Chapter 6 Algebra, Graphs, and Functions

1. Variables x, y

2, Constants $3, -10$

3. Expressions $3x + 4$

4. Equations $3x + 4 = 13$

5. *Solutions to an equation* - a number or numbers that replace the variable to make the equation true

6. To *evaluate* an expression - substitute a given number for a variable and use the order of operations to find a value.

7. exponents and their base $2^4 \quad 2x^4$

Exponents refer to only its base

Example:

$-5^2 = -1 \cdot 5^2$

$(-5)^2 = -5 \cdot -5 = 25$

$x = 3$

$-x^2 + 2x$

$-(3^2) + 2(3)$

$-9 + 6 = -3$

Simplify:

$2 + 3 \cdot 4$

Order of Operations:

P E M D A S

$$6 - 2 \div 2 \times 4^2 (3^2_{9} - 4)$$

$6 - 2 \div 2 \times 16(5)$

$6 - 1 \times 16(5)$

$6 - 16(5)$

$6 - 80 = -74$

Simplify

$$1-\left[30\div(7+3(-4))\right]+3^2$$

-5

$1-(-6)+9$

$7+9=16$

Evaluate:

$$-x^2+4x+16 \quad for\ x=3$$

$-3^2+4(3)+16$

$-9+12+16$

$3+16=19$

$-3x^2 + 2xy - 2y^2 \quad for\ x = 2\ and\ y = 3$

$-3(2^2) + 2(2)(3) - 2(3^2)$

$-12 + 12 - 18$

-18

$3x^2 + \frac{2}{5}xy - \frac{1}{5}y^2 \quad for\ x = 2\ and\ y = 5$

$3(2^2) + \frac{2}{5}(2)(5) - \frac{1}{5}(5^2)$

$12 + 4 - 5 = 11$

Home Work
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Section 6-1 Word Problems

1. A ball is thrown upward off a bridge 40 feet above ground. Its height, in feet, above ground, t seconds after it is thrown, can be determined by the expression $-16t^2+30t+40$. Find the height of the ball, above ground, 2 seconds after it is thrown.

$-16(2)^2+30(2)+40 = 36$

2. The cost, in dollars, for Crescent City Tours to provide a tour for x people can be determined by the expression 220 + 2.75x. Determine the cost for Crescent City Tours to provide a tour for 75 people.

3. The time, in minutes, needed to dry clothes outdoors on a line depends on the temperature, wind speed and the humidity (h). The time can be approximated by the expression $2h^2+80h+40$, where h is humidity expressed as a decimal. Find the length of time required for clothing to dry if there is 60% humidity.

4. A typical car's stopping distance, in feet, on wet pavement can be approximated by the expression $0.08s^2+0.24s-7.10$, where s is the speed of the car, in miles per hour (mph), before braking and $60 \le s \le 80$ miles per hour. Use the expression to approximate the car's stopping distance on wet pavement if the speed of the care before braking is 72 mph.