Rational Numbers

Exercise 1.1

Q. 1. A. Name the property involved in the following examples

$$\frac{8}{5}+0=\frac{8}{5}=0+\frac{8}{5}$$

Answer : Role of zero/additive identity:

0 is the additive identity for rational numbers, i.e. if 'a' is any rational number then a + 0 = a = 0 + a

Q. 1. B. Name the property involved in the following examples

$$2\left(\frac{3}{5}+\frac{1}{2}\right)=2\left(\frac{3}{5}\right)$$

Answer : Distributive law

This property is know as the **distributive law of multiplication over addition.**

For all rational numbers a, b and c

a (b + c) = ab + ac

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

Q. 1. C. Name the property involved in the following examples

$$\frac{3}{7}\times 1=\frac{3}{7}=1\times\frac{3}{7}$$

Answer : Multiplicative identity

The multiplicative identity property states that any time you multiply a number by 1, the result, or product, is that original number.

Q. 1. D. Name the property involved in the following examples

$$\left(\frac{-2}{5}\right) \times 1 = \frac{-2}{5} = 1 \times \left(\frac{-2}{5}\right)$$

Answer : Multiplicative identity

The multiplicative identity property states that any time you multiply a number by 1, the result, or product, is that original number.

Q. 1. E. Name the property involved in the following examples

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

Answer : Commutative law of addition

In commutative law of addition, a, b is rational number where

a + b = b + a

Q. 1. F. Name the property involved in the following examples

$$\frac{5}{2}\times\frac{3}{7}=\frac{15}{14}$$

Answer : Closure law in multiplication

We find that rational numbers are closed under multiplication. For any two rational numbers a and b, a × b is also rational number.

Q. 1. G. Name the property involved in the following examples

7a + (-7a) = 0

Answer : (vii) Additive inverse law

Any two numbers whose sum is 0 are called the additive inverses of each other. In general if ‘a’ represents any rational number then a + (-a) = 0 and (-a) + a = 0

Then a, (-a) are additive inverse of each other.

Q. 1. H. Name the property involved in the following examples

$$x \times \frac{1}{x} = 1 (x \neq 0)$$

Answer : (viii) Multiplicative inverse

We say that a rational number $\frac{a}{b}$ is called the reciprocal or the multiplicative

inverse of another rational number $\frac{a}{b}$ if $\frac{a}{b} \times \frac{c}{d} = 1$

Q. 1. I. Name the property involved in the following examples

$$(2 \times x) + (2 \times 6) = 2 \times (x + 6)$$

Answer : Distributive property

This property is known as distribution law of multiplication over addition. For all rational numbers a, b and c

a + b = b + a

Q. 2. A. Write the additive and the multiplicative inverses of the following.

$$\frac{-3}{5}$$

Answer : Additive inverse, $\frac{3}{5}$

Multiplicative inverse, $\frac{-5}{3}$

Explanation:- When a number is added to its additive inverse, the result zero. When a number is multiplied to its multiplicative inverse, the result is 1.

Solving for the additive inverse:-

$$\frac{-3}{5} + x = 0$$

(Add $\frac{-3}{5}$ to both sides)

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

Solving for the multiplicative inverse:-

$$\frac{-3}{5} \times x = 1$$

(Dividing both sides by $\frac{-3}{5}$)

$$x = \frac{-5}{3}$$

Q. 2. B. Write the additive and the multiplicative inverses of the following.

1

Answer : Additive inverse, -1

Multiplication inverse, 1

Explanation:- When a number is added to its additive inverse, the result is zero. When a number is multiplied to its multiplicative inverse, the result is 1.

Solving for additive inverse:-

1 + x = 0

(Add (-1) to both sides)

X = -1

Solving for the multiplicative inverse:-

1 × X = 1

(Dividing both sides by 1)

X = 1

Q. 2. C. Write the additive and the multiplicative inverses of the following.

0

Answer : Does not exist as the answer will be 0 itself.

Q. 2. D. Write the additive and the multiplicative inverses of the following.

$$\frac{7}{9}$$

Answer : Additive inverse, $-\frac{7}{9}$

Multiplication inverse, $\frac{9}{7}$

Explanation:- When a number is added to its additive inverse, the result is zero. When a number is multiplied to its multiplicative inverse, the result is 1.

