GSE Algebra 1 **7.1 – Notes** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The goal here to see what happens to parabolas as we move them around a graph, what happens in the equation and how that can affect the tables.

Let’s look at quadratics again. What shape do they make? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

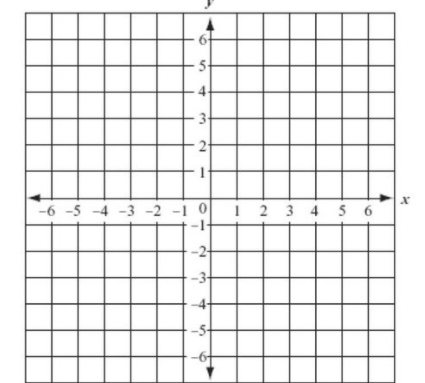
Match the correct statement to the description below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Matching Equation**  **(A, B, C, or D)** | **Statement** | **Function Equation** | |
|  | The length of each side of a square is increased by 5 units. | A |  |
|  | The length of each side of a square is multiplied by 5 units. | B |  |
|  | The area of a square is increased by 5 square units. | C |  |
|  | The area of a square is multiplied by 5. | D |  |

What is the **domain** of ? **PARENT FUNCTION:**

Let’s look at how each part above changes the graph, equation and table.

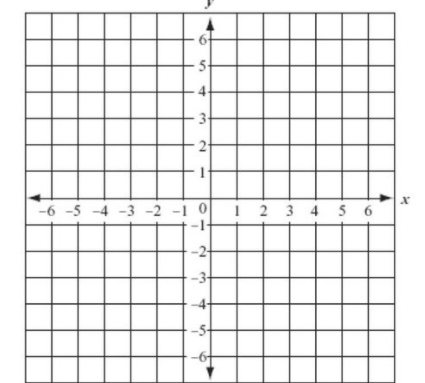
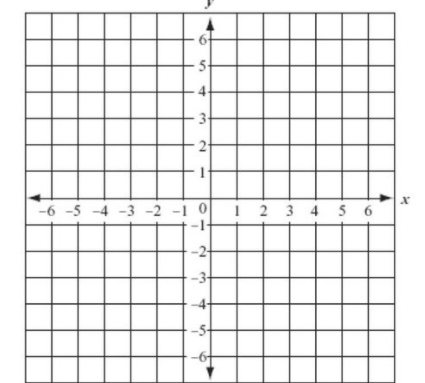
How has this changed from the parent function ?

**Equation** **Table** **Graph**

|  |  |
| --- | --- |
|  |  |
|  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | |  | |
| x | y | x | y |
| -2 |  | -2 |  |
| -1 |  | -1 |  |
| 0 |  | 0 |  |
| 1 |  | 1 |  |
| 2 |  | 2 |  |
| 3 |  | 3 |  |

Let’s look at a few more. Try these two based off the work from above.

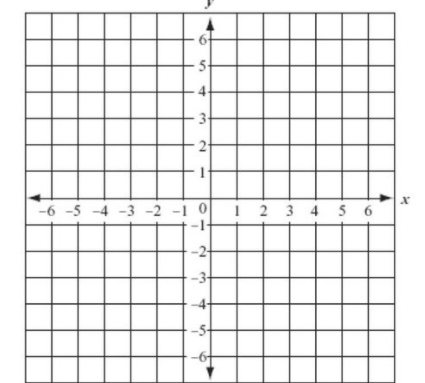
1. **** b)

***So the number OUTSIDE of the parentheses***

***(in the back of the equation) makes the***

***parabola move \_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_***

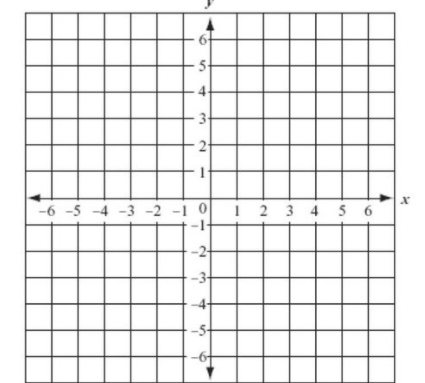
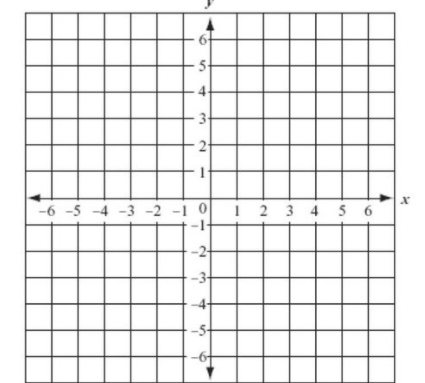
Now let’s try this one:

