Assignment 4

Properties of Multiplication of Rational Numbers

1. Tick (✓) the correct answer.

(a) The multiplicative inverse of $\left(-2 \times \frac{-3}{7}\right)$ is

(i) $\frac{5}{7}$ (ii) $\frac{6}{7}$ (iii) $\frac{13}{7}$ (iv) $\frac{7}{6}$

(b) If a rational number $\frac{c}{d}$ is the multiplicative inverse of $\frac{a}{b}$, then

(i) $a \neq c$ and $b = d$ (ii) $b \neq d$ and $a = c$ (iii) $a = c$ and $b = d$ (iv) $a = d$ and $b = c$

(c) For non-zero rational numbers 'x', 'y' and 'z', which one of the following is not correct?

(i) $x \div (y + z) = x \div y + x \div z$ (ii) $(y - z) \div z = x \div z - y \div z$

(iii) $(x + y) \div z = x \div z + y \div z$ (iv) $x \times (y - z) = x \times y - x \times z$

2. Multiply and write the product in its lowest terms.

(a) $\frac{27}{22} \times \frac{1}{13} \times 44$ ..... (b) $-\frac{3}{5} \times \left(-\frac{15}{7}\right) \times \left(-\frac{21}{40}\right) \times (-24)$ .....

(c) $\frac{13}{17} \times \frac{2}{3} \times 34$ ..... (d) $-\frac{2}{9} \times \left(-\frac{36}{5}\right) \times \left(-\frac{10}{9}\right) \times (-12)$ .....

3. For a rational number x, identify the property illustrated.

(a) $x \times \left(-\frac{3}{5}\right) = \left(-\frac{3}{5}\right) \times x$ ..... (b) $0 \times 2x = 0$ .....

(c) $\frac{-2x}{3} \times \frac{-3}{2x} = 1$ ..... (d) $-\frac{5}{7}\left(\frac{3}{5} \times x\right) = \left(-\frac{5}{7} \times \frac{3}{5}\right)x$ .....

4. Verify the property $x \times y = y \times x$ for the given values of 'x' and 'y'.

(a) $x = \frac{-2}{5}$ and $y = \frac{1}{3}$ ..... (b) $x = \frac{3}{7}$ and $y = \frac{-2}{5}$ .....

5. Verify the property $x \times (y \times z) = (x \times y) \times z$ for the given values of 'x', 'y' and 'z'.

(a) $x = \frac{3}{2}$, $y = \frac{-5}{3}$ and $z = \frac{7}{5}$ ..... (b) $x = \frac{5}{3}$, $y = \frac{3}{5}$ and $z = \frac{-4}{7}$ .....

6. Verify the property $x \times (y + z) = (x \times y) + (x \times z)$ for the given values.

(a) $x = \frac{-3}{2}$, $y = \frac{3}{5}$ and $z = \frac{-1}{3}$ ..... (b) $x = \frac{7}{3}$, $y = \frac{-5}{2}$ and $z = \frac{-3}{5}$ .....

7. Write True (T) or False (F) for the following statements.

(a) $\frac{-5x}{7} \times \frac{-7}{5x} = 1$ .....

(b) For non-zero rational numbers x, y and z; $(x + y)^{-1} = x^{-1} + y^{-1}$. .....

(c) Multiplicative Inverse of $\frac{-5}{9}$ is $\frac{5}{9}$. .....

(d) Reciprocal of $\frac{x}{y}$ is $\frac{p}{q}$, if $\frac{x}{y} \times \frac{p}{q} = 1$. .....

Multiplication and Division of Rational Numbers

Assignment 5

1. Tick (✓) the correct answer.

(a) The reciprocal of $\left|\frac{2}{5} \times \frac{-17}{13}\right|$ is

(i) $\frac{-65}{34}$ (ii) $\frac{-15}{65}$ (iii) $\frac{2}{65}$ (iv) $\frac{34}{65}$

(b) The product of two rational numbers is $\frac{-14}{81}$. If one of the numbers is $\frac{-7}{162}$, then the other number is

(i) $\frac{4}{1}$ (ii) $\frac{-1}{4}$ (iii) $\frac{-7}{162}$ (iv) $\frac{-35}{162}$

(c) If the sum of two rational numbers $\frac{-13}{5}$ and $\frac{12}{7}$ is divided by their difference taken in order, then the number so obtained is

(i) $\frac{-151}{35}$ (ii) $\frac{-31}{35}$ (iii) $\frac{31}{151}$ (iv) 1

2. Find the reciprocal of the following.

(a) $\frac{-1}{4} \times \frac{7}{5}$ ..... (b) $\frac{-3}{4} \times \frac{5}{2}$ ..... (c) $\frac{2}{-3} \times \frac{1}{5}$ ..... (d) $\frac{4}{-5} \times \frac{2}{3}$ .....