Solving for additive inverse:-

$$\frac{7}{9} + x = 0$$

(Add ($\frac{-7}{9}$) to both sides)

$$x = -\frac{7}{9}$$

Solving for the multiplicative inverse:-

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

(Dividing both sides by $\frac{7}{9}$)

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

Q. 2. E. Write the additive and the multiplicative inverses of the following.

−1

Answer : Additive inverse, -1

Multiplication inverse, 1

Explanation:- When a number is added to its additive inverse, the result is zero. When a number is multiplied to its multiplicative inverse, the result is 1.

Solving for additive inverse:-

(-1) + x = 0

(Add 1 to both sides)

X = 1

Solving for the multiplicative inverse:-

(-1) × X = 1

(Dividing both sides by (-1))

X = 1

Q. 3. A. Fill in the blanks.

$$\left(-\frac{1}{17}\right)+(\_)=\left(-\frac{12}{5}\right)+\left(-\frac{1}{17}\right)$$

Answer : Let the blank be x

$$\Rightarrow \left(\frac{-1}{17}\right) + x = \left(\frac{-12}{5}\right) + \left(\frac{-1}{17}\right)$$

$$\Rightarrow x = \frac{-12}{5} - \frac{1}{17} + \frac{1}{17}$$

$$\Rightarrow x = \frac{-12}{5}$$

Q. 3. B. Fill in the blanks.

$$\frac{-2}{3} + \_\_\_ = \frac{-2}{3}$$

Answer : let the blank be x

$$\frac{-2}{3} + x = \frac{-2}{3}$$

$$\frac{-2}{3} + \frac{2}{3} + x = \frac{-2}{3} + \frac{2}{3}$$

(Add $\frac{2}{3}$ on both sides)

X = 0

Q. 3. C. Fill in the blanks.

$$1 \times \_\_\_\_ = \frac{9}{11}$$

Answer : Let the blank be x

$$1 \times x = \frac{9}{11}$$

$$x = \frac{9}{11}$$

Q. 3. D. Fill in the blanks.

$$-12 + \left(\frac{5}{6} + \frac{6}{7}\right) = \left(-12 + \frac{5}{6}\right) + (\quad)$$

Answer : We know, that rational numbers are associative over addition, i.e. if

$\frac{a}{b}, \frac{c}{d}$ and $\frac{e}{f}$ are three rational number then,

$$\frac{a}{b} + \left(\frac{c}{d} + \frac{e}{f}\right) = \left(\frac{a}{b} + \frac{c}{d}\right) + \frac{e}{f}$$

Therefore, on comparing we get $-12 + \left(\frac{5}{6} + \frac{6}{7}\right) = \left(-12 + \frac{5}{6}\right) + \frac{6}{7}$

Q. 3. F. Fill in the blanks.

$$\frac{-16}{7} + \_\_\_ = \frac{-16}{7}$$

Answer : Let the blank be x

$$\frac{-16}{7} + x = \frac{-16}{7}$$

$$x = \frac{-16}{7} + \frac{16}{7}$$

X = 0

Q. 4. Multiply $\frac{2}{11}$ by the reciprocal of $\frac{-5}{14}$

Answer : Reciprocal of $\frac{-5}{14}$ is $\frac{-14}{5}$

According to the given question

$$\frac{2}{11} \times \frac{-14}{5} = \frac{-28}{55}$$

Q. 5. Which properties can be used in computing

$$\frac{2}{5} \times \left(5 \times \frac{7}{6}\right) + \frac{1}{3} \times \left(3 \times \frac{4}{11}\right)$$

Answer :

$$\frac{2}{5} \times \left(5 \times \frac{7}{6}\right) + \frac{1}{3} \times \left(3 \times \frac{4}{11}\right)$$

$$= \frac{2}{5} \times \left(\frac{35}{6}\right) + \frac{1}{3} \times \left(\frac{12}{11}\right)$$

$$= \frac{70}{30} + \frac{12}{33}$$

$$= \frac{7}{3} + \frac{12}{33}$$

$$= \frac{77 + 12}{33} = \frac{89}{33}$$

∴ Multiplicative associative, multiplicative inverse, multiplicative identity, closure with addition are the properties used in computing.

