

Graphing Quadratic Functions: Symmetry

You may have noticed another common characteristic about all quadratic functions.

They all display **line symmetry**. You can see that this line of symmetry divides the parabola exactly in half with a vertical line.

Notice that the horizontal distance from the line of symmetry is the same for each pair of points on the parabola.

The line is called the **Axis of Symmetry**.

In this case, the vertical line is at 0 on the x-axis.

This line is defined by the constant **relation**, $x=0$.

In other words, the axis of symmetry for these types of parabolas can be found using the "x"-value at the vertex.

If you change p to 3 and q to -2, the parabola will be in a new location. Where do you think the new axis of symmetry will be now?

What will the equation for the axis of symmetry be?

Answer: The axis of symmetry will be at $x = -3$.

The equation for the axis of symmetry for this parabola is $x = -3$.

Activity

Drag the p slider to -2 and the q slider to +1. Where will the new axis of symmetry be? What will the equation for the axis of symmetry be?

What will the equation be for the axis of symmetry for the function $y = (x + 6)^2 - 2$?