

b. $-\frac{4}{7}$ and $[-\frac{2}{7}]$

$$= -\frac{4}{7} + [-\frac{2}{7}]$$

$$= -\frac{4}{7} - \frac{2}{7}$$

$$= \frac{-4-2}{7}$$

$$= \frac{-6}{7}$$

5. Verify that $a+b=b+a$ for each ~~case~~ of the following.

a. $a = \frac{3}{7}, b = -\frac{1}{5}$ $= \frac{8}{35} = \frac{8}{35}$

$$= \frac{3}{7} + [-\frac{1}{5}] = -\frac{1}{5} + \frac{3}{7}$$

$$= \frac{3}{7} - \frac{1}{5} = -\frac{1}{5} + \frac{3}{7}$$

$$= \frac{15-7}{35} = \frac{-7+15}{35}$$

b. $a = -\frac{2}{9}, b = -\frac{4}{3}$

$$= -\frac{2}{9} + [-\frac{4}{3}] = -\frac{4}{3} + [-\frac{2}{9}]$$

$$= -\frac{2}{9} - \frac{4}{3} = -\frac{4}{3} - \frac{2}{9}$$

$$= -\frac{2}{9} - \frac{4 \times 3}{3 \times 3} = -\frac{4 \times 3}{3 \times 3} - \frac{2}{9}$$

$$= \frac{-2-12}{9} = \frac{-12-2}{9}$$

$$= \frac{-14}{9} = -\frac{14}{9}$$

Soln one no. is $= \frac{2}{5}$ or $\frac{7}{5}$

Product is $= \frac{14}{15}$

∴ other no. $= \frac{14}{15} \div \frac{7}{5}$

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

Ans → The other number of the product is $\frac{2}{3}$.

5 Divide the sum of $\frac{4}{9}$ and $\frac{-5}{6}$ by the sum of $\frac{2}{5}$ and $\frac{4}{3}$

Soln The sum of $\frac{4}{9}$ and $\frac{-5}{6} = \frac{4}{9} + \left[\frac{-5}{6} \right]$

$$= \frac{4-5}{9} = \frac{-1}{9}$$

$$= \frac{24-45}{54} = \frac{-21}{54}$$

$$= \frac{8-15}{18} = \frac{-7}{18}$$

P.T.O

The sum of $\frac{2}{5}$ and $\frac{4}{3} = \frac{2}{5} + \frac{4}{3}$

$$= \frac{6+20}{15} = \frac{26}{15}$$

$$\therefore \frac{-21}{54} \div \frac{26}{15} = \frac{-7}{18} \div \frac{26}{15}$$

$$= \frac{-7}{18} \times \frac{15}{26} = \frac{-35}{156}$$

$$= \frac{-7}{6} \times \frac{5}{26} = \frac{-35}{156}$$

6. In a class, $\frac{3}{5}$ of the total number of student are girls. If the number of boys is 24, then find the total strength of class.

Soln here number of boys in class = 24
The total number of girls in rational no. $= \frac{3}{5}$

P.T.O

b. $-\frac{4}{7}$ and $[-\frac{2}{7}]$

$$= -\frac{4}{7} + [-\frac{2}{7}]$$

$$= -\frac{4}{7} - \frac{2}{7}$$

$$= \frac{-4-2}{7}$$

$$= \frac{-6}{7}$$

5. Verify that $a+b=b+a$ for each ~~one~~ of the following.

a. $a = \frac{3}{7}, b = -\frac{1}{5}$

$$= \frac{3}{7} + [-\frac{1}{5}] = -\frac{1}{5} + \frac{3}{7}$$

$$= \frac{3}{7} + [-\frac{1}{5}] = -\frac{1}{5} + \frac{3}{7}$$

$$= \frac{3}{7} - \frac{1}{5} = -\frac{1}{5} + \frac{3}{7}$$

$$= \frac{15-7}{35} = -\frac{1+15}{35}$$

b. $a = -\frac{2}{9}, b = -\frac{4}{3}$

$$= -\frac{2}{9} + [-\frac{4}{3}] = -\frac{4}{3} + [-\frac{2}{9}]$$

$$= -\frac{2}{9} - \frac{4}{3} = -\frac{4}{3} - \frac{2}{9}$$

$$= -\frac{2}{9} - \frac{4 \times 3}{3 \times 3} = -\frac{4 \times 3}{3 \times 3} - \frac{2}{9}$$