Q. 6. Verify the following

$$\left(\frac{5}{4}+\frac{-1}{2}\right)+\frac{-3}{2}=\frac{-5}{4}+\left(\frac{-1}{2}+\frac{-3}{2}\right)$$

Answer :

LHS:- $\left(\frac{5}{4} + \left(-\frac{1}{2}\right)\right) + \left(\frac{-3}{2}\right)$

$$= \left(\frac{5-2}{4}\right) - \frac{3}{2}$$

$$= \frac{3}{4} - \frac{3}{2}$$

$$= \frac{3-6}{4} = -\frac{3}{4}$$

RHS:- $\frac{5}{4} + \left(\frac{-1}{2} + \frac{-3}{2}\right)$

$$= \frac{5}{4} + \left(\frac{-1-3}{2}\right)$$

$$= \frac{5}{4} - \frac{4}{2}$$

$$= \frac{5-8}{8}$$

$= \frac{-3}{4}$

LHS = RHS

Hence verified

Q. 7. Evaluate

$\frac{3}{5}+\frac{7}{3}+\left(\frac{-2}{5}\right)+\left(\frac{-2}{3}\right)$ **after rearrangement.**

Answer :

Given, $\frac{3}{5}+\frac{7}{3}+\left(\frac{-2}{5}\right)+\left(\frac{-2}{3}\right)$

$\frac{3}{5}+\left(\frac{-2}{5}\right)+\frac{7}{3}+\left(\frac{-2}{3}\right)$

(Rearranging the like fractions at one place)

$\frac{3}{5}-\frac{2}{5}+\frac{7}{3}-\frac{2}{3}$

(Since + × - = -)

$\frac{3-2}{5}+\frac{7-2}{3}$

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

(L.C.M. of 5 × 3 = 15)

$\frac{3\ +\ 25}{15}$

$\frac{28}{15}$

Q. 8. A. Subtract

$\frac{3}{4}$ **from** $\frac{1}{3}$

Answer :

Given, $\frac{1}{3} - \frac{3}{4}$

$= \frac{4 - 9}{12}$

(By taking L.C.M.)

$= \frac{-5}{12}$

Q. 8. B. Subtract

$\frac{-32}{13}$ **from 2**

Answer :

Given, $2 - \left(\frac{-32}{13}\right)$

$= 2 + \frac{32}{13}$

(Since - × - = +)

$= \frac{26 + 32}{13}$

(By taking L.C.M.)

$= \frac{58}{13}$

Q. 8. C. Subtract

−7 from $\frac{-4}{7}$

Answer :

Given, $\frac{-4}{7} - (-7)$

$= \frac{-4}{7} + 7$

(Since - × - = +)

$= \frac{-4 + 49}{7}$

(By taking L.C.M.)

$= \frac{45}{7}$

Q. 9. What numbers should be added to $\frac{-5}{8}$ so as to get $\frac{-3}{2}$.

Answer : Let the unknown number be x

According to the given question,

$\frac{-5}{8} + x = \frac{-3}{2}$

$x = \frac{-3}{2} + \frac{5}{8}$

(Add $\frac{5}{8}$ on both the sides)

$= \frac{-12 + 5}{8}$

(By taking L.C.M.)

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

Q. 10. The sum of two rational numbers is 8. If one of the numbers is $\frac{-5}{6}$ find the other.

Answer : Let the unknown number be x

According to the given question,

$$x + \frac{-5}{6} = 8$$

$$x = 8 + \frac{5}{6}$$

(Add $\frac{5}{6}$ on both the sides)

$$x = \frac{48 + 5}{6}$$

(By taking L.C.M.)

$$x = \frac{53}{6}$$

Q. 11. Is subtraction associative in rational numbers? Explain with an example.

Answer : Subtraction is not associative for rational numbers because when the numbers (say a,b,c) are subtracted by grouping any two at first and the other two at second [(a-b)-c and then a-(b-c)] the answer is not same. Thus subtraction is not associative in rational numbers.

Example:- let the 3 numbers be 5,8,9

Then, at first -- → (9-5)-8 = -4

And in second - → 9-(5-8) = 9-(-3) = 12

Since, first case is not equal to second case's answer

Q. 12. A. Verify that – (–x) = x for

x = $\frac{2}{15}$

Answer : According to the question,

-(-x) = x

LHS:- -(-X) RHS:- X

$$= -\left(\frac{-2}{15}\right) = \frac{2}{15}$$

$$= \frac{2}{15}$$

(Since - × - = +)

LHS = RHS

Hence verified

Q. 12. B. Verify that – (–x) = x for

x = $\frac{-13}{17}$

Answer : According to the question,

-(-x) = x

LHS:- -(-X) RHS:- X

$$= -\left(-\left(\frac{-13}{17}\right)\right) = \left(\frac{-13}{17}\right)$$

$$= -\left(\frac{13}{17}\right)$$

(Since - × - = +)

LHS = RHS

Hence verified

Q. 13. Write-

(i) The set of numbers which do not have any additive identity
(ii) The rational number that does not have any reciprocal
(iii) The reciprocal of a negative rational number.

