### A.N.1: Identifying Properties: Identify and apply the properties of real numbers (closure, commutative, associative, distributive, identity, inverse)

1. Which property is illustrated by the equation $ax + ay = a(x + y)$?
   - 1) associative
   - 2) commutative
   - 3) distributive
   - 4) identity

2. The statement $2 + 0 = 2$ is an example of the use of which property of real numbers?
   - 1) associative
   - 2) additive identity
   - 3) additive inverse
   - 4) distributive

3. The equation $3(4x) = (4x)3$ illustrates which property?
   - 1) commutative
   - 2) associative
   - 3) distributive
   - 4) multiplicative inverse

4. Tori computes the value of $8 \cdot 95$ in her head by thinking $8(100 - 5) = 8 \times 100 - 8 \times 5$. Which number property is she using?
   - 1) associative
   - 2) distributive
   - 3) commutative
   - 4) closure

5. Which property of real numbers is illustrated by the equation $-\sqrt{3} + \sqrt{3} = 0$?
   - 1) additive identity
   - 2) commutative property of addition
   - 3) associative property of addition
   - 4) additive inverse

6. The equation $\ast(\Delta + \star) = \ast\Delta + \ast\star$ is an example of which property?
   - 1) associative law
   - 2) commutative law
   - 3) distributive law
   - 4) transitive law

7. While solving the equation $4(x + 2) = 28$, Becca wrote $4x + 8 = 28$. Which property did she use?
   - 1) distributive
   - 2) associative
   - 3) commutative
   - 4) identity

8. If $M$ and $A$ represent integers, $M + A = A + M$ is an example of which property?
   - 1) commutative
   - 2) associative
   - 3) distributive
   - 4) closure
9 Which property is illustrated by the equation \( \frac{3}{2} x + 0 = \frac{3}{2} x \)?
1) commutative property of addition
2) distributive property
3) additive inverse property
4) additive identity property

10 Which property is represented by the statement \( \frac{1}{2} (6a + 4b) = 3a + 2b \)?
1) commutative
2) distributive
3) associative
4) identity

11 Which property is illustrated by the equation \( 6 + (4 + x) = 6 + (x + 4) \)?
1) associative property of addition
2) associative property of multiplication
3) distributive property
4) commutative property of addition

12 Which property is illustrated by the equation \( 4x(2x - 1) = 8x^2 - 4x \)?
1) associative
2) commutative
3) distributive
4) identity

13 Which property of real numbers is illustrated by the equation \( 52 + (27 + 36) = (52 + 27) + 36 \)?
1) commutative property
2) associative property
3) distributive property
4) identity property of addition

14 A teacher asked the class to solve the equation \( 3(x + 2) = 21 \). Robert wrote \( 3x + 6 = 21 \) as his first step. Which property did he use?
1) associative property
2) commutative property
3) distributive property
4) zero property of addition

15 When solving for the value of \( x \) in the equation \( 4(x - 1) + 3 = 18 \), Aaron wrote the following lines on the board.

\[
\begin{align*}
\text{[line 1]} & \quad 4(x - 1) + 3 = 18 \\
\text{[line 2]} & \quad 4(x - 1) = 15 \\
\text{[line 3]} & \quad 4x - 1 = 15 \\
\text{[line 4]} & \quad 4x = 16 \\
\text{[line 5]} & \quad x = 4
\end{align*}
\]
Which property was used \emph{incorrectly} when going from line 2 to line 3?
1) distributive
2) commutative
3) associative
4) multiplicative inverse

16 A method for solving \( 5(x - 2) - 2(x - 5) = 9 \) is shown below. Identify the property used to obtain each of the two indicated steps.

\[
\begin{align*}
5(x - 2) - 2(x - 5) &= 9 \\
(1) \quad 5x - 10 - 2x + 10 &= 9 \\
(2) \quad 5x - 2x - 10 + 10 &= 9 \\
3x + 0 &= 9 \\
3x &= 9 \\
x &= 3
\end{align*}
\]
### A.N.1: Identifying Properties

Identify and apply the properties of real numbers (closure, commutative, associative, distributive, identity, inverse)

**Answer Section**

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<td>(1) Distributive; (2) Commutative</td>
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