

# LESSON 5 – ALGEBRAIC EXPRESSIONS

CHAPTERS 9 & 10 IN BLUE TEXTBOOK



# ALGEBRAIC EXPRESSIONS

- An algebraic expression is just a mathematical sentence made up of...
- A symbol (letter) used to replace a number is called a variable
  - **Because its value can change (vary)**

# ALGEBRAIC EXPRESSIONS

- Term ~part that makes up an algebraic expression. It can be composed of:
  - **Numbers only (ex: 5)**
  - **Variables only (ex: x)**
  - **Combination of both (ex: 12y)**

# ALGEBRAIC EXPRESSIONS

- A term only with a number is called a constant term (value does not change)

- Ex:  $5x + 2$  ← Constant term

# ALGEBRAIC EXPRESSIONS

- **Coefficient** ~ the number in front of a variable or variable of a term

- Ex:  $5x + 2$

Coefficient



# ALGEBRAIC EXPRESSIONS

- “Like” terms ~ two or more terms are called “like terms” if they have the same variables raised to the same exponents

- Ex:  $12\underline{a} + 5\underline{a}$

Both have same variable: a

- Ex:  $12\underline{x^2} + 5\underline{x}$

**NOT** like terms; do not have same exponent

# ALGEBRAIC EXPRESSIONS

- All constants are “like terms”

■ Ex:  $3x + 2 - 6$  ← Like terms

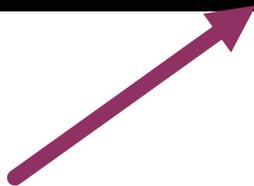
# ORDER OF EXPRESSIONS

- Number first, then alphabetically.

■ Ex: ~~ba~~  
■ 5abc

■ Ex: ~~-2 + 5~~ - 2z + 3y  
■ 5x + 3y - 2z - 2

Constants go at the end



# MONOMIALS

- Algebraic expression consisting of only one term
- Examples:
  - $5abc$
  - $15$
  - $-9x$
  - $y$

# DEGREE OF A MONOMIAL

- **For one variable:** same as the exponent

- Ex:

- $x^2$  ← Degree = 2

- $y^{\circ}$  ← Degree = 1 (because when there is no exponent that means it's 1)

# DEGREE OF A MONOMIAL

- For more than one variable: sum of the exponents of all its variables

■ Ex:

■  $a^2b^3c$  Degree =  $2+3+1 = 6$

■  $xyz$  Degree = 3

# DEGREE OF A MONOMIAL

- **For a constant**: the degree is always  
zero
- **Ex:**
  - **2**      Degree = 0
  - **-17**    Degree = 0

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# PRACTICE!



TAKE OUT A SHEET OF LOOSELEAF

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# QUESTION 1

Answer the following questions based on this algebraic expression:  $2x - 4y - z + 7$

- a) How many terms are there?
- b) Name the coefficient/s
- c) Name the constant/s
- d) List the variable/s

## QUESTION 2

What are the 3 “things” that makeup algebraic expressions?

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## QUESTION 3

To what degree is each monomial?

a)  $2x^2$

b)  $-2$

c)  $2xyz$

d)  $2x^3y^3z^2$

## QUESTION 4

Combine the like terms

$$3xy^2 - 20$$

$$2x^2 - 4x \quad x$$

$$-xy^2 - 4x^2 \quad 12$$

## QUESTION 5

Place the follow algebraic terms in proper order (clean algebra)

a)  $(y)(-2)(x)(z)$

b)  $-17 + 2a - 5c - 17b$

## QUESTION 6

Answer each of the following questions by indicating whether the answer would be positive or negative

## QUESTION 6

- a) What do you get when adding 2 negative numbers? (positive or negative)
- b) What do you get when adding 2 positive numbers? (positive or negative)

## QUESTION 6

- a) What do you get when you divide a positive number by a negative number? (positive or negative)
- b) What do you get when multiply a negative number by another negative number? (positive or negative)

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# ANSWERS



# QUESTION 1

Answer the following questions based on this algebraic expression:  $2x - 4y - z + 7$

- a) How many terms are there? **4**
- b) Name the coefficient/s **2, 4 and 1**
- c) Name the constant/s **7**
- d) List the variable/s **x, y and z**

## QUESTION 2

What are the 3 “things” that makeup algebraic expressions?

- variables
- coefficients
- constants

## QUESTION 3

To what degree is each monomial?

- a)  $2x^2$  2<sup>nd</sup>
- b)  $-2$  none
- c)  $2xyz$  3<sup>rd</sup>
- d)  $2x^3y^3z^2$  8<sup>th</sup>

## QUESTION 4

Combine the like terms

$$3xy^2 - 20$$

$$2x^2 - 4x \quad x$$

$$-xy^2 - 4x^2 \quad 12$$

## QUESTION 5

Place the follow algebraic terms in proper order (clean algebra)

a)  $(y)(-2)(x)(z)$      $-2xyz$

b)  $-17 + 2a - 5c - 17b$      $2a - 17b - 5c - 17$

## QUESTION 6

Answer each of the following questions by indicating whether the answer would be positive or negative

## QUESTION 6

- a) What do you get when adding 2 negative numbers? (positive or **negative**)
- b) What do you get when adding 2 positive numbers? (**positive** or negative)

## QUESTION 6

- a) What do you get when you divide a positive number by a negative number? (positive or **negative**)
- b) What do you get when multiply a negative number by another negative number? (**positive** or negative)

# HOMEWORK

- No Homework 😊