Answer : (i) Natural numbers

(ii) 0 (zero) is the rational number which does not have a reciprocal.

(iii) Is a negative rational number

The reciprocal of a negative number must itself be a negative number so that the number and its reciprocal multiply to 1.

Example:- $\frac{-3}{2}$

Reciprocal $\frac{-2}{3}$

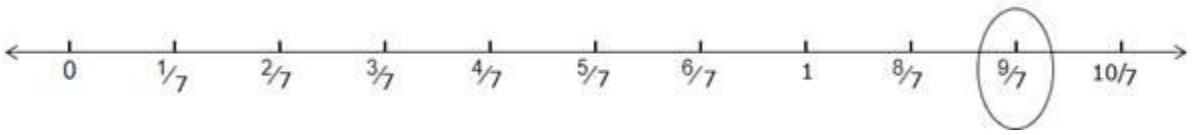
Exercise 1.2

Q. 1. Represent these numbers on the number line.

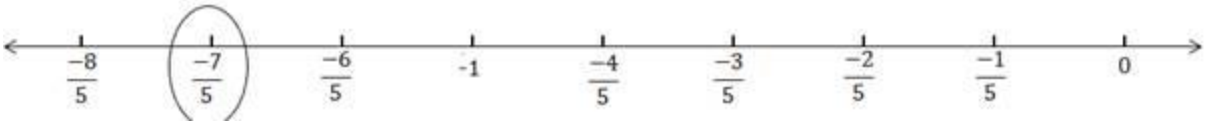
(i) 9/7 (ii) -7/5

Answer : In a rational number, the number below the bar i.e. the denominator tells the number of equal parts into which the first unit has been divided. The numerator tells 'how many' of these parts are considered.

(i) Here $\frac{9}{7}$ means 9 markings of $\frac{1}{7}$ each on the right of zero and starting from 0. The 9th marking is $\frac{9}{7}$.



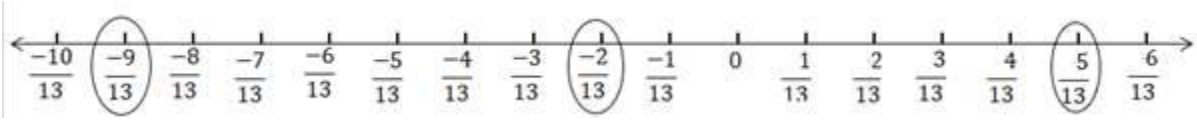
(ii) Here $\frac{-7}{5}$ means 7 markings of $\frac{1}{5}$ each on the left of zero and starting from 0. The 7th marking is $\frac{-7}{5}$.



Q. 2. Represent $-\frac{2}{13}, \frac{5}{13}, \frac{-9}{13}$ on the number line.

Answer : In a rational number, the number below the bar i.e. the denominator tells the number of equal parts into which the first unit has been divided. The numerator tells 'how many' of these parts are considered.

Here, $\frac{-2}{13}$ and $\frac{-9}{13}$ means 2 and 9 markings of $\frac{1}{13}$ each on the left of zero and starting from 0 respectively and $\frac{5}{13}$ means 5 markings of $\frac{1}{13}$ each on the right of zero and starting from 0.



Q. 3. Write five rational numbers which are smaller than $\frac{5}{6}$.

Answer : Now we have to write 5 numbers which are less than $\frac{5}{6}$

It is very simple.

$$\ldots < \frac{0}{6} < \frac{1}{6} < \frac{2}{6} < \frac{3}{6} < \frac{4}{6} < \frac{5}{6}$$

Therefore

$\frac{0}{6}, \frac{1}{6}, \frac{2}{6}, \frac{3}{6}, \frac{4}{6}$ are 5 numbers which are less than $\frac{5}{6}$

Q. 4. Find 12 rational numbers between -1 and 2.

Answer : Let us multiply and divide (-1) and 2 by 12

$$-1 = -1 \times \frac{12}{12} = \frac{-12}{12}$$

$$2 = 2 \times \frac{12}{12} = \frac{24}{12}$$

∴ 12 rational numbers are,

$$\frac{-11}{12}, \frac{-10}{12}, \frac{-9}{12}, \frac{-8}{12}, \frac{-7}{12}, \frac{-6}{12}, \frac{-5}{12}, \frac{-4}{12}, \frac{-3}{12}, \frac{-2}{12}, \frac{-1}{12}, 0$$

Q. 5. Find a rational number between $\frac{2}{3}$ and $\frac{3}{4}$.

[Hint: First write the rational numbers with equal denominators.]

