \frac{2}{5}$ of 5 litres $= \left(\frac{2}{5} \times 5\right)$ litres $= 2$ litres

(ii) Fraction of water consumed by Pratap

$$= 1 - \frac{2}{5} = \frac{5}{5} - \frac{2}{5} = \frac{5-2}{5} = \frac{3}{5}$$

Hence, $\frac{3}{5}$ of the total quantity of water Pratap drank.

Multiplication of a Fraction by a fraction

Product of two fractions = Product of Numerators/Product of Denominators

If one or both of the fractions is a mixed fraction, we first convert into an improper fraction.

When two proper fractions are multiplied, the product is less than both the fractions. Or, we say the value of the product of two proper fractions is smaller than each of the two fractions.

When two improper fractions are multiplied the product of two improper fractions is greater than each of the two fractions. Or, the value of the product of two improper fractions is more than each of the two fractions.

Ex 2.3 Class 7 Maths

Question 1.

Find :

(i) $\frac{1}{4}$ **of (a)** $\frac{1}{4}$ **(b)** $\frac{3}{5}$ **(c)** $\frac{4}{3}$ **(ii)** $\frac{1}{7}$ **of (a)** $\frac{2}{9}$ **(b)** $\frac{6}{5}$ **(c)** $\frac{3}{10}$

Solution:

(i) (a) $\frac{1}{4}$ of $\frac{1}{4} = \frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$ (b) $\frac{1}{4}$ of $\frac{3}{5} = \frac{1}{4} \times \frac{3}{5} = \frac{3}{20}$

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

(ii) (a) $\frac{1}{7}$ of $\frac{2}{9} = \frac{1}{7} \times \frac{2}{9} = \frac{2}{63}$ (b) $\frac{1}{7}$ of $\frac{6}{5} = \frac{1}{7} \times \frac{6}{5} = \frac{6}{35}$

(c) $\frac{1}{7}$ of $\frac{3}{10} = \frac{1}{7} \times \frac{3}{10} = \frac{3}{70}$

Question 2.

Multiply and reduce to lowest form (if possible) :

(i) $\frac{2}{3} \times 2\frac{2}{3}$ **(ii)** $\frac{2}{7} \times \frac{7}{9}$ **(iii)** $\frac{3}{8} \times \frac{6}{4}$

(iv) $\frac{9}{5} \times \frac{3}{5}$ **(v)** $\frac{1}{3} \times \frac{15}{8}$ **(vi)** $\frac{11}{2} \times \frac{3}{10}$

(vii) $\frac{4}{5} \times \frac{12}{7}$

Solution:

(i) $\frac{2}{3} \times 2\frac{2}{3} = \frac{2}{3} \times \frac{8}{3} = \frac{2 \times 8}{3 \times 3} = \frac{16}{9} = 1\frac{7}{9}$ $\left[\because 2\frac{2}{3} = \frac{2 \times 3 + 2}{3} = \frac{8}{3}\right]$

(ii) $\frac{2}{7} \times \frac{7}{9} = \frac{2 \times 1}{1 \times 9} = \frac{2}{9}$

(iii) $\frac{3}{8} \times \frac{6}{4} = \frac{3 \times 3}{8 \times 2} = \frac{9}{16}$

(iv) $\frac{9}{5} \times \frac{3}{5} = \frac{9 \times 3}{5 \times 5} = \frac{27}{25} = 1\frac{2}{25}$

(v) $\frac{1}{3} \times \frac{15}{8} = \frac{1 \times 5}{1 \times 8} = \frac{5}{8}$

(vi) $\frac{11}{2} \times \frac{3}{10} = \frac{11 \times 3}{2 \times 10} = \frac{33}{20} = 1\frac{13}{20}$

(vii) $\frac{4}{5} \times \frac{12}{7} = \frac{4 \times 12}{5 \times 7} = \frac{48}{35} = 1\frac{13}{35}$

Question 3.

Multiply the following fractions :

(i) $\frac{2}{5} \times 5\frac{1}{4}$ **(ii)** $6\frac{2}{5} \times \frac{7}{9}$ **(iii)** $\frac{3}{2} \times 5\frac{1}{3}$ **(iv)** $\frac{5}{6} \times 2\frac{3}{7}$

(v) $3\frac{2}{5} \times \frac{4}{7}$ **(vi)** $2\frac{3}{5} \times 3$ **(vii)** $3\frac{4}{7} \times \frac{3}{5}$

Solution:

(i) $\frac{2}{5} \times 5\frac{1}{4} = \frac{2}{5} \times \frac{5\times 4+1}{4} = \frac{2}{5} \times \frac{20+1}{4}$

$= \frac{2}{5} \times \frac{21}{4} = \frac{1\times 21}{5\times 2} = \frac{21}{10} = 2\frac{1}{10}$

(ii) $6\frac{2}{5} \times \frac{7}{9} = \frac{6\times 5+2}{5} \times \frac{7}{9} = \frac{30+2}{5} \times \frac{7}{9}$

$= \frac{32}{5} \times \frac{7}{9} = \frac{32\times 7}{5\times 9} = \frac{224}{45} = 4\frac{44}{45}$

(iii) $\frac{3}{2} \times 5\frac{1}{3} = \frac{3}{2} \times \frac{5\times 3+1}{3} = \frac{3}{2} \times \frac{15+1}{3}$

$= \frac{3}{2} \times \frac{16}{3} = \frac{48}{6} = 8$

(iv) $\frac{5}{6} \times 2\frac{3}{7} = \frac{5}{6} \times \frac{2\times 7+3}{7} = \frac{5}{6} \times \frac{14+3}{7}$

$= \frac{5}{6} \times \frac{17}{7} = \frac{5\times 17}{6\times 7} = \frac{85}{42} = 2\frac{1}{42}$