$$= \frac{-2-12}{9} = -\frac{12-2}{9}$$

$$= \frac{-14}{9} = -\frac{14}{9}$$

$$\therefore \text{time} = 3\frac{1}{4} \text{ or } \frac{13}{4} \text{ and distance } 12\frac{3}{2} \text{ or } \frac{27}{2}$$

$$\therefore \text{speed} = \frac{27}{2} \div \frac{13}{4}$$

$$= \frac{27}{2} \times \frac{4}{13} = \frac{54}{13} \text{ or } 4\frac{2}{13} \text{ km/h}$$

3. The length and breadth of a rectangle are $6\frac{1}{2}$ m and $2\frac{2}{5}$ m respectively. Find the ² area and ⁵ the ~~per~~ perimeter of the $\square$.

Soln here length of $\square = 6\frac{1}{2}$ or $\frac{13}{2}$

and breadth of $\square = 2\frac{2}{5}$ or $\frac{12}{5}$

$$\begin{aligned} \text{The perimeter of } \square &= 2(l+b) \\ &= 2\left[\frac{13}{2} + \frac{12}{5}\right] \end{aligned}$$

P.T.O

$$= 2\left[\frac{65+24}{10}\right]$$

$$= 2\left[\frac{89}{10}\right]$$

$$= 2 \times \frac{89}{10}$$

$$= \frac{89}{5} \text{ m or } 17.8 \text{ m}$$

$$\text{The area of } \square = \frac{13}{2} \times \frac{12}{5}$$

$$= \frac{13}{2} \times \frac{12}{5}$$

$$= \frac{78}{5} \text{ or } 15.6 \text{ m}^2$$

Ans The area is 15.6 m^2 and Perimeter is 17.8 m

4. The product of two rational number is $\frac{14}{15}$. If one of the numbers is $1\frac{2}{5}$, then find the other.

$$\frac{-30}{16}, \frac{-31}{16}, \frac{-32}{16}, \frac{-35}{16}, \frac{-38}{16}, \frac{-40}{16}, \frac{-45}{16},$$

$$\frac{-50}{16}, \frac{-52}{16}, \frac{-60}{16}, \frac{-70}{16}$$

8. Find four rational numbers between x and $|x|$ here x is $-\frac{2}{7}$

Soln here $x = -\frac{2}{7}$ and $|x|$ can also be written as $|\frac{-2}{7}| = \frac{2}{7}$

∴ numbers between the x and $|x|$ are

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

$$= \frac{-10}{35}, \frac{-5}{35}, \frac{-1}{35}, 0, \frac{1}{35}, \frac{10}{35}$$

Ex 1.4

1. Smita takes $2\frac{1}{3}$ hours to complete one round of jogging in a park. How many hours will she take to complete 6 rounds of the park?

Soln. Given that
Smita takes time to complete round $= 2\frac{1}{3}$ hours

$$\therefore \text{For 6 rounds she will take time of } = 2\frac{1}{3} \times 6$$

$$= \frac{7}{3} \times \frac{6}{1} = 14 \text{ hours}$$

Ans. Smita will take 14 hours for 6 rounds

2. A car covers $12\frac{3}{2}$ km in $3\frac{1}{4}$ hours. Find its speed

Soln. Formula of speed = $\frac{\text{distance}}{\text{time}}$

$$\therefore \text{A car takes } 12\frac{3}{2} \text{ km in } 3\frac{1}{4}$$

4. From each of the following rational numbers, check that $x \div y \neq y \div x$

a. $x = \frac{1}{4}, y = \frac{35}{48}$

$$= \frac{\frac{1}{4} \div \frac{35}{48}}{\frac{35}{48} \div \frac{1}{4}} = \frac{\frac{1}{4} \times \frac{48}{35}}{\frac{35}{48} \times \frac{4}{1}} = \frac{\frac{12}{5}}{\frac{5}{12}} \neq \frac{5}{12}$$

b. $x = 10, y = -\frac{20}{19}$

$$= \frac{10 \div -\frac{20}{19}}{-\frac{20}{19} \div 10} = \frac{10 \times \frac{19}{-20}}{-\frac{20}{19} \times \frac{1}{10}} = \frac{-\frac{19}{2}}{-\frac{2}{19}} = \frac{19}{2} \neq -\frac{2}{19}$$

