



Properties of Rational Numbers

1) **Commutative property:** While *adding*, any two rational numbers can be _____ in any order, and yet their _____ remains the same.

2) If $a = \frac{3}{4}$ and $b = \frac{5}{6}$, then which of the following is **true** for the **commutative property**?

a) $a + b = b - a$

c) $a + b = b + a$

b) $a + b = b - a$

d) $a - b = b - a$

3) Which of the following operations is **not** commutative for rational numbers?

a) Addition b) Subtraction c) both a and b

4) Which expression demonstrates the commutative property of

addition for rational numbers $\frac{2}{3}$ and $\frac{3}{4}$?

a) $\frac{2}{3} + \frac{3}{4} = \frac{3}{4} + \frac{2}{3}$

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

c) $\frac{2}{3} + \frac{3}{4} = \frac{3}{4} - \frac{2}{3}$

d) $\frac{2}{3} - \frac{3}{4} = \frac{3}{4} + \frac{2}{3}$



5) The **sum** of any rational number and **0** is the _____ itself.

$$\text{Thus, } \frac{a}{b} + 0 = 0 + \frac{a}{b} = \frac{a}{b}.$$

6) The **additive identity** for every rational number is _____

7) $\frac{13}{11} + 0 = \text{-----}$ a) $0 + \frac{13}{11}$ b) $\frac{13}{11}$ c) $\frac{11}{13}$ d) both a and b

8) Match the following

a) $\frac{4}{7} + \frac{1}{7} =$ $-\frac{1}{8}$

b) $\frac{7}{15} + \frac{2}{9} = \frac{2}{9} + \frac{7}{15}$ 0

c) $\frac{-1}{8} + 0$ commutative property

d) Additive identity $\frac{1}{7} + \frac{4}{7}$

9) Verify the following follows commutative property

a) $\frac{3}{5} + \frac{1}{7} = \frac{3}{5} - \frac{1}{7}$ a) yes b) no

b) $\frac{-13}{5} + \frac{2}{7} = \frac{2}{7} + \frac{-13}{5}$ a) yes b) no

10) Verify: $\frac{1}{3}, \frac{2}{7}$ follows the commutative property of addition

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|---|---|
| $\frac{1}{3} + \frac{2}{7} = \frac{7(1)}{3 \times 7} + \frac{3(2)}{3 \times 7}$ | $\frac{2}{7} + \frac{1}{3} = \frac{3(2)}{7 \times 3} + \frac{7(1)}{7 \times 3}$ |
| Sum = $\frac{(7 + 6)}{21} = \text{-----}$ | Sum = $\frac{(6 + 7)}{21} = \text{-----}$ |

commutative property of addition is verified _____