Answer : Make denominators same

$$\frac{2}{3} \times \frac{8}{8} = \frac{16}{24}$$

$$\frac{3}{4} \times \frac{6}{6} = \frac{18}{24}$$

Therefore $\frac{17}{24}$ lies between $\frac{2}{3}$ and $\frac{3}{4}$

Q. 6. Find ten rational numbers between $-\frac{3}{4}$ and $\frac{5}{6}$.

Answer : Make denominators same

$$\frac{-3}{4} = \frac{-3}{4} \times \frac{3}{3} = \frac{-9}{12}$$

$$\frac{5}{6} = \frac{5}{6} \times \frac{2}{2} = \frac{10}{12}$$

∴ 10 rational numbers are,

$$\frac{-8}{12}, \frac{-7}{12}, \frac{-6}{12}, \frac{-5}{12}, \frac{-4}{12}, \frac{-3}{12}, \frac{-2}{12}, \frac{-1}{12}, 0, \frac{1}{12}$$

Exercise 1.3

Q. 1. Express each of the following decimal in the $\frac{p}{q}$ form.

(i) 0.57
(ii) 0.176
(iii) 1.00001
(iv) 25.125

Answer :

$$(i) = \frac{0.57 \times 100}{100} = \frac{57}{100}$$

$$(ii) = \frac{0.176 \times 1000}{1000} = \frac{176}{1000} = \frac{22}{125}$$

$$(iii) = \frac{1.00001 \times 100000}{100000} = \frac{100001}{100000}$$

$$(iv) = \frac{25.125 \times 1000}{1000} = \frac{25125}{1000} = \frac{201}{8}$$

Q. 2. A. Express each of the following decimals in the rational form $\left(\frac{P}{q}\right)$.

$0.\overline{9}$

Answer : Let x = **$0.\overline{9}$**

x = 0.99999….. -⟶(i)

Here the periodicity of the decimal is one

So, we multiply both sides of (i) by 10 and we get

10x = 9.999…-⟶(ii)

Subtract (i) from (ii)

10x = 9.999….

x = 0.999…

10x - x = 9.999... - 0.999...

9x = 9.0

x = 1

Hence $0.\overline{9}$ = 1

Q. 2. B. Express each of the following decimals in the rational form $\left(\frac{P}{q}\right)$.

$0.\overline{57}$

Answer : Let x = $0.\overline{57}$

X = 0.575757….. -⟶(i)

Here the periodicity of the decimal is two

So, we multiply both sides of (i) by 100 and we get

100x = 57.575757…-⟶(ii)

Subtract (i) from (ii)

100x = 57.5757….

X = 0.5757…

99x = 57.0

$$x = \frac{57}{99}$$

(Divide by 99 on both sides)

$$x = \frac{19}{33}$$

Hence $0.\overline{57} = \frac{19}{33}$

Q. 3. A. Find (x + y) ÷ (x − y) if

$$x = \frac{5}{2},\ y = \frac{-3}{4}$$

Answer : According to the question we have,

(x + y) ÷ (x − y)

Put the values of x and y

$$\left(\frac{5}{2}+\left(\frac{-3}{4}\right)\right)\div\left(\frac{5}{2}-\left(\frac{-3}{4}\right)\right)$$

$$=\left(\frac{5}{2}-\frac{3}{4}\right)\div\left(\frac{5}{2}+\frac{3}{4}\right)$$

$$=\left(\frac{10-3}{4}\right)\div\left(\frac{10+3}{4}\right)$$

$$=\left(\frac{7}{4}\div\frac{13}{4}\right)$$

$$=\frac{7}{4}\times\frac{4}{13}$$

$$=\frac{7}{13}$$

Q. 3. B. Find (x + y) ÷ (x − y) if

$$\mathbf{x}=\frac{1}{4}\,,\mathbf{y}=\frac{3}{2}$$

Answer : According to the question we have,

(x + y) ÷ (x − y)

