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Properties of Rational Numbers

1) *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) $a + b = b - a$

b) $a + b = b - a$

c) $a + b = b + a$

d) $a - b = b - a$

3) *Two rational numbers can be _____ in any order , and yet their _____ remains the same.*

4) *If a and b are integers, which of the following demonstrates the commutative property of multiplication for rational numbers* $\frac{a}{b}$ *and* $\frac{c}{d}$ *?*

a) $\frac{a}{b} + \frac{c}{d} = \frac{c}{d} - \frac{a}{b}$

b) $\frac{a}{b} \div \frac{c}{d} = \frac{c}{d} \div \frac{a}{b}$

c) $\frac{a}{b} - \frac{c}{d} = \frac{c}{d} - \frac{a}{b}$

d) $\frac{a}{b} \times \frac{c}{d} = \frac{c}{d} \times \frac{a}{b}$

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

a) Addition *b) Subtraction* *c) Multiplication* *d) both a and c*

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

7) Which expression demonstrates the commutative property of multiplication for rational numbers $\frac{-2}{3}$ and $\frac{5}{7}$?

a) $\frac{-2}{3} \times \frac{5}{7} = \frac{5}{7} \div \frac{-2}{3}$

b) $\frac{-2}{3} \times \frac{5}{7} = \frac{5}{7} \times \frac{-2}{3}$

c) $\frac{-2}{3} \div \frac{5}{7} = \frac{5}{7} \times \frac{-2}{3}$

d) $\frac{-2}{3} \div \frac{5}{7} = \frac{5}{7} \div \frac{-2}{3}$

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

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

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

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

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11) The product of any rational number and 1 is the _____ itself. Thus, $\frac{a}{b} \times 1 = 1 \times \frac{a}{b} = \frac{a}{b}$.

12) The **multiplicative identity** for every rational number is _____

13) $\frac{-9}{17} \times 1$ = -------- a) $1 \times \frac{-9}{17}$ b) $\frac{-9}{17}$ c) $\frac{17}{-9}$ d) both a and b

14) **Zero property of multiplication**: The product of any rational number and **0** is the _____ . Thus, $\frac{a}{b} \times 0 = 0 \times \frac{a}{b} = 0$.

15) $\frac{3}{5} \times 0$ = -------- a) $0 \times \frac{3}{5}$ b) $\frac{3}{5}$ c) 0 d) both a and c

16) Match the following

a) $\frac{4}{7} \times 0 =$	$-\frac{1}{8}$
b) $\frac{7}{15} =$	0
c) $\frac{-1}{8} + 0$	additive identity
d) Multiplicative identity	$\frac{7}{15} \times 1$
e) 0	1

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