

Station 1:

Go to <https://www.desmos.com/calculator>

Type in the equation  $y = x^2$  (the parent graph) into line 1, then graph it in desmos.

1) Type  $y = x^2 + 3$  into line 2.

- a. What is the vertex?
- b. How did the graph transform?

Delete line 2.

2) Type  $y = x^2 - 2$  into line 2.

- a. What is the vertex?
- b. How did the graph transform?

Delete line 2.

3) Type in  $y = x^2 + 1$  into line 2.

- a. What is the vertex?
- b. How did the graph transform?

Delete line 2.

4) Type in  $y = x^2 - 4$  into line 2.

- a. What is the vertex?
- b. How did the graph transform?

Delete line 2.

Given  $y = x^2 + k$ , what directions does the graph translate when you change  $k$ ?

## Station 2

Go to <https://www.desmos.com/calculator>

Type in the equation  $y = x^2$  (the parent graph) into line 1, then graph it in desmos.

5) Type  $y = (x + 2)^2$  into line 2.

- a. What is the vertex?
- b. How did the graph transform?

Delete line 2.

6) Type  $y = (x - 4)^2$  into line 2.

- c. What is the vertex?
- d. How did the graph transform?

Delete line 2.

7) Type  $y = (x + 3)^2$  into line 2.

- e. What is the vertex?
- f. How did the graph transform?

Delete line 2.

8) Type  $y = (x - 1)^2$  into line 2.

- g. What is the vertex?
- h. How did the graph transform?

Delete line 2.

Given  $y = (x - h)^2$ , what directions does the graph translate when you change  $h$ ?

### Station 3

Go to <https://www.desmos.com/calculator>

**Type in the equation  $y = x^2$  (the parent graph) into line 1, then graph it in desmos.**

9) Type  $y = 5x^2$  into line 2. Then type  $y = 30x^2$  into line 3.

- a. What is the vertex?
- b. How did the graph transform when you increase the coefficient?

Delete line 2 and 3.

10) Type  $y = 0.6x^2$  into line 2. Then type  $y = 0.2x^2$  into line 3.

- a. What is the vertex?
- b. How did the graph transform when you decrease the coefficient?

Delete line 2 and 3.

11) Type  $y = -x^2$  into line 2.

- a. What is the vertex?
- b. How did the graph transform?

Delete line 2.

**Given  $y = ax^2$ , when  $a > 1$ . How did the graph transform by increasing  $a$ ?**

**Given  $y = ax^2$ , when  $0 < a < 1$ . How did the graph transform by decreasing  $a$ ?**

**Given  $y = ax^2$ , when  $a$  is negative. How did the graph transform?**

Station 4:

Given the quadratics below, convert each quadratic into vertex form.

State the vertex.

$$12) y = x^2 - 10x + 24$$

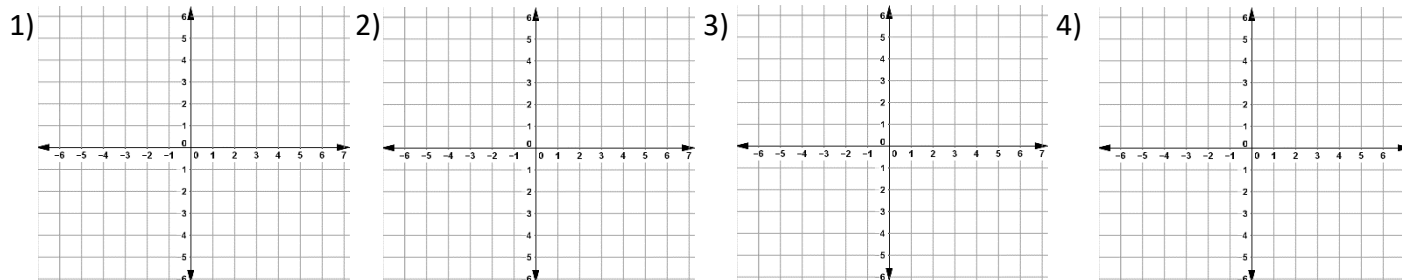
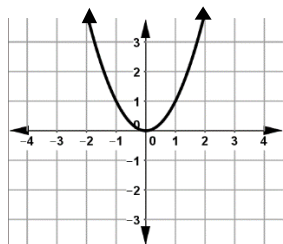
$$13) y = x^2 + 2x - 8$$

$$14) y = x^2 - 4x - 5$$

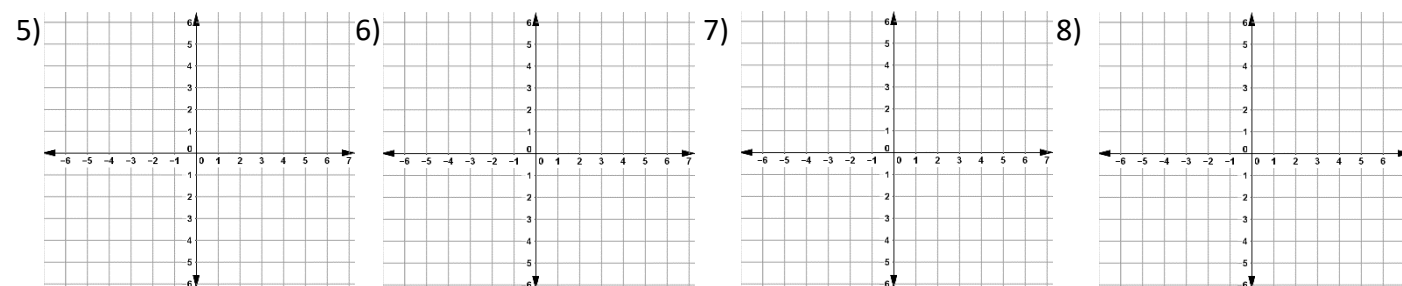
$$15) y = x^2 + 6x - 7$$

$$16) y = x^2 + 5x - 14$$

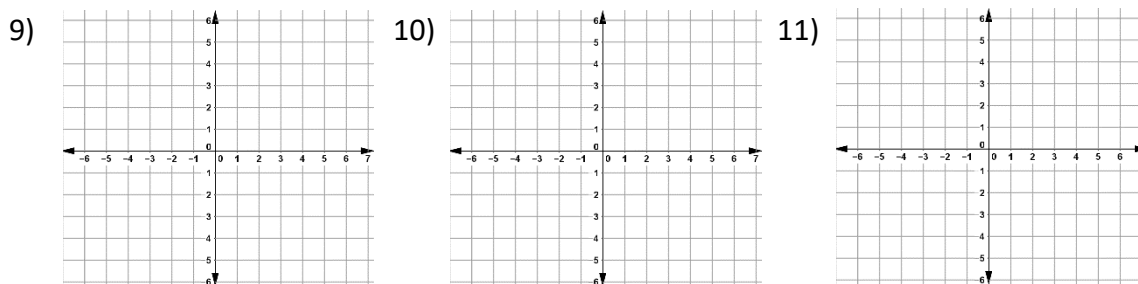
Parent Graph  $y = x^2$



Given  $y = x^2 + k$ , what directions does the graph translate when you change  $k$ ?



Given  $y = (x - h)^2$ , what directions does the graph translate when you change  $h$ ?



Given  $y = ax^2$ , when  $a > 1$ . How did the graph transform by increasing  $a$ ?

Given  $y = ax^2$ , when  $0 < a < 1$ . How did the graph transform by decreasing  $a$ ?

Given  $y = ax^2$ , when  $a$  is negative. How did the graph transform?