

Warm Up

1/24/19

Simplify the following expressions. Identify the terms, the constant term and the factors & coefficients of the non-constant terms.

1. $12x^3 + 16x + 4$

Terms: $12x^3, 16x, 4$

constant: 4

coefficient: 12, 16

Factors: $12, x^3$
 $16, x$

2. $21x^2 + 3x - 15x^2 + 9$

$6x^2 + 3x + 9$

Terms: $6x^2, 3x, 9$

constant: 9

Coefficients: 6, 3

Factors: $6, x^2$
 $3, x$

Translate:

3. half the sum of a number and 5

4. The product of 8 and the cube of a number increased by the difference of 6 and the same number squared

$$\frac{x+5}{2} \text{ or } \frac{1}{2}(x+5)$$

$$8x^3 + 6 - x^2$$

Interpreting Linear Expressions

Notes

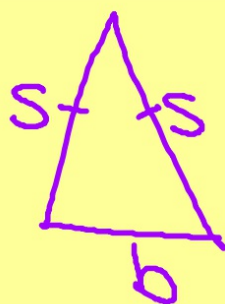
Algebraic expressions used to describe situations contain variables

Key Concepts:

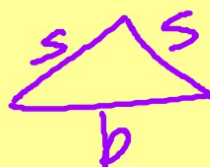
- Translate the situation into an expression
- As variables change, constant terms WILL NOT change
- As constants change, terms containing variables WILL NOT change
- Follow the Order of Operations
B P E M D A S

Example 1

To calculate the perimeter of an isosceles triangle, the expression $2s + b$ is used, where s represents the length of the two congruent sides and b represents the length of the base. What effect, if any, does increasing the length of the congruent sides have on the expression?



$$2s + b$$



Example 2

Money deposited in a bank account earns interest on the initial amount deposited as well as any interest earned as time passes. This simple interest can be described by the expression $P(1 + rn)$, where P represents the initial amount deposited, r represents the interest rate, and n represents the number of years that pass. How does a change in each variable affect the value of the expression?

$$P(1 + rn)$$

100

$P \rightarrow$ \$ deposited
 $r \rightarrow$ rate of interest (%)
 $n \rightarrow$ years

SOLVING MULTI- STEP EQUATIONS

SOLVING EQUATIONS

**1. Distribute &
Combine Like Terms**

2. Get all variables to the LEFT side

**3. Add/Subtract
THEN Multiply/Divide**

$$1) \quad 9x + 1 - 7x - 5 = -20$$

$$\begin{array}{r} 2x - 4 = -20 \\ +4 \quad +4 \end{array}$$

$$\begin{array}{r} 2x = -16 \\ \underline{2} \quad \underline{2} \end{array}$$

$$x = -8$$

↙ ↘

$$2) \quad -7(3a - 1) = 91$$

$$-21a + 7 = 91$$

$$\begin{array}{r} -21a = 84 \\ \underline{-21} \quad \underline{-21} \end{array}$$

$$a = -4$$

$$3) 4m - 5(3m + 10) = 126$$

$$\textcircled{4m} - \textcircled{15m} - 50 = 126$$

$$-11m - \cancel{50} = 126$$

$$\frac{ + \cancel{50} + 50}{ + \cancel{50} + 50}$$

$$-11m = 176$$

$$\frac{-11}{-11} \quad \frac{-11}{-11}$$

$$\boxed{m = -16}$$

$$4) -3(k - 8) - 1(k + 5) = 23$$

$$\textcircled{-3k} + \textcircled{24} - \textcircled{k} - \textcircled{5} = 23$$

$$-4k + \cancel{19} = 23$$

$$\frac{ - \cancel{19} - 19}{ - \cancel{19} - 19}$$

$$-4k = 4$$

$$\frac{-4}{-4} \quad \frac{4}{-4}$$

$$\boxed{k = -1}$$

$$5) \quad 10x - 6(2x + 5) = 20$$

$$10x - 12x - 30 = 20$$

$$\begin{array}{r} -2x - 30 = 20 \\ +30 \quad +30 \\ \hline \end{array}$$

$$\begin{array}{r} -2x = 50 \\ \hline -2 \quad -2 \end{array}$$

$$x = -25$$