3. Simplify the following, using distributive property of rational numbers.

(a) $\left\{\frac{6}{5} \times \left(-\frac{1}{12}\right)\right\} + \left\{\frac{6}{5} \times \frac{5}{12}\right\}$ .....

(b) $\left\{\frac{3}{7} \times \left(-\frac{1}{5}\right)\right\} + \left\{\frac{3}{7} \times \frac{4}{5}\right\}$ .....

(c) $\left\{\frac{2}{9} \times \frac{1}{4}\right\} + \left\{\frac{2}{9} \times \left(-\frac{1}{5}\right)\right\}$ .....

(d) $\left\{\frac{3}{4} \times \frac{4}{5}\right\} + \left\{\frac{3}{4} \times \left(-\frac{2}{7}\right)\right\}$ .....

4. Write the product for the following in its lowest terms.

(a) multiply $\frac{5}{9}$, by the reciprocal of $\frac{-4}{7}$. .....

(b) multiply $\frac{1}{7}$, by the reciprocal of $\frac{-3}{8}$. .....

5. Find the other rational number, if one rational number is $\frac{p}{q}$ and the product of the two rational numbers is $\frac{r}{s}$.

(a) $\frac{p}{q} = \frac{4}{5}, \frac{r}{s} = \frac{8}{15}$ .....

(b) $\frac{p}{q} = \frac{6}{5}, \frac{r}{s} = \frac{-12}{13}$ .....

6. By what rational number should we multiply $\frac{P}{Q}$ so that the product is $\frac{R}{S}$?

(a) $\frac{P}{Q} = \frac{-8}{13}, \frac{R}{S} = \frac{4}{13}$ .....

(b) $\frac{P}{Q} = \frac{-15}{14}, \frac{R}{S} = \frac{16}{7}$ .....

7. Verify the property "reciprocal of (x × y) = reciprocal of x × reciprocal of y" for the given values.

(a) $x = \frac{7}{11}$ and $y = \frac{3}{2}$ .....

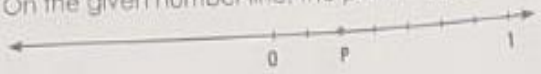
(b) $x = \frac{5}{7}$ and $y = \frac{6}{5}$ .....

Assignment 6

Representation of Rational Numbers on a Number Line

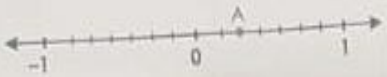
1. Tick (✓) the correct answer.

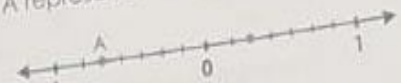
(a) On the given number line, the point P represents the rational number

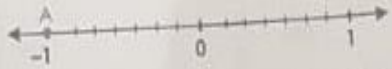


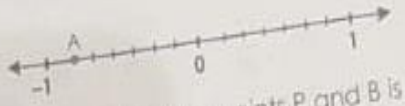
(i) $\frac{2}{3}$ (ii) $\frac{(2+3)}{7}$ (iii) $\frac{2}{7}$ (iv) $\frac{3}{7}$

(b) On which of the following number lines, the point A represents the rational number $\frac{-5}{7}$.

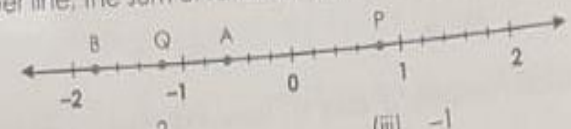
(i) 

(ii) 

(iii) 

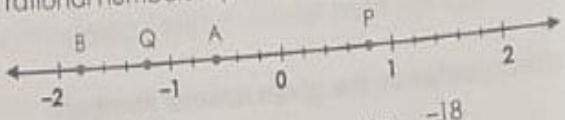
(iv) 

(c) On the number line, the sum of rational numbers represented by the points P and B is



(i) $\frac{2}{5}$ (ii) $\frac{-2}{5}$ (iii) -1 (iv) 1

(d) The product of rational numbers represented by the points A and Q on the number line is



(i) $\frac{9}{25}$ (ii) $\frac{18}{25}$ (iii) $\frac{-18}{25}$ (iv) $\frac{-9}{25}$

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

(a) $\frac{1}{5}$ and $\frac{6}{5}$

(b) $\frac{3}{5}$ and $\frac{8}{5}$

(c) $\frac{2}{5}$ and $\frac{7}{5}$

(d) $\frac{2}{5}$ and $\frac{9}{5}$

(e) $\frac{3}{5}$ and $\frac{7}{5}$

(f) $\frac{3}{2}$ and $-\frac{1}{5}$

(g) $\frac{-3}{11}$, $\frac{-6}{11}$, and $\frac{-13}{11}$

(h) $\frac{-4}{10}$, $\frac{-8}{10}$ and $\frac{-14}{10}$

(i) $\frac{-7}{10}$, $\frac{-9}{10}$ and $\frac{-13}{10}$