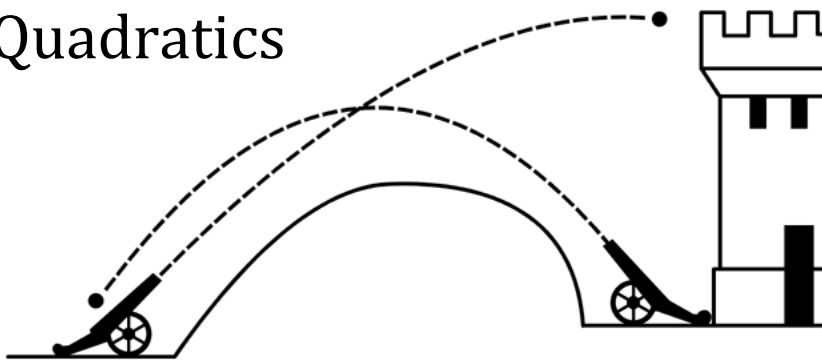


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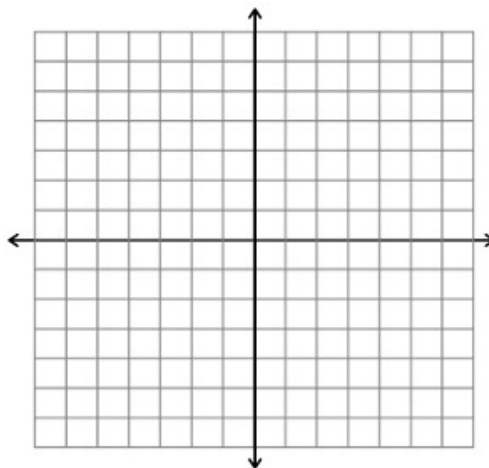
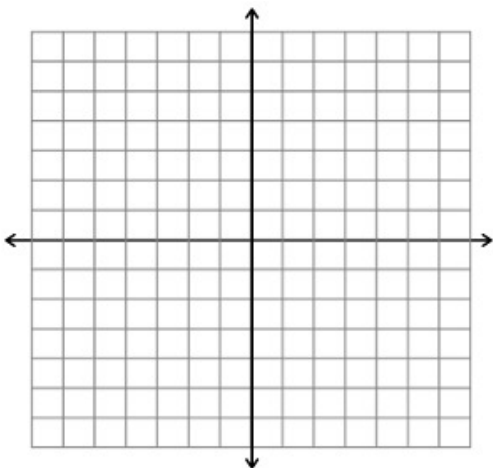
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# Exploring Quadratics



- 1) Look at the above picture. Why do the cannon balls have different paths? Name all the reasons you can think of. (Hint: Talk about the height and angle of the cannon).
- 2) Go to “Google Images” at <http://images.google.com/>. Search the word “quadratics.”
- 3) Now that you know what quadratics look like, describe what they are in your own words.
- 4) What does the path of the cannon balls in the picture above have to do with quadratics?
- 5) Draw 2 examples of things that have the shape of a parabola in everyday life. (Hint: if you can’t think of any – use Google Images to search “parabolas in everyday life.”)
- 6) Draw 2 examples of what quadratics can look like.



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- 7) Visit this website, and read through the webpage. Then answer the questions that follow.  
<http://MsHarmony.weebly.com>
- 8) What is the quadratic equation? What is it for?
- 9) When you have a quadratic equation, why can't the coefficient "a" in front of the  $x^2$  be 0?
- 10) Where do quadratics get their name?
- 11) What does "quad" mean? Why does the word "quad" describe a square?
- 12) Give me examples!

Examples of Quadratic Equations	NON-Examples of Quadratic Equations
1.	1.
2.	2.
3.	3.