Put the values of x and y

$$\left(\frac{1}{4}+\frac{3}{2}\right)\div\left(\frac{1}{4}-\frac{3}{2}\right)$$

$$=\left(\frac{1+6}{4}\right)\div\left(\frac{1}{4}-\frac{3}{2}\right)$$

$$= \frac{7}{4} \div \left(\frac{-5}{4}\right)$$

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

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

Q. 4. Divide the sum of $-\frac{13}{5}$ and $\frac{12}{7}$ by the product of $-\frac{13}{7}$ and $-\frac{1}{2}$.

Answer : To find the sum,

$$\frac{-13}{5} + \frac{12}{7}$$

$$= \frac{-91 + 60}{35} = \frac{-31}{35}$$

To find the sum,

$$\left(\frac{-13}{7}\right) \times \left(\frac{-1}{2}\right)$$

$$= \frac{13}{14}$$

According to the given question,

$$\frac{\text{sum}}{\text{product}}$$

$$= \frac{\frac{-31}{35}}{\frac{13}{14}}$$

$$= \frac{-31}{35} \times \frac{14}{13} = \frac{-434}{455}$$

$$= \frac{-62}{65}$$

Q. 5. If $\frac{2}{5}$ of a number exceeds $\frac{1}{7}$ of the same number by 36. Find the number.

Answer : Let the number is x

Then $\frac{2}{5}$ of x = $\frac{2\times}{5}$

According to the question,

$$\frac{2x}{5} = \frac{x}{7} + 36$$

$$\frac{2x}{5} - \frac{x}{7} = 36$$

$$\frac{14x - 5x}{35} = 36$$

$$\frac{9x}{35} = 36$$

9x = 36 × 35

(Multiply 35 on both the sides)

9X = 1260

$$x = \frac{1260}{9}$$

(Divide by 9 on both the sides)

X = 140

Q. 6. Two pieces of lengths $2\frac{3}{5}$ m and $3\frac{3}{10}$ m are cut off from a rope 11 m long. What is the length of the remaining rope?

Answer : Total length of the rope = 11m

Let the third part of rope be x

Length of first piece = $2\frac{3}{5}$ m = $\frac{13}{5}$ m

Length of second piece = $3\frac{3}{10}$ m = $\frac{33}{10}$ m

According to the question,

$$\frac{13}{5} + \frac{33}{10} + x = 11$$

$$\frac{26 + 33}{10} + x = 11$$

(By taking L.C.M.)

$$x = 11 - \frac{59}{10}$$

$$x = \frac{110 - 59}{10}$$

$$x = \frac{51}{10} = 5\frac{1}{10}$$

Q. 7. The cost of $7\frac{2}{3}$ meters of cloth is $12\frac{3}{4}$. Find the cost per metre.

Answer :

$$\text{cost of cloth} = 12\frac{3}{4} = \frac{51}{4}$$

$$\text{Length of cloth} = 7\frac{2}{3} = \frac{23}{3}$$

$$\text{Cost per meter} = \frac{51}{4} \times \frac{3}{23} = \frac{153}{92}$$

(Divide cost of cloth by length of cloth)

= 1.66 is the cost per meter

Q. 8. Find the area of a rectangular park which is $18\frac{3}{5}$ m long and $8\frac{2}{3}$ m broad.

Answer :

$\text{length} = 18\frac{3}{5}\text{m} = \frac{93}{5}$

$\text{Breadth} = 8\frac{2}{3}\text{m} = \frac{26}{3}$

$\text{Area} = \text{length} \times \text{breadth}$

$= \frac{93}{5} \times \frac{26}{3} = \frac{806}{5}$

Q. 9. What number should $\frac{-33}{16}$ be divided by to get $-\frac{11}{4}$?

Answer : Let the number which be divided by be x

According to the question

$$\frac{\frac{-13}{16}}{x} = \frac{-11}{4}$$

$$\frac{-33}{16} = \frac{-11}{4}x$$

(Multiply by x on both the sides)

$$\frac{-33}{16} \times \frac{4}{-11} = x$$

$$x = \frac{3}{4}$$

Q. 10. If 36 trousers of equal sizes can be stitched with 64 meters of cloth. What is the length of the cloth required for each trouser?

Answer : Number of trousers = 36

Length of cloth = 64m

Length required for each trouser = $\frac{64}{36} = \frac{16}{9}$ m

Q. 11. When the repeating decimal 0.363636 .... is written in simplest fractional form $\frac{p}{q}$, find the sum p + q.

Answer : x = 0.363636…(i)

Periodicity = 2

So,

100x = 36.363636….(ii)

From (i) and (ii)

100x = 36.363636….
X = 0.3636363…

_____

99x = 36

$$X = \frac{36}{99} = \frac{4}{11}$$

Then p = 4 and q = 11

p + q = 4 + 11 = 15