**Equation** **Table** **Graph**

|  |  |
| --- | --- |
|  |  |
|  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | |  | |
| x | y | x | y |
| -2 |  | -7 |  |
| -1 |  | -6 |  |
| 0 |  | -5 |  |
| 1 |  | -4 |  |
| 2 |  | -3 |  |
| 3 |  | -2 |  |

Let’s look at a few more. Try these two based off the work from above.

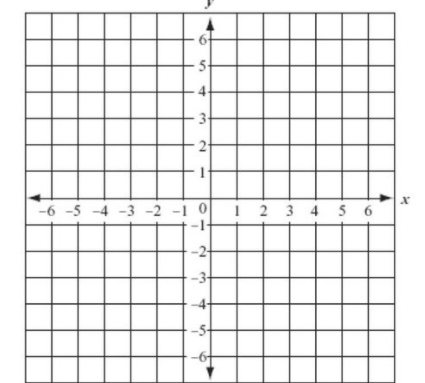
1. **** b)

***So the number INSIDE of the parentheses***

***(in the middle of the equation) makes the***

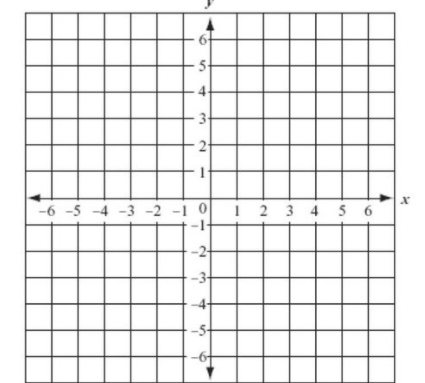
***parabola move \_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_***

Now this one:

**Equation** **Table** **Graph**

|  |  |
| --- | --- |
|  |  |
|  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | |  | |
| x | y | x | y |
| -2 |  | -2 |  |
| -1 |  | -1 |  |
| 0 |  | 0 |  |
| 1 |  | 1 |  |
| 2 |  | 2 |  |
| 3 |  | 3 |  |

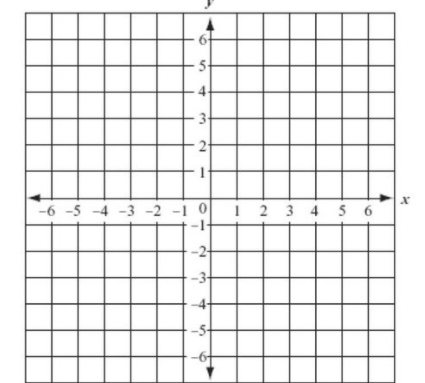
****Now try these two:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| x | -2 | -1 | 0 | 1 | 2 | 3 |
| y |  |  |  |  |  |  |

1. b)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| x | -2 | -1 | 0 | 1 | 2 | 3 |
| y |  |  |  |  |  |  |

Let’s look at what happens when the parabola is flipped upside down.

**Equation** **Table** **Graph**

|  |  |
| --- | --- |
|  |  |
|  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | |  | |
| x | y | x | y |
| -2 |  | -2 |  |
| -1 |  | -1 |  |
| 0 |  | 0 |  |
| 1 |  | 1 |  |
| 2 |  | 2 |  |
| 3 |  | 3 |  |

So what happens when the number in **front** of the x2 is **negative**?

This is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ over the x-axis.

**Bringing it ALL together!**

The vertex form of a quadratic is all of what you just did put together.

**Vertex: (h, k)**

What does each part mean?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **a** | If **a** is **positive** | If **a** is **negative** | If **a > 1** | If **0 < a < 1** |
| **h** | If **h** is **positive** in the equation | | If **h** is **negative** in the equation | |
| **k** | If **k** is **positive** in the equation | | If **k** is **negative** in the equation | |

Tell what has happened just based on the equation.

1. 2) 3) 4)