CLASS NOTES-ANSWERS

EXERCISE 1.1

1. Using appropriate properties find.

(i) $(-\frac{2}{3})\times\frac{3}{5}+\frac{5}{2}-\frac{3}{5}\times\frac{1}{6}$ (ii) $\frac{2}{5}\times(-\frac{3}{7})-\frac{1}{6}\times\frac{3}{2}+\frac{1}{14}\times\frac{2}{5}$

Answer:

(i) $(-\frac{2}{3})\times\frac{3}{5}+\frac{5}{2}-\frac{3}{5}\times\frac{1}{6}$

$=\frac{3}{5}\times(-\frac{2}{3})-\frac{3}{5}\times\frac{1}{6}+\frac{5}{2}$ (By commutativity of multiplication & addition)

$=\frac{3}{5}\times(-\frac{2}{3}-\frac{1}{6})+\frac{5}{2}$

$=\frac{3}{5}\times(-\frac{4}{6}-\frac{1}{6})+\frac{5}{2}$

$=\frac{3}{5}\times(-\frac{5}{6})+\frac{5}{2}$

$=\frac{-3}{6}+\frac{5}{2}$

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

$=\frac{4}{2}$

$=2$

(ii) $\frac{2}{5}\times(-\frac{3}{7})-\frac{1}{6}\times\frac{3}{2}+\frac{1}{14}\times\frac{2}{5}$

$=\frac{2}{5}\times(-\frac{3}{7})+\frac{2}{5}\times\frac{1}{14}-\frac{1}{6}\times\frac{3}{2}$ (By commutativity of multiplication & addition)

$=\frac{2}{5}\times(-\frac{3}{7}+\frac{1}{14})-\frac{1}{6}\times\frac{3}{2}$

$=\frac{2}{5}\times(-\frac{6}{14}+\frac{1}{14})-\frac{1}{6}\times\frac{3}{2}$

$=\frac{2}{5}\times(\frac{-5}{14})-\frac{1}{6}\times\frac{3}{2}$

$=\frac{-1}{7}-\frac{1}{6}\times\frac{3}{2}$

$= \frac{-1}{7} - \frac{1}{4}$

$= \frac{-4}{28} - \frac{7}{28}$

$= \frac{-11}{28}$

2. Write the additive inverse of each of the following.

(i) $\frac{2}{8}$ (ii) $\frac{-5}{9}$ (iii) $\frac{-6}{-5}$ (iv) $\frac{2}{-9}$ (v) $\frac{19}{-6}$

Answer:

(i) $\frac{2}{8} = -\frac{2}{8}$

(ii) $\frac{-5}{9} = \frac{5}{9}$

(iii) $\frac{-6}{-5} = -(\frac{-6}{-5}) = -\frac{6}{5}$

(iv) $\frac{2}{-9} = \frac{2}{9}$

(v) $\frac{19}{-6} = \frac{19}{6}$

3. Verify that –(– x) = x for.

(i) $x = \frac{11}{15}$ (ii) $x = -\frac{13}{17}$

Answer:

(i) $x = \frac{11}{15}$

$-(-x) = -(-\frac{11}{15}) = \frac{11}{15} = x$

(ii) $x = -\frac{13}{17}$

$-(-x) = -[-(-\frac{13}{17})] = -\frac{13}{17} = x$

4. Find the multiplicative inverse of the following.

(i) −13 (ii) $\frac{-13}{19}$ (iii) $\frac{1}{5}$ (iv) $\frac{-5}{8} \times \frac{-3}{7}$

(v) $-1 \times \frac{-2}{5}$ (vi) -1

Answer:

(i) -13, its multiplicative inverse is $\frac{1}{-13}$

(ii) $\frac{-13}{19}$, its multiplicative inverse is $\frac{19}{-13}$

(iii) $\frac{1}{5}$, its multiplicative inverse is 5

(iv) $\frac{-5}{8} \times \frac{-3}{7} = \frac{15}{56}$, its multiplicative inverse is $\frac{56}{15}$

(v) -1 $\times \frac{-2}{5} = \frac{2}{5}$, its multiplicative inverse is $\frac{5}{2}$

(vi) -1, its multiplicative inverse is -1

5. Name the property under multiplication used in each of the following.

(i) $\frac{-4}{5} \times 1 = 1 \times \frac{-4}{5} = \frac{-4}{5}$

(ii) $\frac{-13}{17} \times \frac{-2}{7} = \frac{-2}{7} \times \frac{-13}{17}$

(iii) $\frac{-19}{29} \times \frac{29}{-19} = 1$

Answer:

(i) $\frac{-4}{5} \times 1 = 1 \times \frac{-4}{5} = \frac{-4}{5}$

$\therefore$ 1 is the multiplicative identity and here, property of multiplicative identity is used.

(ii) $\frac{-13}{17} \times \frac{-2}{7} = \frac{-2}{7} \times \frac{-13}{17}$

Commutativity of multiplication of rational numbers is used here.

(iii) $\frac{-19}{29} \times \frac{29}{-19} = 1$

Multiplicative Inverse..

6. Multiply $\frac{6}{13}$ by the reciprocal of $\frac{-7}{16}$.

Answer:

Reciprocal of $\frac{-7}{16}$ is $\frac{16}{-7}$

$\frac{6}{13} \times \frac{-7}{16} = \frac{96}{-91} = -\frac{96}{91}$

7. Tell what property allows you to compute $\frac{1}{3} \times (6 \times \frac{4}{3})$ as $(\frac{1}{3} \times 6) \times \frac{4}{3}$.

Answer: Associativity of multiplication of rational numbers is used here.

8. Is $\frac{8}{9}$ the multiplicative inverse of -1 $\frac{1}{8}$? Why or why not?

Answer: -1 $\frac{1}{8} = \frac{-9}{8}$

Multiplicative inverse of $\frac{-9}{8} = \frac{8}{-9}$

The multiplicative inverse of -1 $\frac{1}{8}$ is not $\frac{8}{9}$. Since, $\frac{8}{9} \times \frac{-9}{8} = -1 \neq 1$

9. Is 0.3 the multiplicative inverse of 3 $\frac{1}{3}$? Why or why not?

Answer: 3 $\frac{1}{3} = \frac{10}{3}$ and $0.3 = \frac{3}{10}$

$\frac{10}{3} \times \frac{3}{10} = 1$

Yes, 0.3 is the multiplicative inverse of 3 $\frac{1}{3}$.

10. Write.

(i) The rational number that does not have a reciprocal.

(ii) The rational number that are equal to their reciprocal.

(iii) The rational number that is equal to its negative.

Answer:

(i) Zero is the rational number which does not have a reciprocal.

(ii) The rational numbers 1 and (–1) are equal to their own reciprocals.

(iii) Rational number 0 is equal to its negative.

11. Fill in the blanks.

(i) Zero has _____ reciprocal.

(ii) The numbers _____ and _____ are their own reciprocals.

(iii) The reciprocal of – 5 is _____.

(iv) Reciprocal of $\frac{1}{x}$, where x ≠ 0 is _____.

(v) The product of two rational numbers is always a _____.

(vi) The reciprocal of a positive rational number is _____.

Answer:

(i) Zero has no reciprocal.

(ii) The numbers 1 and (–1) are their own reciprocals.

(iii) The reciprocal of (–5) is $\frac{1}{-5}$.

(iv) Reciprocal of $\frac{1}{x}$, where x ≠ 0 is x.

(v) The product of two rational numbers is always a rational number.

(vi) The reciprocal of a positive rational number is positive.