

Algebra Unit 1 Study Guide

- 1** Students need to be able to:
- Evaluate numeric expressions with positive and negative numbers.
 - Use Order of Operations (PEMDAS) to simplify numeric expressions.
 - Name and give examples of the properties we have learned in this unit.
 - Write numeric and algebraic expressions and be able to simplify them.
 - Evaluate expressions with absolute value.
 - Use the formulas for arithmetic and geometric sequences.
 - Create arithmetic and geometric sequences and find the nth term of each.
 - Distinguish the difference between arithmetic and geometric sequences.
- 2** Which equation illustrates the Additive Identity Property?
- A** $\frac{1}{4} \cdot 4 = 1$
 - B** $8(9 + 0) = 8(9)$
 - C** $4(0) = 0$
 - D** $8 \cdot 1 = 8$
- 3** Name the property used in $n + 0 = 7$.
- A** Additive Identity Property
 - B** Multiplicative Inverse Property
 - C** Multiplicative Identity Property
 - D** Substitution Property

Write a verbal expression for the algebraic expression.

4 $\frac{8y^2}{3}$

- A** the difference of 8 times y squared and 3
- B** the sum of 8 times y squared and 3
- C** 8 times y squared minus three
- D** the quotient of 8 times y squared and 3

Find the product.

5 $-13(-12)$

6 $-6(-20)$

Find the sum or difference.

7 $-3 + (14)$

8 $1 + (-9)$

- 9** Evaluate the following expression if $x = 12$, $y = 4$, and $z = 8$.

$$\frac{x^2y - 2z}{4}$$

10 Simplify $-2(2g + 5)$.

11 Evaluate $6(8 - 3)$.

Find the product. Round to the nearest hundredth if your answer is a decimal. Answer in simplest fraction form if your answer is a fraction.

12 $-\frac{12}{11} * \frac{3}{8}$

13 $-2.4(14.24)$

14 $18.6(-18.87)$

15 $2.8 - 8.02$

16 Write an algebraic expression for *twenty less than Sarah's hours*.

17 Write a verbal expression for $2x - 5$

18 Evaluate $14 - |6 - 15|$

19 $-15 - 10$

20 $8.84 + (-13.33)$

21 Solve the equation.

$$a = \frac{8(12-1)}{4(4)+6} + 4$$

22 Evaluate the following expression if $a = 5$, $b = 4$, and $c = 7$.

$$3c + bc - 2a$$

23 Simplify $3(5a + b) + 4(a + 2b)$.

Name the property used in the equation. Then find the value of n .

24 $2n = 2$

25 $6 = n + 6$

26 Write an example of each of the following:

- A. Algebraic Expression in simplest form.
- B. Numeric Expression
- C. Multiplicative Property of Zero
- D. Multiplicative Inverse Property
- E. Additive Inverse Property
- F. Commutative Property
- G. Distributive Property
- H. Associative property

27 In the second game of the basketball season, Julia scored 2 points fewer than three times the number of points she scored in the first game. Let p represent the number of points that she scored in the first game. Write an expression that can be used to find the number of points scored in the second game.

- A $2p - 3$
- B $3p - 2$
- C $3p - 2p$
- D $3p + 2$

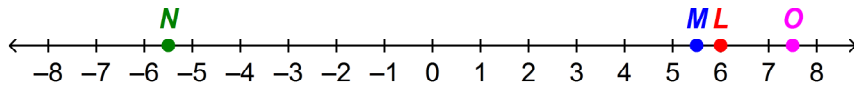
28 A charity event organizer told her volunteers that if they raised \$170 more in donations, then they would reach their overall goal of \$1,500. Let a represent the amount of donations raised so far. Write an equation that can be used to solve for a .

- A $a + 170 = 1,500$
- B $170a = 1,500$
- C $a - 170 = 1,500$
- D $a + 1,500 = 170$

29 A number problem states, “-5 times a number, minus 22 gives a result of 23.” What is the number?

- A -0.2
- B -9
- C 17.4
- D -26.6

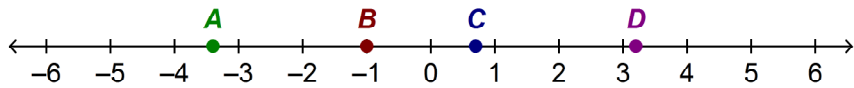
30 Which point on the number line represents the additive inverse of $5\frac{1}{2}$?



31 What is one possible answer when the number 1 is divided by a positive number larger than 1?

- A 1 C 12
 B 0 D 0.1

32 Which point on the number line is one possible answer when the number 1 is multiplied by a positive number larger than 1?



Find the value of each expression. Round decimals to the nearest hundredth if necessary.

33 $9 + 7 \times 3^2 \div 3 + 9$

34 $\frac{5(-4) + 8}{6^1 + 5 \times 6}$

35 $\frac{7 + 8 \times 8 - 4}{5 - 3(7 - 5)}$

36 $8^2 + 6^3$

37 In what order should the operations be performed in the following expression?

$5 - 7 \times 2 + 4 \div 7$

- A $\div, \times, -, +$ C $\times, \div, -, +$
 B $+, -, \div, \times$ D $-, \times, +, \div$

38 What operation should be performed first to simplify the following expression?

$2 - 8 \div 5 \times 4 + 7$

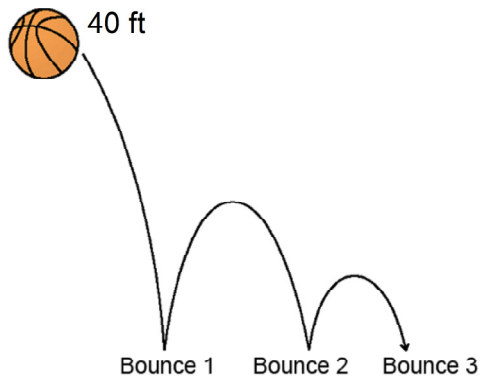
- A addition
 B division
 C multiplication
 D subtraction

39 Use the order of operations to simplify the following expression.

$16 + (14 - 6) \times 3 - 6^2 \div 6$

40 Simplify.
 $|45| - |-4|$

- 41 What is the next number in this sequence?
1.7, 5.7, 9.7, 13.7, 17.7, ...
- 42 What is the fifth term in the sequence 1,536, 1,523, 1,510, 1,497, ... ?
- 43 What is the fifth term in the sequence 17.3, 34.3, 51.3, 68.3, ...?
- 44 What is the fifth term in the sequence 3, 30, 300, 3,000, ...?
- 45 Students in Mr. Taylor's physics class conducted an experiment by dropping a basketball from a height of 40 feet and then recording the ball's height after each bounce. The ball climbed to a height of 20 feet after the first bounce, and 10 feet after the second bounce. If this pattern continues, how many feet high will the ball climb after the third bounce?



- 46 What is the sixth term in the following sequence?

n	a_n
1	4.8
2	8.3
3	11.8
4	15.3
5	18.8
6	?