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

$= \frac{15+2}{5} \times \frac{4}{7} = \frac{17}{5} \times \frac{4}{7}$

$= \frac{17\times 4}{5\times 7} = \frac{68}{35} = 1\frac{33}{35}$

(vi) $2\frac{3}{5} \times 3 = \frac{2\times 5+3}{5} \times 3 = \frac{10+3}{5} \times 3$

$= \frac{13}{5} \times 3 = \frac{13\times 3}{5}$

$= \frac{39}{5} = 7\frac{4}{5}$

(vii) $3\frac{4}{7} \times \frac{3}{5} = \frac{3\times 7+4}{7} \times \frac{3}{5} = \frac{21+4}{7} \times \frac{3}{5}$

$= \frac{25}{7} \times \frac{3}{5} = \frac{25\times 3}{7\times 5} = \frac{5\times 3}{7\times 1} = \frac{15}{7} = 2\frac{1}{7}$

Question 4.

Which is greater?

(i) $\frac{2}{7}$ **of** $\frac{3}{4}$ **or** $\frac{3}{5}$ **of** $\frac{5}{8}$ **(ii)** $\frac{1}{2}$ **of** $\frac{6}{7}$ **or** $\frac{2}{3}$ **of** $\frac{3}{7}$

Solution:

(i) We have, $\frac{2}{7}\text{of}\ \frac{3}{4}=\frac{2}{7}\times\frac{3}{4}=\frac{6}{28}$

$=\frac{6\div2}{28\div2}=\frac{3}{14}$

and, $\frac{3}{5}\text{of}\ \frac{5}{8}=\frac{3}{5}\times\frac{5}{8}=\frac{15}{40}$

$=\frac{15\div5}{40\div5}=\frac{3}{8}$

We know that, if two fractions have the same numerator but different denominators, the fraction with smaller denominator is greater.

$\therefore \quad \frac{3}{8}>\frac{3}{14}$

$\Rightarrow\left(\frac{3}{5}\text{of}\ \frac{5}{8}\right)$ is greater than $\left(\frac{2}{7}\text{of}\ \frac{3}{4}\right)$.

(ii) We have,

$\frac{1}{2}\text{of}\ \frac{6}{7}=\frac{1}{2}\times\frac{6}{7}=\frac{1\times6}{2\times7}$

$=\frac{6}{14}=\frac{6\div2}{14\div2}=\frac{3}{7}$

and, $\frac{2}{3}\text{of}\ \frac{3}{7}=\frac{2}{3}\times\frac{3}{7}=\frac{2\times3}{3\times7}$

$=\frac{6}{21}=\frac{6\div3}{21\div3}=\frac{2}{7}$

We know that, if two fractions have the same denominator but different numerators, the fraction with greater numerator is greater.

$\therefore \quad \frac{3}{7}>\frac{2}{7}$

$\Rightarrow\left(\frac{1}{2}\text{of}\ \frac{6}{7}\right)$ if greater than $\left(\frac{2}{3}\text{of}\ \frac{3}{7}\right)$.

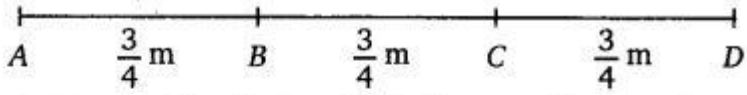
Question 5.

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:

Let four saplings be planted in a row at the points A, B, C and D such that AB = BC =

CD = $\frac{3}{4}$ m



∴Distance between the first and the last sapling

$$= AD = 3 \times AB = \left(3 \times \frac{3}{4}\right) \text{m}$$

$$= \frac{9}{4} \text{m} = 2\frac{1}{4} \text{m}$$

Question 6.

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

Solution:

Time for which the book is read in 1 day

$$= 1\frac{3}{4} \text{ hours}$$

Time for which the book is read in six days

$$= \left(6 \times 1\frac{3}{4}\right) \text{hours}$$

$$= \left(6 \times \frac{7}{4}\right) \text{hours} = \frac{42}{4} \text{ hours}$$

$$= \left(\frac{42 \div 2}{4 \div 2}\right) \text{hours} = \frac{21}{2} \text{ hours}$$

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

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:

Distance covered by a car using 1 litre of petrol

$$= 16 \text{ km}$$

Distance covered by a car using $2\frac{3}{4}$ litres of petrol

$$= \left(16 \times 2\frac{3}{4}\right) \text{km} = \left(16 \times \frac{11}{4}\right) \text{km}$$

$$= (4 \times 11) \text{ km} = 44 \text{ km}$$

Question 8.

(a) (i) Provide the number in the box ( ), such that $\frac{2}{3} \times (\ ) = \frac{10}{30}$

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

(b) (i) Provide the number in the box ( ) such that $\frac{3}{5} \times (\ ) = \frac{24}{75}$

(ii) The simplets form of the number obtained in ( ) is _____

Solution:

(a) (i) Since, $10 \div 2 = 5$ and $30 \div 3 = 10$

$\therefore \quad \frac{2}{3} \times \boxed{\frac{5}{10}} = \frac{10}{30}$

(ii) $\frac{5}{10} = \frac{5 \div 5}{10 \div 5}$

$= \frac{1}{2}$ [$\because$ H.C.F. of 5 and 10 = 5]

(b) (i) Since, $24 \div 3 = 8$ and $75 \div 5 = 15$

$\therefore \quad \frac{3}{5} \times \boxed{\frac{8}{15}} = \frac{24}{75}$

(ii) Since, H.C.F. of 8 and 15 = 1

$\therefore \frac{8}{15}$ is the simplest form.

NOTE: NEXT WEEK I WILL PROVIDE YOU WITH NEXT EXERCISES SO TILL TAKE CARE AND GOOD BYE.