Unit 7, Lesson 17

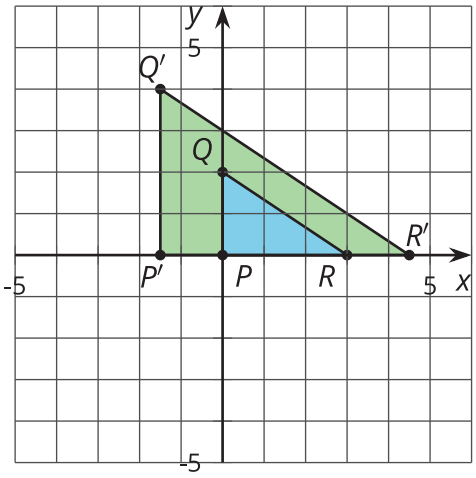
# Parameters and Graphs

Let's talk about moving graphs around the plane.

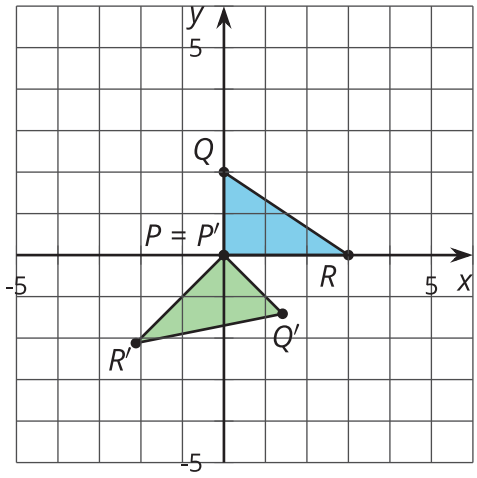
## 17.1 Which Three Go Together: Triangles

Each figure shows triangle $PQR$, and its image after a transformation, $P'Q'R'$. Which three go together? Why do they go together?

