

Exercise 1.1

1. Fill in the boxes using = or \neq .

a. $(-2) \times \left[3 \times \left(\frac{1}{2} \right) \right] \square [(-2) \times 3] \times \left(\frac{1}{2} \right)$

b. $-2 + 3 \square 3 + (-2)$

c. $\left(\frac{5}{6} \right) \times \left(\frac{6}{5} \right) \times 0 \square 1$

d. $0 \div \left(\frac{-1}{5} \right) \square 0$

e. $-2 \div 0 \square 0$

f. Additive inverse of 6 $\square \frac{1}{6}$

2. Add the following using suitable property, as applicable.

a. $\frac{2}{7} + \frac{-11}{5} + \frac{-3}{7} + \frac{3}{5}$

b. $\frac{-4}{9} + \frac{-2}{7} + \frac{-5}{14} + \frac{3}{18}$

3. Using distributive property, evaluate the following.

a. $\frac{1}{5} \times \frac{1}{2} - \frac{1}{5} \times \frac{3}{2}$

b. $\frac{16}{17} \times \frac{1}{9} + \frac{16}{17} \times \left(\frac{-1}{9} \right)$

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

4. Find the additive inverse of the following.

a. $\frac{1}{2}$

b. $\frac{-3}{4}$

c. $\frac{p}{q}$

d. $-x$

e. 0

f. $\frac{-5}{-7}$

5. Find the multiplicative inverse of the following.

a. 2

b. $\frac{7}{-5}$

c. $\frac{p}{q}$

d. $-a$

e. $\frac{-5}{-7}$

f. -5

6. Find the sum of $\frac{1}{2}$, the multiplicative identity of rational number and additive inverse of $\frac{-2}{3}$.

7. Write the rational numbers which are their own multiplicative inverse.

8. Write the rational number which is equal to its additive inverse.

9. Verify the following and name the properties used.

a. $\left[\left(\frac{-2}{3} \right) \times \left(\frac{-5}{6} \right) \right] \times \frac{1}{2} = \left(\frac{-2}{3} \right) \times \left[\left(\frac{-5}{6} \right) \times \frac{1}{2} \right]$

b. $\frac{7}{9} + \frac{10}{13} = \frac{10}{13} + \frac{7}{9}$

c. $\left[\left(\frac{-1}{5} \right) + \frac{1}{2} \right] + \frac{11}{15} = \left(\frac{-1}{5} \right) + \left[\frac{1}{2} + \frac{11}{15} \right]$

d. $\frac{16}{19} \times \left(\frac{-3}{4} \right) = \left(\frac{-3}{4} \right) \times \frac{16}{19}$

10. Evaluate the following.

a. $\left(\frac{-3}{4} \right) \times \left(\frac{-5}{8} \right) \times \frac{7}{6} \times \frac{11}{15}$

b. $\frac{2}{3} \times \left(\frac{11}{7} \right) \times \left(\frac{-3}{4} \right) \times \left(\frac{-7}{5} \right)$

11. Match the following.

Column A	Column B
a. Commutative Property of Addition	i. $a + 0 = 0 + a = a$
b. Associative Property of Multiplication	ii. $a + (b + c) = (a + b) + c$
c. Associative Property of Addition	iii. $(a + b) \times c = (a \times c) + (b \times c)$
d. Commutative Property of Multiplication	iv. $a \times (b \times c) = (a \times b) \times c$
e. Additive Identity	v. $a \times 1 = 1 \times a = a$
f. Multiplicative Identity	vi. $a + b = b + a$
g. Distributive Property of Multiplication over Addition	vii. $a \times b = b \times a$

Exercise 1.1

1. a. = b. = c. ≠ d. = e. ≠ f. ≠

2. a. $\frac{-61}{35}$ b. $\frac{-58}{63}$

3. a. $\frac{-1}{5}$ b. 0 c. $\frac{-15}{4}$

4. a. $\frac{-1}{2}$ b. $\frac{3}{4}$ c. $\frac{-p}{q}$ d. x

e. 0 f. $\frac{-5}{7}$

5. a. $\frac{1}{2}$ b. $\frac{-5}{7}$ c. $\frac{q}{p}$

d. $\frac{-1}{a}$ e. $\frac{7}{5}$ f. $\frac{-1}{5}$

6. $\frac{13}{6}$

7. 1 and -1

8. 0

9. a. Associative property of multiplication

b. Commutative property of addition

c. Associative property of addition

d. Commutative property of multiplication

10. a. $\frac{77}{192}$ b. $\frac{11}{10}$

11. a. \leftrightarrow vi b. \leftrightarrow iv c. \leftrightarrow ii d. \leftrightarrow vii
e. \leftrightarrow i f. \leftrightarrow v g. \leftrightarrow iii