Name:_____ Date:_____
Algebra 1 Band:_____

# Unit 1: Foundations of Algebra

**What is an algebraic expression for the word phrase?**

**1.** 9 less than the quotient of 6 and a number $x$

**2.** 8 less than the product of a number $x$ and 4

**LT#1:** Simplify expressions involving exponents.

**3.** In the absence of predators, the rabbit population in a forest has grown to $5^6$ over the past 5 years. What is the rabbit population in the forest?

**LT#2:** Use order of operations to evaluate expressions.

**4.** What is the value of $-9 + (2^3 - 3^2)$?

**5.** What is the value of $3^3 - (4^2 - 2^3)$?

**6.** Simplify $8^2 \div 4 + 3(6 - 3) + 2^3$.

**7.** What is the value of $3 + |x - 2|$ for $x = -3$?

**8.** Evaluate $x(y - z)^2$ for $x = -1, y = 5$, and $z = -3$.

**9.** Simplify: $7 \cdot 4^2 \div 8 - 12$

**10.** What is the value of $\frac{3m^2 - mn}{2mn^2}$ when $m = -1$ and $n = 2$?

**11.** Evaluate each expression for $x = 3$ and $y = 2$.

**A.** $-4x + 3y$

**B.** $\frac{x^2 - y}{4x}$

**12.** Simplify: $14 + 2 \times 8 - 5^2 + 3^2$

**13.** Evaluate each expression for $x = -7$.

**A.** $|x - 3|$

**B.** $|x + 3|$

**14.** Evaluate $b^2 - 4ac$ for $a = -1, b = -5$, and $c = 2$.

**15.** Simplify $4 - 3(2^2 - 5)$.

**16.** Simplify: $4x - 6y + 8y - 6x - 12y$

**17.** What is the value of $15 - (6^2 - 5^2)$?

**18.** Simplify $3(-5x-7)-(6x)$.

**19.** Evaluate $-3a(2b-4c)$ for $a=-3, b=2$, and $c=-7$.

**20.** Simplify $9^3 \div 3^3 - 5(8-4) + 9^2$.

**21.** What is the value of the expression $(-8)(6)-(-4)(-5)+(-3)(-6)$?

**22.** Simplify $6^2 + 15 \div 3 + 4\times 3$.

**23.** What is $\frac{8x+3y^2}{4y-3x}$ when $x=2$ and $y=3$?

**24.** Evaluate each expression.

**A.** $x^2$ for $x=-5$

**B.** $-x^2$ for $x=-5$

**LT#3:** Classify, graph, and compare real numbers.

**25.** What is the order of the numbers $\sqrt{12}, -3.5, \frac{5}{3}, -\frac{2}{3}$ from least to greatest?

**26.** What type of number can be written in the form $\frac{a}{b}$, where $a$ and $b$ are integers, and $b \neq 0$?

**27.** Describe four different subsets of real numbers. Explain the differences between the various subsets. Give several examples of each subset.

**LT#4:** Identify and use properties of real numbers.

**28.** Which property is illustrated by $(3+5)+7=3+(5+7)$?

**29.** Which property is illustrated by $45+19=19+45$?

**30.** Which property is illustrated by $a(b+c)=ab+ac$?

**LT#5:** Find sums and differences of real numbers.
**LT#6:** Find products and quotients of real numbers.

**31.** Which ordered pair is NOT a solution of $y=2x+1$?

**A.** $(3,7)$
**B.** $(0,1)$
**C.** $(-1,1)$
**D.** $(-3,-5)$

**32.** Tatiana purchased 5 tickets online for a show. The tickets cost $12 each plus there was a $3.50 service fee for the order. How much money did Tatiana spend for the tickets?

**33.** What is the value of the expressions $(-7)(3)-(5)(-3)$?

**LT#7:** Use the Distributive Property to simplify expressions.

**34.** Simplify: $-3.2(2x - 2.1)$

**35.** Simplify: $4(2x + 1) - (-6x)$?

**36.** Simplify $(x^2 + 6) - (3x^2 - 2x - 5)$

**37.** What is the simplified form of $-3(x + 4)$?

**38.** What is the simplified form of $5 - 4y + 2x - 3y - 2 + 5x$?

**39.** Simplify $(ab^2 + 10 + a) - (6ab^2 - 2ab + 8)$