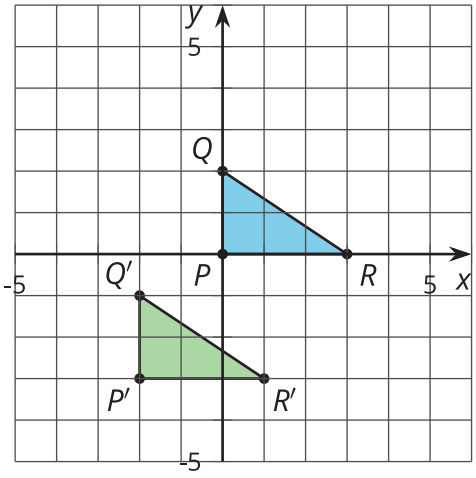
**A**



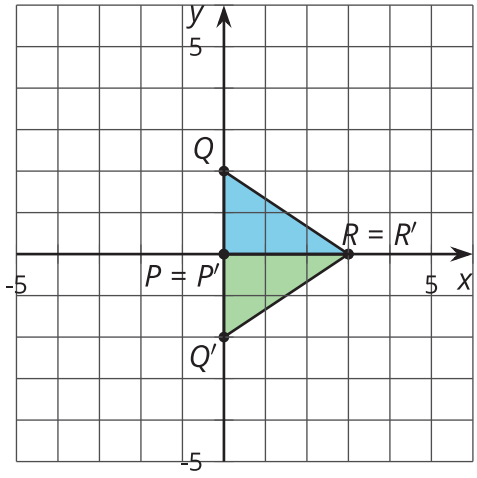

**B**




**C**




**D**

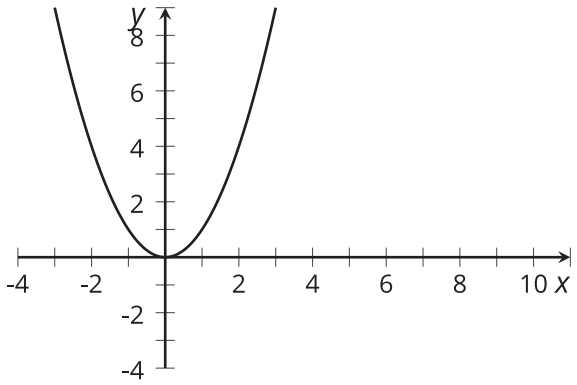
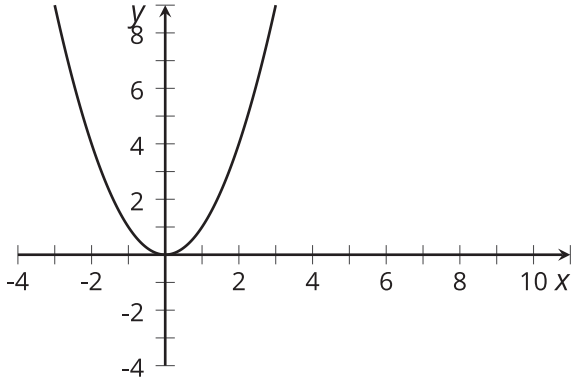
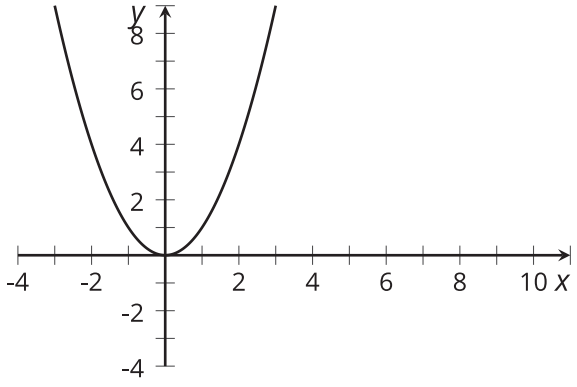




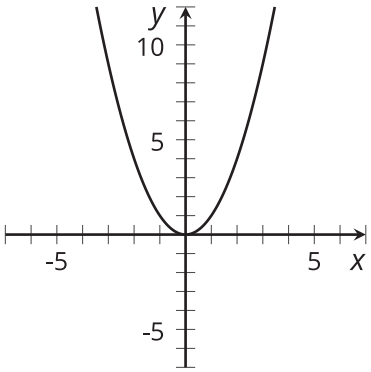
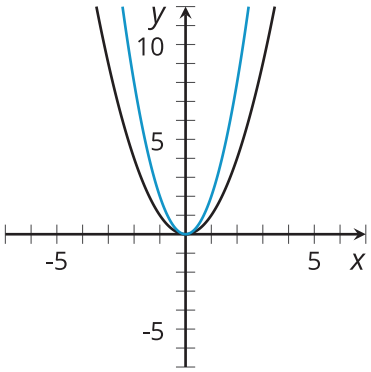
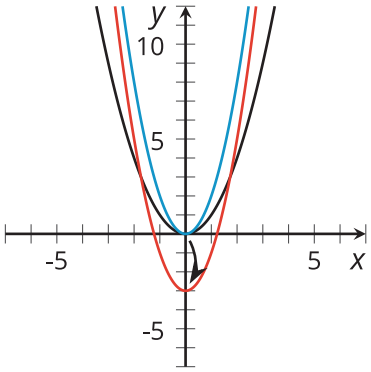
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# 17.2 Describe the Change

1. Use graphing technology to graph each equation. Describe how each graph changes from the graph before 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 $y = -2x^2 - 3$ 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.
2. Shift the vertex of the graph up 1 unit.
3. Shift the vertex of the graph right 1 unit and up 1 unit.
4. Make the original graph narrower.
5. Make the original graph narrower, and shift the vertex 1 unit to the right.

- $y = x^2 + 1$
- $y = (x + 1)^2$
- $y = 3x^2$
- $y = (x - 1)^2 + 1$
- $y = 3(x - 1)^2$