- 13) In the "Standard" Quadratic Equation, what do a, b, and c represent?
- 14) Check out the "Quadratic Equation Explorer." What happens when "a" is less than -1?
- 15) What happens to a parabola when "a" is greater than 1?
- 16) What happens when "b" is positive? What happens when "b" is negative?
- 17) What happens when "c" is positive? What happens when "c" is negative?
- 18) Draw arrows to a, b, and c in the Standard Quadratic Equation below. Explain how each coefficient affects the how the parabola looks.

$$y = ax^2 + bx + c$$

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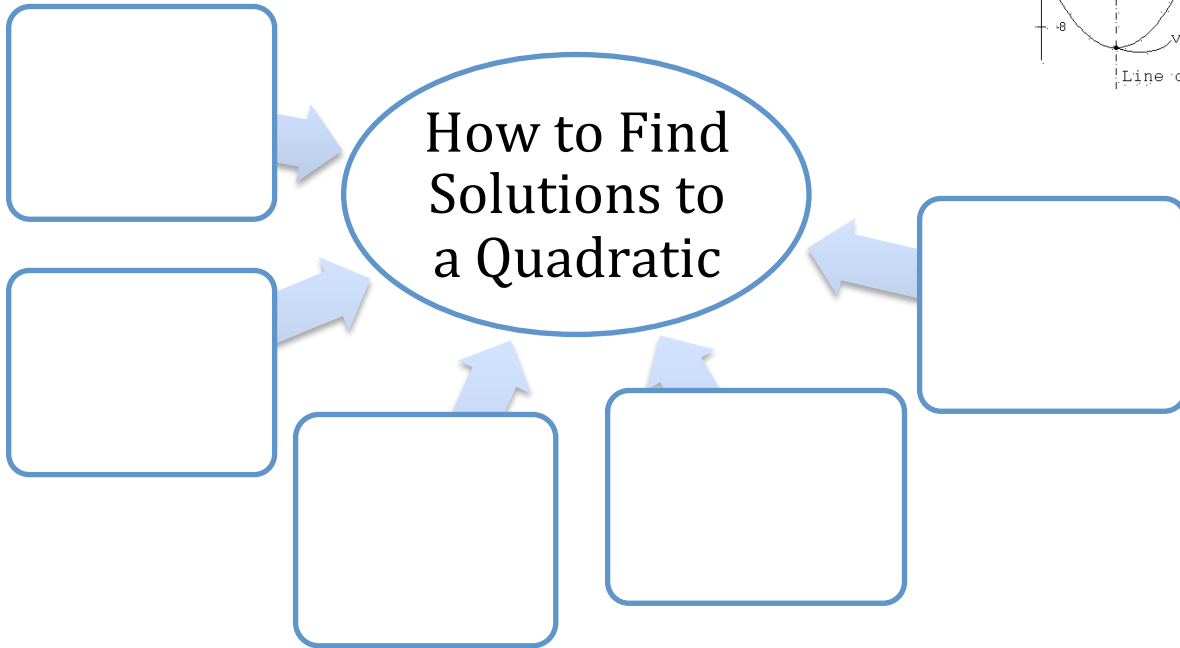
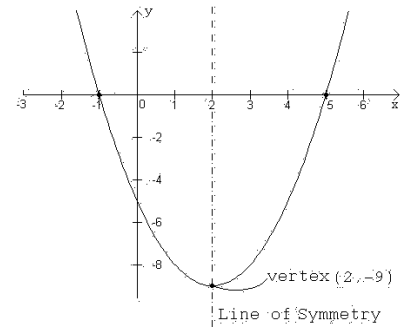
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19) What are the "solutions" to a graphed parabola? Where are they on the graph?



20) What are all the synonyms for the word "solution"?

21) What are the 5 Ways To Find The Solutions to A Quadratic?



# FACTORING QUADRATICS

22) What does it mean to "factor a quadratic"? What are you looking for?

23) What are the factors of  $x^2 + 3x - 4$  ?

24) Prove that the factors of  $x^2 + 3x - 4$  are  $(x + 4)$  and  $(x - 1)$ . Use the generic rectangle below to multiply  $(x + 4)$  and  $(x - 1)$ . When you add (find the sum of) the areas of each of the small areas, what do you get?

