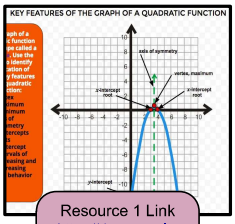
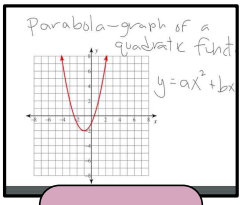
Skill: Given the graph or equation of a quadratic function, identify the following key parts: intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries; end behavior; vertex; axis of symmetry (from graph or table only); parent function; and roots.

Intro 1: All quadratic functions have a degree of 2. This means that the highest exponent in the function is a 2. All quadratic functions also have a similar-shaped graph, called a parabola, that resembles the letter U. These graphs have many different features that can be identified and used when solving problems. Use this visual to create a list of eight key features of quadratic functions and describe, in your own words, each feature.



Resource 1 Link
https://docs.google.com/drawings/d/1QI2gJaKqPiHrmyOj3VClhxMtYJUo_6LAugrxCmdEh9k/edit

Intro 2: When you are given an equation of a quadratic function, you will first want to graph it to identify its key features. Once you have the graph, the vertex, intercepts, and even the axis of symmetry can be quickly identified. Follow along with this video for an example.

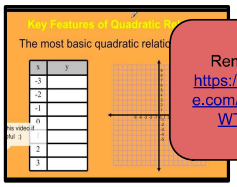


Resource 2 Link
https://vimeo.com/153054698

5 Question MC Assessment

1. Which of the following represents the y-intercept of the function shown on the graph? https://drive.google.com/open?id=0B_hx6PCYa_WcZ1l2VDQtZ0VubEE
2. What is the x-value for the axis of symmetry of the function below? https://drive.google.com/open?id=0B_hx6PCYa_WcQm5NS1k2cTA3anc
3. What is the vertex of $f(x) = x^2 + 6x + 5$?
4. Graph the following function, and then identify the point of the maximum or minimum. $f(x) = x^2 + 6x - 7$
5. Graph the following function and then identify the interval on which the function is decreasing. $f(x) = x(-x - 4)$

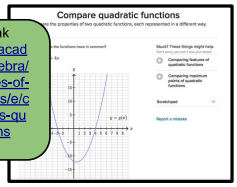
Remedial Intro: Try to visualize what happens when you factor a quadratic trinomial. Oftentimes, these expressions factor into two binomials. In this video, you will see how you can use a box to help you visualize the process and to keep your work organized.



Remedial Link
https://www.youtube.com/watch?v=UVWTK8P86to

Enrichment Intro: This video will show you a different method for factoring quadratic trinomials when the leading coefficient is not equal to one. Why is the method named "Bottoms Up"? After you watch the video, create an outline for how you would teach this method to another student.

Enrichment Link
https://www.khanacademy.org/math/algebra/quadratics/features-of-quadratic-functions/e/compare-properties-quadratic-functions



FR

Describe the following key features for the quadratic function shown on the graph: intercepts, intervals where the function is increasing and decreasing, the maximum or minimum, the vertex, the axis of symmetry, and the end behavior.

Free-response assessment item

SR

Which learning strategy did you use to meet the goal for this lesson?

Student reflection item

Student rating item

Rate your mastery of identifying the key features of a quadratic function.

1. I do not get it at all and need more help.
2. I am starting to understand but still need more practice.
3. I feel confident that I understand this concept.
4. I really grasp this skill and could apply it in different situations.