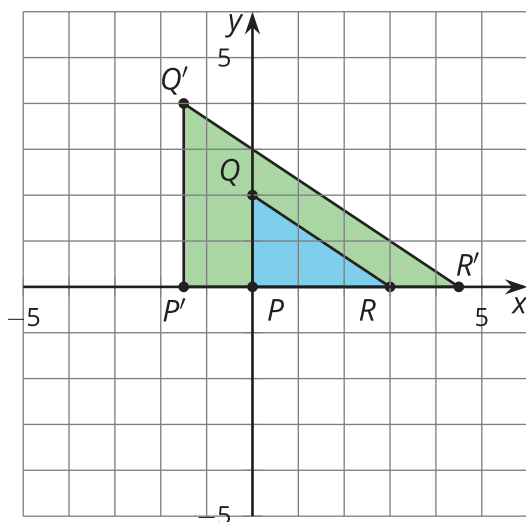# Lesson 17: Parameters and Graphs

- Let's talk about moving graphs around the plane.
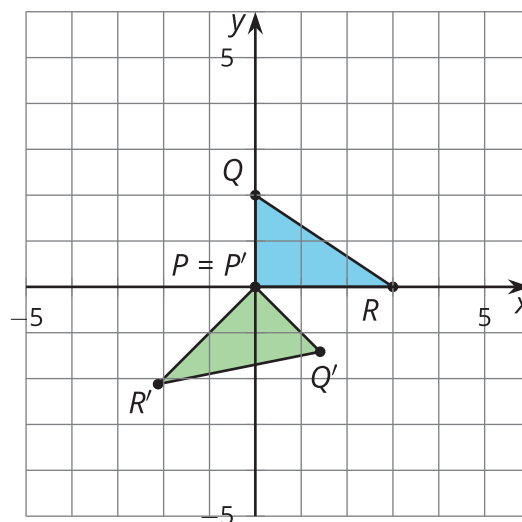
## 17.1: Which One Doesn't Belong: Triangles

Each figure shows triangle $PQR$, and its image after a transformation, $P'Q'R'$. Which one doesn't belong?

