THE GRAPH OF A QUADRATIC FUNCTION

* The **Quadratic Equation** is written as: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , this equation has a degree of \_\_\_\_\_\_\_\_\_.
  + - Where **a, b** and **c** are integer coefficients (where a  0)
* The graph of this equation is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, it is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Parabolas are functions because they \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When **“a”** is **positive,** the parabola opens: \_\_\_\_\_\_\_

Where the curve reaches a ­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2 TYPES OF PARABOLA SHAPES**



When **“a”** is **negative,** the parabola opens: \_\_\_\_\_\_\_

Where the curve reaches a ­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Draw in the line of symmetry of the parabola on the grid.

# x

*y*

This line of symmetry is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* It is always a vertical line that goes through the turning point of the curve.

**Formula: Axis of Symmetry:**

**Turning Point:** Is another term for the **vertex** of the parabola. The “vertex” has the coordinates of .

**To Find Turning Point (T.P.)**



# x

*y*

**Roots** of the equation are the points where the parabola

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the x – axis, so y = \_\_\_\_\_\_\_\_\_\_\_,

*What are the roots of the parabola on the grid to the left? \_\_\_\_\_\_\_\_\_*

## **GRAPHING QUADRATIC FUNCTIONS**

**How to Graph Parabolas:**

1. Find the **axis of symmetry** by using the formula.

2. Substitute the x value back into the

equation to find the **turning point and describe it as a max or min pt.**

3. Make a **table** of values.

4. **Graph** the points.

EX1: GRAPH: 

EX2: GRAPH:  () ← ***This is called an******interval, which means your table should cover the x values of -4 to 2.***

EXPLORING THE GRAPHED

**QUADRATIC EQUATION (DAY 7)**

Quadratic functions are written in the form: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The **x – intercepts** (when x = 0) of the parabola  are called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the equation ()

**How many roots are possible to obtain from a quadratic equation?**

**Draw a picture to illustrate each situation**

# x

*y*

# x

*y*

# x

*y*

EX1. Given the following graph of the equation y = x2 – 7x + 10. Answer the following questions.

What is the axis of symmetry? \_\_\_\_\_\_\_\_\_\_

What are the coordinates of the turning point?\_\_\_\_\_\_\_\_

Is the T.P. a max or minimum point? \_\_\_\_\_\_\_\_

How many roots are there?\_\_\_\_\_\_\_\_\_\_

What are the solutions of this equation? \_\_\_\_\_

What are the solutions called? \_\_\_\_\_\_\_\_

Now, solve the equation: 0 = x2 – 7x +10

**What do you notice?**

EX2. GRAPH: 

What is the axis of symmetry? \_\_\_\_\_\_\_\_\_\_

What are the coordinates of the turning point?\_\_\_\_\_\_\_

Is the T.P. a max or minimum point? \_\_\_\_\_\_\_\_

How many roots are there?\_\_\_\_\_\_\_\_\_\_

What are the solutions of this equation? \_\_\_\_\_\_\_\_

What do you call these solutions? \_\_\_\_\_\_\_\_\_\_

Now try to solve the above equation algebraically! How do we do this?

Write an equation for each graph below.

Ex.3 Ex.4