Chapter 1

Variables, Real Numbers, and Mathematical Models
Which one of the following is true?

A.) \( \frac{2}{3} + \frac{1}{5} = \frac{3}{8} \)

B.) \( \frac{2 + 3}{3} = \frac{2 + 3}{3} = 2 \)

C.) \( \frac{1}{3} \div \frac{1}{3} = 1 \)
Which one of the following is true?

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B.) \( \frac{2 + 3}{3} = \frac{2 + 3}{3} = 2 \)

C.) \( \frac{1}{3} \div \frac{1}{3} = 1 \)

Correct Answer: C
Which one of the following statements is true?

A.) Every rational number is an integer.

B.) Some whole numbers are not integers.

C.) Some rational numbers are not positive.
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Correct Answer: C
Which one of the following statements is true?

A.) All whole numbers are positive.

B.) Some integers are not rational numbers.

C.) Some real numbers are not rational numbers.
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A.) All whole numbers are positive.

B.) Some integers are not rational numbers.

C.) Some real numbers are not rational numbers.

**Correct Answer: C**
Which one of the following statements is true?

A.) Subtraction is a commutative operation.

B.) \[ 3y + 5y = 3 + 5 \quad y \text{ for any value of } y. \]

C.) \[ 24 \div 6 \div 2 = 24 \div 6 \div 2 \]
Which one of the following statements is true?

A.) Subtraction is a commutative operation.

B.) $3y + 5y = 3 + 5 \ y$ for any value of $y$.

C.) $24 \div 6 \div 2 = 24 \div 6 \div 2$

Correct Answer: B
Which one of the following statements is true?

A.) The sum of a positive number and a negative number is a negative number.

B.) If two numbers are both positive or both negative, then the absolute value of their sum equals the sum of their absolute values.

C.) \[ \frac{3}{4} + \left( -\frac{3}{5} \right) = -\frac{3}{20} \]
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C.) \[
\frac{3}{4} + \left( -\frac{3}{5} \right) = -\frac{3}{20}
\]

Correct Answer: C
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Which one of the following statements is true?

A.) The sum of zero and a negative number is always a negative.

B.) If one number is positive and the other negative, then the absolute value of their sum equals the sum of their absolute values.

C.) The sum of a positive number and a negative number is a positive number.
Which one of the following statements is true?

A.) The sum of zero and a negative number is always a negative.

B.) If one number is positive and the other negative, then the absolute value of their sum equals the sum of their absolute values.

C.) The sum of a positive number and a negative number is a positive number.

Correct Answer: A
Which one of the following statements is true?

A.) If $a$ and $b$ are negative numbers, then $a - b$ is a negative number.

B.) $7 - (-2) = 5$

C.) The difference between 0 and a negative number is always a positive number.
Which one of the following statements is true?

A.) If $a$ and $b$ are negative numbers, then $a - b$ is a negative number.

B.) $7 - (-2) = 5$

C.) The difference between 0 and a negative number is always a positive number.

Correct Answer: C
Which one of the following statements is true?

A.) Multiplying a negative number by a nonnegative number will always give a negative number.

B.) The product of two negative numbers is always a positive number.

C.) The product of real numbers \( a \) and \( b \) is not always equal to the product of real numbers \( b \) and \( a \).
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A.) Multiplying a negative number by a nonnegative number will always give a negative number.

B.) The product of two negative numbers is always a positive number.

C.) The product of real numbers $a$ and $b$ is not always equal to the product of real numbers $b$ and $a.$

Correct Answer: B
Which one of the following statements is true?

A.) The product of two negative numbers is always a positive.

B.) Both addition and the multiplication of two negative numbers results in a positive number.

C.) Reversing the order of the two factors in a product results in a different answer.
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A.) The product of two negative numbers is always a positive.

B.) Both addition and the multiplication of two negative numbers results in a positive number.

C.) Reversing the order of the two factors in a product results in a different answer.

Correct Answer: A
Which one of the following is true?

A.) The value of $\frac{|3-7|-2^3}{-2-3}$ is the fraction that results when $\frac{1}{3}$ is subtracted from $-\frac{1}{3}$.

B.) A miniature version of a space shuttle is an example of a mathematical model.

C.) The algebraic expression $\frac{6x+6}{x+1}$ cannot have the same value when two different replacements are made for $x$ such as $x = -3$ and $x = 3$. 
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Correct Answer: A
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Which insertion of parentheses is correct?

A.) \( 18 \div 4 \cdot \frac{1}{3} + \frac{2}{3} \) is \( \left( 18 \div 4 \cdot \frac{1}{3} \right) + \frac{2}{3} \)

B.) \( 2 \cdot 3 + 3 \cdot 5 \) is \( 2 \cdot 3 + 3 \cdot 5 \)

C.) \( 2 \cdot 5 - \frac{1}{2} \cdot 10 \cdot 9 \) is \( \left( 2 \cdot 5 - \frac{1}{2} \cdot 10 \right) \cdot 9 \)
Which insertion of parentheses is correct?

A.) \[ 18 \div 4 \cdot \frac{1}{3} + \frac{2}{3} \text{ is } \left( 18 \div 4 \cdot \frac{1}{3} \right) + \frac{2}{3} \]

B.) \[ 2 \cdot 3 + 3 \cdot 5 \text{ is } 2 \cdot 3 + 3 \cdot 5 \]

C.) \[ 2 \cdot 5 - \frac{1}{2} \cdot 10 \cdot 9 \text{ is } \left( 2 \cdot 5 - \frac{1}{2} \cdot 10 \right)9 \]

Correct Answer: A