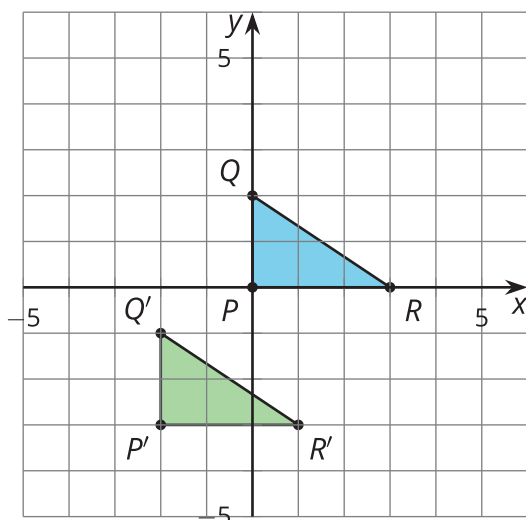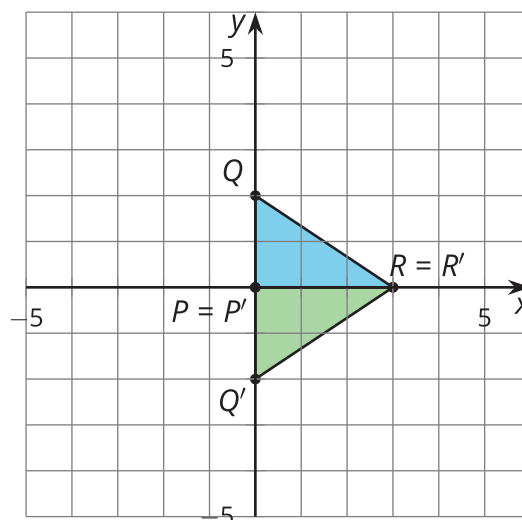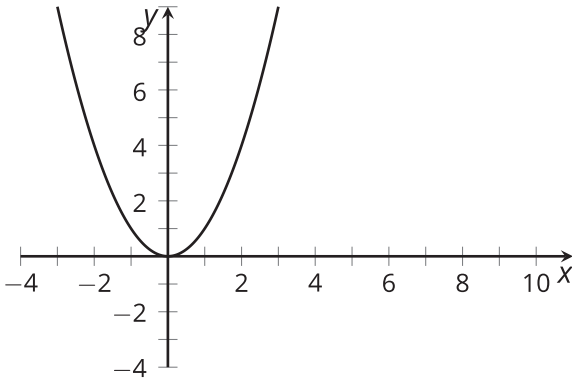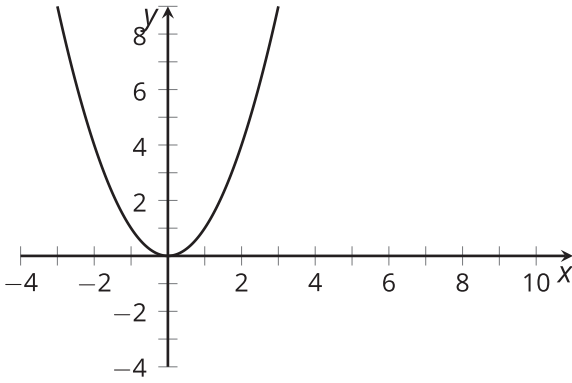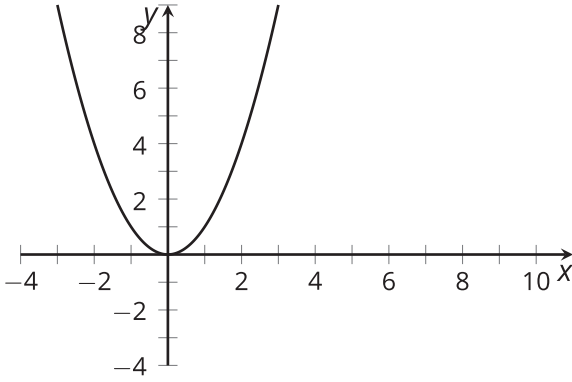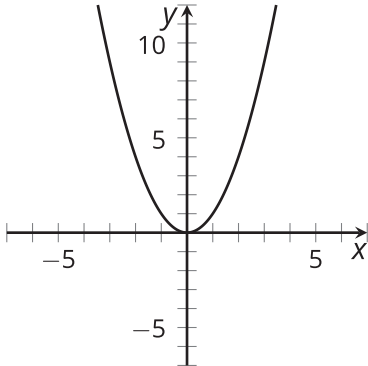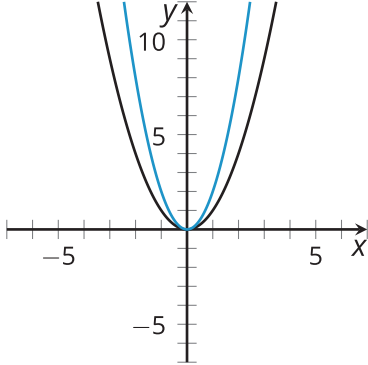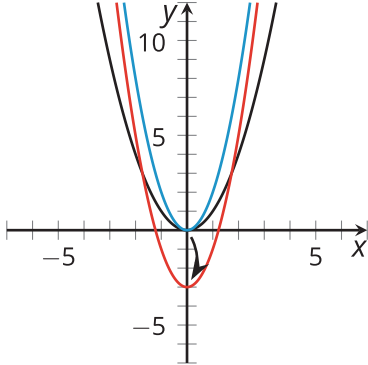**A**



**B**



**C**



**D**

## 17.2: Describe the Change

1. Use graphing technology to graph each equation. Describe how each graph changes from the previous graph and draw a sketch of the change.

| equation | description of change | sketch of graph |
|---|---|---|
| $y = x^2$ | original graph | |
| $y = (x - 5)^2$ | | |
| $y = (x - 5)^2 + 4$ | | |

2. Describe the change in the given sketch and write an equation that you think would generate that change.

| equation | description of change | sketch of graph |
|----------|----------------------|-----------------|
| $y = x^2$ | original graph |  |
|  |  |  |
|  |  |  |

3. How would the graph of $y = \text{-}2x^2 - 3$ compare to the graph of $y = 2x^2 - 3$?

## 17.3: Select a Function

Let's call the graph of $y = x^2$ "the original graph."

Select the function that will affect the original graph in the way described.

1. Shift the vertex of the graph left 1 unit.
- $y = x^2 + 1$

2. Shift the vertex of the graph up 1 unit.
- $y = (x + 1)^2$

3. Shift the vertex of the graph right 1 unit and up 1 unit.
- $y = 3x^2$

4. Make the original graph narrower.
- $y = (x - 1)^2 + 1$

5. Make the original graph narrower, and shift the vertex 1 unit to the right.
- $y = 3(x - 1)^2$