5. Verify the property, $x \times (y \times z) = (x \times y) \times z$, for each of the following.

a. $x = -\frac{7}{8}, y = -\frac{4}{9}, z = \frac{7}{9}$

$$= \frac{-7}{8} \times \left[\frac{-4}{9} \times \frac{7}{9} \right] = \left[\frac{-7}{8} \times \frac{4}{9} \right] \times \frac{7}{9}$$

$$= \frac{-7}{8} \times \frac{-4}{9} = \frac{+4}{8} \times \frac{7}{9}$$

PTD

$$= \frac{+28}{72} = \frac{+28}{72}$$

$$= \frac{+7}{18} = \frac{+7}{18}$$

b. $x = \frac{2}{3}, y = \frac{4}{7}, z = \frac{3}{5}$

$$= \frac{2}{3} \times \left[\frac{4}{7} \times \frac{3}{5} \right] = \left[\frac{2}{3} \times \frac{4}{7} \right] \times \frac{3}{5}$$

$$= \frac{2}{3} \times \left[\frac{12}{35} \right] = \left[\frac{8}{21} \right] \times \frac{3}{5}$$

$$= \frac{2}{3} \times \frac{12}{35} = \frac{8}{21} \times \frac{3}{5}$$

$$= \frac{248}{105} = \frac{248}{105}$$

$$= \frac{8}{35} = \frac{8}{35}$$

6. Verify the property, $x \times (y + z) = x \times y + x \times z$, for each of the following.

a. $x = \frac{3}{11}, y = -\frac{11}{15}, z = \frac{2}{9}$

$$= \frac{3}{11} \times \left[-\frac{11}{15} + \frac{2}{9} \right] = \frac{3}{11} \times \frac{11}{15} + \frac{3}{11} \times \frac{2}{9}$$

$$= \frac{3}{11} \times \left[\frac{-99 + 30}{135} \right] = \frac{3}{11} \times \frac{-44}{15} + \frac{3}{11} \times \frac{2}{9}$$

PTD

Ex 1.2

1. Find the multiplicative inverse of each of the following.

a. $-3 = \frac{-1}{3}$

b. $\frac{2}{3} = \frac{3}{2}$

c. $-8^{-2} \times \frac{-3}{4}$

d. $\frac{-4}{9} \times \frac{27}{28}$

e. $-6 = \frac{-1}{6}$

$= \frac{-4}{9} \times \frac{27}{28}$
 $= \frac{-4}{9} \times \frac{27}{28}$
 $= \frac{-3}{7} = \frac{-7}{3}$

2. Write the name of the property used in each of the following.

a. $3 \times \left[\frac{4}{5} + \frac{3}{7} \right] = 3 \times \frac{4}{5} + 3 \times \frac{3}{7}$

$\Rightarrow$ Distributive property

b. $\frac{4}{9} \times \frac{9}{4} = 1 = \frac{9}{4} \times \frac{4}{9}$

$\Rightarrow$ Existence of the multiplicative inverse.

c. $\frac{3}{11} \times \frac{11}{15} = \frac{11}{15} \times \frac{3}{11}$

$\Rightarrow$ Commutative property

d. $\left[\frac{7}{10} \times \frac{5}{14} \right] \times \frac{2}{9} = \frac{7}{10} \times \left[\frac{5}{14} \times \frac{2}{9} \right]$

$\Rightarrow$ Associative property

3. Verify the commutative property of multiplication for the following rational numbers.

a. $-\frac{3}{11}$ and $-\frac{5}{9}$

b. $\frac{13}{15}$ and 5

$= -\frac{3}{11} \times -\frac{5}{9} = -\frac{5}{9} \times -\frac{3}{11}$

$= \frac{13}{15} \times \frac{5}{1} = \frac{5}{1} \times \frac{13}{15}$

$= \frac{15}{99} = \frac{15}{99}$

$= \frac{13}{15} = \frac{13}{15}$

$$= \frac{2}{9} - \frac{14}{15} = \frac{-1}{9} - \frac{3}{5}$$

$$= \frac{30-126}{135} = \frac{-5-27}{45}$$

$$= \frac{96^{32}}{135^{45}} = \frac{32}{45}$$

8. For $x = +\frac{9}{10}$ and $y = \frac{-5}{7}$, verify that $(-x) + (-y) = -(x+y)$

Soln here $x = +\frac{9}{10}$ and $y = \frac{-5}{7}$

$$\therefore (-x) + (-y) = -(x+y)$$

$$= -x - y = -(x+y)$$

$$= -\left[\frac{9}{10}\right] - \left[\frac{-5}{7}\right] = -\left[\left(\frac{9}{10}\right) + \left(\frac{-5}{7}\right)\right]$$

