6th Grade Expressions and Equations Unit Test

Multiple Choice
Identify the choice that best completes the statement or answers the question.

Solve each equation. Use models if necessary. Check your solution.

1. \(2 = 5 + r\)
   - A 3
   - B -3
   - C 7
   - D -7

2. \(p - 4 = 3\)
   - A 1
   - B -1
   - C -7
   - D 7

3. \(55 = 11r\)
   - A 44
   - B 5
   - C 605
   - D 66

4. \(5 = \frac{r}{15}\)
   - A 5
   - B 3
   - C 75
   - D 10

Find the value of each expression.

5. \(12 \div 4 \times 3 + 5 - 2\)
   - A 4
   - B 15
   - C 12
   - D 22

Write each phrase as an algebraic expression.

6. three apples less than \(b\)
   - A \(b - 3\)
   - B \(\frac{b}{3}\)
   - C \(\frac{3}{b}\)
   - D \(3 - b\)

Write each sentence as an algebraic equation.

7. The sum of 5 and a number equals 14.
   - A \(n - 5 = 14\)
   - B \(n + 14 = 5\)
   - C \(5 - n = 14\)
   - D \(n + 5 = 14\)

8. The product of \(k\) and \(-9\) equals 17.
   - A \(9k = 17\)
   - B \(-9k = 17\)
   - C \(\frac{k}{-9} = 17\)
   - D \(\frac{-9}{k} = 17\)
9. Three more than the product of \( z \) and 7 equals 12.

A. \( 12 + 3z = 7 \)  
B. \( 3 + 7z = 12 \)  
C. \( 7 + 3z = 12 \)  
D. \( 12 + 7z = 3 \)

*Use one or more properties to rewrite the expression as an equivalent expression that does not use parentheses.*

10. \( 7 + (y + 6) \)

A. \( y - 13 \)  
B. \( 7y + 42 \)  
C. \( 13 - y \)  
D. \( y + 13 \)

11. \( 8(c + 3) + 4c \)

A. \( 12c + 3 \)  
B. \( 4c + 8(c + 3) \)  
C. \( 12c + 24 \)  
D. \( 15c \)

*Name the property shown by each statement.*

12. \( 6 \times (4 \times 3) = (6 \times 4) \times 3 \)

A. Distributive Property  
B. Identity Property of Multiplication  
C. Associative Property of Multiplication  
D. Commutative Property of Multiplication

13. \( p \times q = q \times p \)

A. Commutative Property of Multiplication  
B. Distributive Property  
C. Associative Property of Multiplication  
D. Identity Property of Multiplication

14. \( (5 + m) + n = 5 + (m + n) \)

A. Distributive Property  
B. Associative Property of Addition  
C. Commutative Property of Addition  
D. Identity Property of Addition

15. \( p(q + r) = pq + pr \)

A. Distributive Property  
B. Commutative Property of Addition  
C. Identity Property of Addition  
D. Associative Property of Addition

*Use the Distributive Property to write each expression as an equivalent expression. Then evaluate the expression.*

16. \( 7(8 - 1) \)

A. \( 7 \times 8 - 7 \times 1 = 63 \)  
B. \( 7 \times (8 - 1) \times 7 = 343 \)  
C. \( 7 \times 8 - 1 = 55 \)  
D. \( 7 \times 8 - 7 \times 1 = 49 \)

17. Which expression can be used to find \( 5 \times 8.4 \) mentally?

A. \( 5 + (8 + 0.4) \)  
B. \( 5(8) + 5(0.4) \)  
C. \( 5 \times 8 \times 0.4 \)  
D. \( 5(8 \times 0.4) \)

18. Use the Distributive Property to rewrite \( 9(x + 12) \).

A. \( 9x + 21 \)  
B. \( 9(x + 12) \)  
C. \( 9x + 12 \)
Short Answer

1. If \( x \) is a number that satisfies \( 3x - 4 = 8 \), can \( x \) be equal to 5? Explain.

2. Deandre is saving money for a TV that costs $139. He has already saved $65. Write and solve an addition equation to find how much more money Deandre needs to save.

3. It takes Imani 4 times as long as Carissa to travel to school each morning. If it takes Imani 28 minutes to travel to school, write and solve a multiplication equation to find how long it takes Carissa to get to school. Explain your reasoning.

4. To make fruit punch, Jasmine pours 2.8 liters of apple juice in a bowl. This is 1.3 liters more than the amount of pineapple juice to be added to the punch. Write and solve an addition equation to find how many liters of pineapple juice Jasmine will add to the punch.

5. Mr. Hillard divided his class of students into three groups, with 6 students in each group. Write and solve a division equation to find the number of students in Mr. Hillard’s class.

6. Evaluate the expression \( w^2 - 3y \) if \( w = 5 \) and \( y = 4 \).