Algebra 2 Name _____

1-3 Algebraic Expressions Date _____ **A#7**

Goal: 1) To evaluate algebraic expressions
2) To simplify algebraic expressions

Vocabulary and Key Concepts

Properties for Simplifying Algebraic Expressions

Let a, b, and c represent real numbers.

Definition of ☐
$a - b = a + (-b)$

Definition of ☐
$a \div b = \frac{a}{b} = a \cdot \frac{1}{b}, b \neq 0$

Distributive Property for ☐
$a(b - c) = ab - ac$

Multiplication by 0
☐ $\cdot a = 0$

Multiplication by −1
☐ $\cdot a = -a$

Opposite of a ☐
$-(a + b) = -a + (-b)$

Opposite of a ☐
$-(a - b) = b - a$

Opposite of a ☐
$-(ab) = -a \cdot b = a \cdot (-b)$

Opposite of an ☐
$-(-a) = a$

A variable is _____

An algebraic expression or a variable expression is an expression that contains _____

_____

To evaluate an expression, _____

_____

A term is _____

A coefficient is _____

Examples

❶ **Evaluating an Expression with Exponents** Evaluate $(k - 18)^2 - 4k$ for $k = 6$.

❷ **Elections** The expression $-0.08y^2 + 3y$ models the percent increase of voters in a town from 1990 to 2000. In the expression, y represents the number of years since 1990. Find the approximate percent of increase of voters by 1998.

Since $1998 - 1990 =$ ☐, $y = 8$ represents the year 1998.

Combining Like Terms Simplify $2h - 3k + 7(2h - 3k)$ by combining like terms.

Quick Check

1. Evaluate each expression for $c = -3$ and $d = 5$.

a. $c^2 - d^2$ **b.** $c(3 - d) - c^2$ **c.** $-d^2 - 4(d - 2c)$

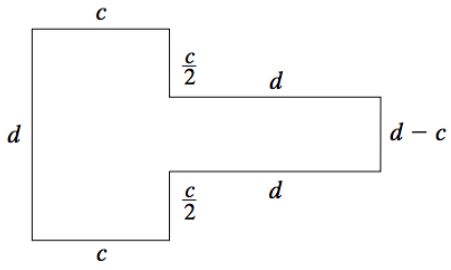
2. a. Assume that the model in Example 2 holds for future years. What percent of the eligible voters will vote in 2012? In 2020?

b. Critical Thinking Give some reasons that the model may not hold in future years.

3. Simplify by combining like terms.

a. $2x^2 + 5x - 4x^2 + x - x^2$ **b.** $-2(r + s) - (2r + 2s)$

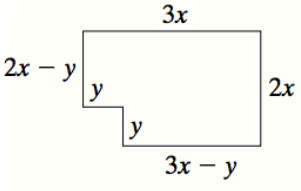
4 Finding Perimeter Find the perimeter of this figure. Simplify the answer.



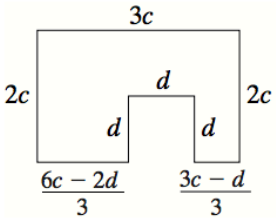
Quick Check

4. Find the perimeter of each figure. Simplify the answer.

a.



b.



Simplify by combining like terms.

1. $6x + x$ **2.** $11t + 3t - 5$ **3.** $-6a - 5a + b - 1$

13. The expression $6s^2$ represents the surface area of a cube with edges of length s. Find the surface area of a cube with each edge length.

a. 3 inches **b.** 1.5 meters