$$= -\frac{9}{10} + \frac{5}{7} = -\left[\frac{9}{10} - \frac{5}{7}\right]$$

$$= -\frac{63+50}{70} = -\left[\frac{63-50}{70}\right]$$

9. If $x = \frac{3}{5}$, $y = \frac{17}{35}$, $z = \frac{4}{7}$ then check that $(x-y)-z \neq x-(y-z)$

Soln here $x = \frac{3}{5}$, $y = \frac{17}{35}$ and $z = \frac{4}{7}$

$\therefore$ To prove $(x-y)-z \neq x-(y-z)$

$$\text{The Equation} = \left[\frac{3}{5} - \left[\frac{17}{35}\right]\right] - \left[\frac{4}{7}\right] \neq \frac{3}{5} - \left[\frac{17}{35} - \left[\frac{4}{7}\right]\right]$$

$$= \left[\frac{3}{5} - \frac{17}{35}\right] - \frac{4}{7} \neq \frac{3}{5} - \left[\frac{17}{35} - \frac{4}{7}\right]$$

$$= \left[\frac{3 \times 7 - 17}{5 \times 7} - \frac{4}{7}\right] \neq \frac{3}{5} - \left[\frac{17 - 4 \times 5}{35 - 7 \times 5}\right]$$

$$= \left[\frac{21-17}{35}\right] - \frac{4}{7} \neq \frac{3}{5} - \left[\frac{17-20}{35}\right]$$

$$= \frac{4}{35} - \frac{4 \times 5}{7 \times 5} \neq \frac{3}{5} - \left[\frac{-4}{35}\right]$$

$$= \frac{4}{35} - \frac{4 \times 5}{7 \times 5} \neq \frac{3 \times 7 + 5}{5 \times 7} - \frac{5}{35}$$

$$= \frac{4-20}{35} \neq \frac{21+5}{35}$$

$$= \frac{16}{35} \neq \frac{26}{35}$$

Page No.

Date

$$\therefore \text{The each one get} = \frac{25}{3} \div \frac{5}{1}$$
$$= \frac{25}{3} \times \frac{1}{5} = \frac{5}{3} \text{ kg}$$

$\therefore$ The $\frac{5}{3}$ kg of grapes will each gets.

6. For each of the following check that $a-b \neq b-a$

a. $a = \frac{4}{3}, b = \frac{2}{5}$

$b-a = \frac{6}{7}, b = -\frac{3}{8}$

$\frac{4}{3} - \frac{2}{5} = \frac{2}{5} - \frac{4}{3}$

$= -\frac{6}{7} - [-\frac{3}{8}] = -\frac{3}{8} - [-\frac{6}{7}]$

$\frac{20-6}{15} = \frac{6-20}{15}$

$= -\frac{6}{7} + \frac{3}{8} = -\frac{3}{8} + \frac{6}{7}$

$\frac{24}{15} = \frac{-24}{15}$

$= -\frac{48+21}{56} = \frac{-21+48}{56}$

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

$= -\frac{21}{56} = \frac{21}{56}$

7. Verify the associative property of addition for the following sets of rational nos.

a. $-\frac{7}{8}, \frac{3}{4}, \frac{1}{2}$

P.T.O

$\Rightarrow -\frac{7}{8} + [\frac{3}{4} + \frac{1}{2}] = [-\frac{7}{8} + \frac{3}{4}] + \frac{1}{2}$

$\Rightarrow -\frac{7}{8} + [\frac{6+4}{4}] = [-\frac{7}{8} + \frac{3 \times 2}{4 \times 2}] + \frac{1}{2}$

