

Name \_\_\_\_\_

**Use the commutative property of addition to write an equivalent algebraic expression.**

1)  $x + 16$

2)  $x + 4$

3)  $2 + 3x$

4)  $7x + 2y$

5)  $7(x + 6)$

6)  $5 + 2x$

7)  $7x + 9y$

8)  $9(x + 5)$

**Use the commutative property of multiplication to write an equivalent algebraic expression.**

9)  $9x$

10)  $x + y^2$

11)  $3x + 4$

12)  $2(x + 5)$

**Use an associative property to rewrite the algebraic expression. Once grouping has been changed, simplify the resulting algebraic expression.**

13)  $9 + (5 + x)$

14)  $4 + (9 + x)$

15)  $7(5x)$

16)  $9(2x)$

Use the distributive property to rewrite the algebraic expression without parentheses. Simplify.

17)  $7(x + 7)$

18)  $4(2x + 10)$

19)  $\frac{1}{5}(15x + 10)$

20)  $8(x - 4)$

21)  $3(6x - 8)$

22)  $\frac{1}{5}(15x - 10)$

23)  $(6x + 2)7$

24)  $6(4x + 5 + y)$

25)  $2(3x + 8 + 2y)$

Simplify the algebraic expression.

26)  $9x + 3x$

27)  $6x - 3x$

28)  $8a + 3 - 5a$

29)  $8y + 8 - 3y + 1$

30)  $9a + 7 - 2a$

31)  $6y + 2 - 2y + 10$

32)  $3 + (x - 6)$

33)  $12(3x + 6) - 4$

34)  $23 + 5(6x - 3)$

35)  $10(4a + 5b) + 3(6a + 5b)$

**Write the English phrase as an algebraic expression, then simplify the expression. Let  $x$  represent the number.**

36) The difference of 6 times a number and 3 times the number

37) The difference of 8 times a number and 3 times the number

38) The difference of 7 times a number and twice times the number

39) The difference of 9 times a number and twice times the number

40) The product of 5 and a number, which is then added to the product of 13 and the number.

41) The product of 6 and a number, which is then added to the product of 11 and the number.

42) The product of 5 and a number, which is then added to the product of 14 and the number.

43) nine times the product of 5 and a number.

44) eight times the product of 5 and a number.

45) nine times the sum of 4 and a number.

46) eight increased by the product of 3 and two less than a number.

47) nine increased by the product of 2 and one less than a number.

48) The product of 2 and a number, which is then added to the product of 14 and the number.

49) nine times the product of 3 and a number.

50) seven times the sum of 3 and a number.

51) eight increased by the product of 3 and one less than a number.

## Answer Key

Testname: 01.4V01A

- 1)  $16 + x$
- 2)  $4 + x$
- 3)  $3x + 2$
- 4)  $2y + 7x$
- 5)  $7(6 + x)$
- 6)  $2x + 5$
- 7)  $9y + 7x$
- 8)  $9(5 + x)$
- 9)  $x9$
- 10)  $x + 2y$
- 11)  $x3 + 4$
- 12)  $(x + 5)^2$
- 13)  $(9 + 5) + x$ ;  $14 + x$
- 14)  $(4 + 9) + x$ ;  $13 + x$
- 15)  $(7 \cdot 5)x$ ;  $35x$
- 16)  $(9 \cdot 2)x$ ;  $18x$
- 17)  $7x + 49$
- 18)  $8x + 40$
- 19)  $3x + 2$
- 20)  $8x - 32$
- 21)  $18x - 24$
- 22)  $3x - 2$
- 23)  $42x + 14$
- 24)  $24x + 30 + 6y$
- 25)  $6x + 16 + 4y$
- 26)  $12x$
- 27)  $3x$
- 28)  $3a + 3$
- 29)  $5y + 9$
- 30)  $7a + 7$
- 31)  $4y + 12$
- 32)  $x - 3$
- 33)  $36x + 68$
- 34)  $30x + 8$
- 35)  $58a + 65b$
- 36)  $6x - 3x$ ;  $3x$
- 37)  $8x - 3x$ ;  $5x$
- 38)  $7x - 2x$ ;  $5x$
- 39)  $9x - 2x$ ;  $7x$
- 40)  $13x + 5x$ ;  $18x$
- 41)  $11x + 6x$ ;  $17x$
- 42)  $14x + 5x$ ;  $19x$
- 43)  $9(5x)$ ;  $45x$
- 44)  $8(5x)$ ;  $40x$
- 45)  $9(x + 4)$ ;  $9x + 36$
- 46)  $8 + 3(x - 2)$ ;  $3x + 2$
- 47)  $9 + 2(x - 1)$ ;  $2x + 7$
- 48)  $14x + 2x$ ;  $16x$
- 49)  $9(3x)$ ;  $27x$
- 50)  $7(x + 3)$ ;  $7x + 21$

Answer Key

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51)  $8 + 3(x - 1); 3x + 5$