Codingal

Properties of Rational Numbers

1) ***Closure property of multiplication:*** *The product of any two rational numbers is always a* _____.

2) *Which of the following demonstrates the closure property of multiplication for any two rational numbers* $\frac{a}{b}$ *and* $\frac{c}{d}$ *?*

   a) $\frac{a}{b} \times \frac{c}{d}$ *is a whole number*

   b) $\frac{a}{b} \times \frac{c}{d}$ *is an integer*

   c) $\frac{a}{b} \times \frac{c}{d}$ *is a rational number*

   d) *both b and c*

3) *If* $a = \frac{2}{3}$, $b = \frac{-4}{7}$, *then show that the product of a and b follows the closure property of multiplication?*

Step 1 - $\left(\frac{2}{3} \times \frac{-4}{7}\right) = \left(\frac{2 \quad -4}{3 \quad 7}\right)$

Step 2 - $\left(\frac{2}{3} \times \frac{-4}{7}\right) =$ ----------

Step 3 - Is $\frac{-8}{21}$ *Simplest form* _____

Step 4 - Thus, the product of two rational numbers $\left(\frac{2}{3} \times \frac{-4}{7}\right) = \frac{-8}{21}$ *is also a* _____.

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4) ***Closure property of division:*** *The quotient of any two rational numbers is may or may not be a* _____.

5) *Which of the following demonstrates the closure property of division for any two rational numbers* $\frac{a}{b}$ *and* $\frac{c}{d}$ *?*

a) $\frac{a}{b} \div \frac{c}{d}$ *is an integer*

b) $\frac{a}{b} \div \frac{c}{d}$ *is a rational number*

c) $\frac{a}{b} \times \frac{c}{d}$ *is a whole number*

d) *both a and c*

6) *If* $a = \frac{1}{4}$, $b = \frac{5}{3}$, *then show that the quotient of a and b follows the closure property of division ?*

Step 1 - $\left(\frac{1}{4} \div \frac{5}{3}\right) = \left(\frac{1}{4} \quad \frac{3}{5}\right)$

Step 2 - $\left(\frac{1}{4} \div \frac{5}{3}\right) =$ ----------

Step 3 - Thus, the quotient of two rational numbers $\left(\frac{1}{4} \div \frac{5}{3}\right) = \frac{3}{20}$ *is also a* _____.

7) $\frac{2}{3} \div 0 =$ _____