$\Rightarrow -\frac{7}{8} + \frac{10}{8} = [-\frac{7}{8} + \frac{6}{8}] + \frac{1}{2}$

$\Rightarrow -\frac{7+10}{8} = -\frac{1}{8} + \frac{1 \times 4}{2 \times 4}$

$\Rightarrow \frac{-7}{8} + \frac{3}{8} = \frac{-1+4}{8} = \frac{+3}{8}$

$\frac{0}{8} + \frac{3}{8} = \frac{+3}{8}$

b. $\frac{2}{8}, -\frac{1}{3}, -\frac{3}{5}$

$= \frac{2}{8} + [-\frac{1}{3} + [-\frac{3}{5}]] = [\frac{2}{8} + [-\frac{1}{3}]] + [-\frac{3}{5}]$

$= \frac{2}{8} + [-\frac{1}{3} + \frac{3}{5}] = [\frac{2}{8} + \frac{-1}{3}] - \frac{3}{5}$

$= \frac{2}{8} + [\frac{-5-9}{15}] = [\frac{2}{8} + \frac{-1 \times 3}{3 \times 3}] - \frac{3}{5}$

$= \frac{2}{8} + [\frac{-14}{6}] = [\frac{2-3}{3}] - \frac{3}{5}$

ad

the total no. of boys in rational no. = $1 = \frac{3}{3}$

$$= \frac{1}{1} - \frac{3}{6}$$

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

∴ The total no. of student in a class:
let the total no. of student be x

$$= \frac{2}{5} \times x = 24$$

$$2x = 24 \times \frac{5}{2}$$

$$x = 60$$

Ans In this class there are 60 students.

7. From a wire 10 m long two pieces of lengths $\frac{13}{5}$ m and $\frac{33}{10}$ m are cut. What is the length of the remaining wire?

Soln The wire is of = 10 m
Two pieces to be cutted = $\frac{13}{5}$ m and $\frac{33}{10}$ m

$$\text{The remained wire} = \left[\frac{13}{5} + \frac{33}{10} \right] - 10$$

$$= \left[\frac{26}{10} + \frac{33}{10} \right] - 10$$

$$= \frac{59}{10} - \frac{100}{10}$$

$$= \frac{59-100}{10} = \frac{-41}{10}$$

Ans ∴ The remained wire is of 4.1 m.

8. If a basket has 25 kg of grapes and if it is to be distributed among 5 children equally, how many grapes will the each get?

Soln A basket contains which has 25 kg weight. It is needed to distributed among 5 children - evenly.

5. Find six rational number between $\frac{3}{4}$ and $\frac{1}{2}$.

Soln $\therefore$ here LCM = 4

$$= \frac{3 \times 1}{4 \times 1} \text{ and } \frac{1 \times 2}{2 \times 2} = \frac{3}{4} \text{ and } \frac{2}{4}$$

To find six rational number in between of the number we need to multiply by 7

$$= \frac{3 \times 7}{4 \times 7} = \frac{21}{28} \text{ and } \frac{2 \times 7}{4 \times 7} = \frac{14}{28}$$

the number are: $\frac{20}{28}, \frac{19}{28}, \frac{18}{28}, \frac{17}{28}, \frac{16}{28}, \frac{15}{28}$

6. Find five rational numbers between 9.1 and 9.5

Soln 9.1 and 9.5 can be written as $\frac{91}{10}$ and $\frac{95}{10}$

To find five rational nos between them

we need to multiply by 6

$$\frac{91 \times 6}{10 \times 6} = \frac{546}{60} \text{ and } \frac{95 \times 6}{10 \times 6} = \frac{570}{60}$$

$$= \frac{546}{60}, \frac{550}{60}, \frac{552}{60}, \frac{556}{60}, \frac{560}{60}, \frac{570}{60}$$

7. Find 15 rational numbers between -5 and -1. -5 and -1 can also be written as $\frac{-5}{1}$ and $\frac{-1}{1}$

$\Rightarrow$ -5 and -1 can also be written as $\frac{-5}{1}$ and $\frac{-1}{1}$

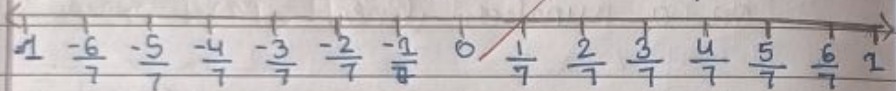
To find rational nos between them we need to multiply 16

$$\frac{-5 \times 16}{1 \times 16} = \frac{-80}{16} \text{ and } \frac{-1 \times 16}{1 \times 16} = \frac{-16}{16}$$

$\therefore$ The nos are $\frac{-19}{16}, \frac{-20}{16}, \frac{-23}{16}, \frac{-29}{16}$

P.T.O

2. Represent $-\frac{2}{7}$ and $\frac{2}{7}$ on the same number line. Also the points representing them equidistant from the origin.



