

UNIT 2 LESSON 1 - IDENTIFYING AND INTERPRETING QUADRATICS

**VOCABULARY**

Terms - The number of parts in the expression.

Like Terms - Terms that can be put together.

Coefficient - The numbers that are attached to variables.

Constant - The numbers that are not attached to anything.

**Monomial**- A number, a variable or a product of a number and one or more variables.

**Binomial**- The sum of two monomials.

**Trinomial**- The sum of three monomials.

**F.O.I.L.**- First Term. Outer Term. Inner Term. Last Term.

**Quadratic Expression**-  $ax^2 + bx + c$

Look at the expression  $4x^2 + 3x - 2x - 7$ ....

Terms:  $(4x^2)$ ,  $(3x)$ ,  $(-2x)$ , and  $(-7)$  - WHICH MEANS THERE ARE 4 TERMS IN THE EXPRESSION

Like Terms:  $(3x)$  and  $(-2x)$  - ARE LIKE TERMS BECAUSE THEY BOTH HAVE AN 'X' ATTACHED

Coefficients:  $(4)$  IS A COEFFICIENT BECAUSE IT IS ATTACHED TO 'X<sup>2</sup>'

Constants:  $(-7)$  IS A CONSTANT BECAUSE IT IS NOT ATTACHED TO ANYTHING

Monomial:  $4x^2$  BECAUSE IT IS ONE TERM

Binomial:  $4x^2 + x$  BECAUSE IT IS TWO TERMS

Trinomial:  $4x^2 + x - 7$  BECAUSE IT IS THREE TERMS

Quadratic Expression:  $4x^2 + x - 7$  IS A QUADRATIC EXPRESSION BECAUSE IT IS IN THE FORM  $ax^2 + bx + c$

**Ex 1)** Identify each term, coefficient, and constant term of  $6(x - 1) - x(3 - 2x) + 12$ . Classify the expression as a monomial, binomial, or trinomial. Determine whether it is a quadratic expression.

**Ex 2)** Translate the verbal expression "take triple the difference of 12 and the square of x, then increase the result by the sum of 3 and x" into an algebraic expression. Identify the terms, coefficients, and constant term(s) of the given expression. Is the expression quadratic?

**Ex 3)** Show that  $(x + 2)(2x - 1)$  is a quadratic expression by writing it in the form  $ax^2 + bx + c$ . Identify a, b, c.

**Ex 4)** What values of x make the expression  $(x + 2)(x - 3)$  positive?

Work on back →

**YOU TRY!!!**

**Ex 5)** Identify each term, coefficient, and constant term of  $5x + 4(5x - x) - 2x(6)$ . Classify the expression as a monomial, binomial, or trinomial. Determine whether it is a quadratic expression.

**Ex 6)** Determine whether the expression  $(x + 5)(3x - 1)$  is a quadratic expression by writing it in the form  $ax^2 + bx + c$ . Identify a, b, c.

**Ex 7)** Translate the expression into algebra "the product of 9 and x, decreased by the sum of 8 and the square of x". Identify the terms, coefficients, and constant term(s) of the given expression. Is the expression quadratic?

Ex 1) Simplify the expression

$$6(x-1) - x(3-2x) + 12$$

$$6x - 6 - 3x + 2x^2 + 12$$
$$2x^2 + 3x + 6$$

3 Terms

2, 3 Coefficients

6 Constant

This is a Trinomial

It is a quadratic

Ex 2) Triple = 3

Difference of 12 and the square of  $x = (12 - x^2)$

Increase = +

Sum of 3 and  $x = (3 + x)$

$$3(12 - x^2) + (3 + x)$$

Simplify the expression  $\rightarrow 36 - 3x^2 + 3 + x$   
 $-3x^2 + x + 39$

3 Terms

-3, 1 Coefficients

39 Constant

It is a quadratic

Ex 3) Multiply the expression  $(x+2)(2x-1)$  using FOIL

$$x \cdot 2x = 2x^2$$

$$x \cdot -1 = -x$$

$$2 \cdot 2x = 4x$$

$$2 \cdot -1 = -2$$



$$2x^2 + 3x - 2$$

It is a quadratic

$$a = 2$$

$$b = 3$$

$$c = -2$$

Ex 4) Solve by factoring

$$(x+2) = 0$$

$$x = -2$$

$$(x-3) = 0$$

$$x = 3$$

Since the outcome must be positive

Write 2 inequality statements

$$x > -2 \quad \text{and} \quad x > 3 \quad \rightarrow \text{ANSWER}$$