3. Arrange the following the rational numbers in ascending order.

a. $-\frac{3}{8}, -\frac{4}{5}, \frac{1}{4}$

LCM = 40 // $-\frac{3 \times 5}{8 \times 5}, \frac{4 \times 8}{5 \times 8}, \frac{1 \times 10}{4 \times 10}$

$= \frac{15}{40}, -\frac{32}{40}, \frac{10}{40}$

* In ascending order $= \frac{15}{40} < \frac{10}{40} < -\frac{32}{40}$

or $-\frac{3}{8} < -\frac{4}{5} < \frac{1}{4}$

b. $\frac{5}{9}, -\frac{1}{6}, -\frac{7}{12}$

$= \text{LCM} = 36$

$= \frac{5 \times 4}{9 \times 4} = \frac{20}{36}, -\frac{1 \times 6}{6 \times 6} = -\frac{6}{36}, -\frac{7 \times 3}{12 \times 3} = -\frac{21}{36}$

$= -\frac{21}{36} < -\frac{6}{36} < \frac{20}{36} \therefore -\frac{7}{12} < -\frac{1}{6} < \frac{5}{9}$

4. Find seven rational numbers between $-\frac{3}{11}$ and $-\frac{4}{11}$

Soln $-\frac{3 \times 8}{11 \times 8}$ and $-\frac{4 \times 8}{11 \times 8}$

$\Rightarrow -\frac{24}{88}$ and $-\frac{32}{88}$ ~~no numbers between are~~

$\therefore$ Numbers between these are rational nos

$\Rightarrow -\frac{25}{88}, -\frac{26}{88}, -\frac{27}{88}, -\frac{28}{88}, -\frac{29}{88}, -\frac{30}{88}, -\frac{31}{88}$

$$= \frac{1}{3} \times \frac{112^{56}}{65} = \frac{2}{15} + \frac{2}{13}$$

$$= \frac{56}{195} = \frac{36 + 20}{195}$$

$$= \frac{56}{195} = \frac{56}{195}$$

$$b. -\frac{2}{3} \times \left[\frac{6}{7} - \frac{9}{10} \right]$$

$$= -\frac{2}{3} \times \left[\frac{6}{7} - \frac{9}{10} \right] = -\frac{2}{3} \times \frac{60 - 63}{70} = -\frac{2}{3} \times \frac{-3}{70}$$

$$= -\frac{2}{3} \times \left[\frac{60 - 63}{70} \right] = -\frac{4}{7} \left[\frac{-3}{5} \right]$$

$$= \frac{2}{3} \times \frac{3}{5} = \frac{-4}{7} + \frac{3}{5}$$

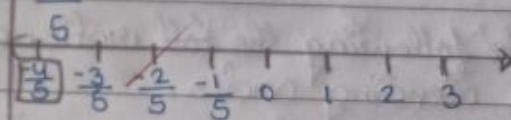
$$= \frac{1}{35} = \frac{-20 + 21}{35}$$

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

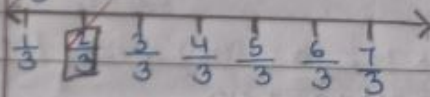
Ex 1.3

1. Represent the following rational numbers on a number line.

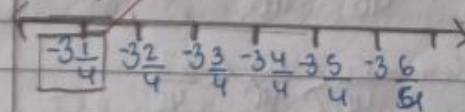
a. $-\frac{4}{5}$



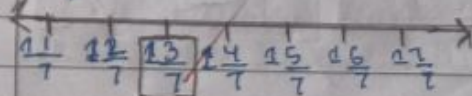
b. $\frac{2}{3}$



c. $-3\frac{1}{4}$



d. $1\frac{3}{7}$



$$= \frac{3}{11} \times \frac{69}{135} = \frac{-1}{5} + \frac{2}{33}$$

$$\frac{3}{11} \times \frac{69}{135} = \frac{33+10}{165}$$

$$\Rightarrow -\frac{23}{165} = -\frac{23}{165}$$

$$\text{b. } x = \frac{5}{6}, y = \frac{4}{5}, z = \frac{3}{8}$$

$$= x \times (y+z) = x \times y + x \times z$$

$$= \frac{5}{6} \times \left[\frac{4}{5} + \frac{3}{8} \right] = \frac{5}{6} \times \frac{4}{5} + \frac{5}{6} \times \frac{3}{8}$$

$$= \frac{5}{6} \times \left[\frac{32+15}{40} \right] = \frac{5}{6} \times \frac{47}{8} = \frac{5 \times 47}{6 \times 8}$$

$$= \frac{5}{6} \times \frac{47}{8} = \frac{2}{3} + \frac{5}{16}$$

$$= \frac{47}{24} = \frac{32+15}{48}$$

Page No.

Date

Page No.

Date

$$= \frac{47}{48} = \frac{47}{48}$$

9. If $x = \frac{3}{5}, y = \frac{17}{35}, z = \frac{4}{7}$ then check that $(x-y)-z \neq x-(y-z)$

Soln- here $x = \frac{3}{5}, y = \frac{17}{35}$ and $z = \frac{4}{7}$

To prove $(x-y)-z \neq x-(y-z)$

The equation

7 Use the distributive property of multiplication of rational numbers to find the value of the following

$$\text{a. } \frac{1}{6} \times \left[\frac{4}{5} + \frac{13}{13} \right]$$

$$= \frac{1}{6} \times \left[\frac{62+60}{65} \right] = \frac{1}{6} \times \frac{122}{65} = \frac{1 \times 122}{6 \times 65}$$

PTD

8/4/24

Page No.

Date.

Ch:-1

Rational Numbers.

- * The Numbers which starts from 1 is called Natural Number.
- * The Number which starts from 0 is called Whole Number.
- * The combination of positive and negative including zero is called Integer.
- * The Number which can represented in the form of $\frac{p}{q}$ where $q \neq 0$ is called rational number. eg:- $\frac{1}{4}, \frac{2}{6}, \frac{7}{8}$

Ex 1.1

1. Write additive Inverse

a. $\frac{3}{7} = -\frac{3}{7}$

b. $-\frac{2}{9} = \frac{2}{9}$

c. $-\frac{11}{20} = \frac{11}{20}$

d. $\frac{4}{5} - -\frac{4}{6}$ ✓

2. Name the property used in each of the following.

a. $\frac{2}{11} + [-\frac{2}{11}] = 0 = [-\frac{2}{11}] + \frac{2}{11}$

⇒ Existence of additive property

b. $\frac{8}{17} + \frac{3}{14} = \frac{3}{14} + \frac{8}{17}$ ✓

⇒ Commutative property

c. $\frac{2}{9} + [-\frac{1}{4} + \frac{3}{4}] = [-\frac{1}{4} + \frac{3}{4}] + \frac{2}{9}$

⇒ Associative property

d. $\frac{3}{4} + [-\frac{5}{6} + \frac{1}{3}] = [-\frac{5}{6} + \frac{1}{3}] + \frac{3}{4}$

⇒ Associative property

3. Verify that $[-(-x)] = x$ for each of following.

a. $x = -\frac{2}{7}$

$= [-(-\frac{2}{7})]$

$= [-[\frac{2}{7}]]$

$= [-\frac{2}{7}]$

$= \frac{2}{7}$ ✓

b. $x = \frac{3}{13}$

$= [-(-\frac{3}{13})]$

$= [-[\frac{3}{13}]]$

$= [-\frac{3}{13}]$

$= \frac{3}{13}$ ✓

4. Verify the closure property of addition for the following rational numbers.

a. $\frac{11}{13}$ and $-\frac{5}{3}$

$= \frac{11}{13} + [-\frac{5}{3}]$

$= \frac{11}{13} - \frac{5}{3}$

$= \frac{33 - 65}{39}$

$= \frac{-32}{39}$ ✓