

# Will it hit the can?

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In this lesson you will apply your knowledge of parabolas to answer the question we raised in class. For your convenience, this photo is already in a geogebra file at <\\fileserver\group files\Algebra II\20100223 - Will it hit the can>. A video of the answer is there too, but don't look at it yet!



1. Sketch the situation and write an equation that models the path of the ball. Show or explain how you know your sketch and equation fit the situation.

### *Discussion Points*

How can we make a graph fit this situation?

What information do we need in order to find an equation?

How can we be sure that our equation fits the situation?

1. *[Further Guidance]* Use this question if your group is having trouble with #1. This question assumes you are using graphing form,  $y = a(x - h)^2 + k$ .
  - a. Sketch the path of the ball on your own paper. Choose where to place the x- and y-axes in your diagram. Label as many points as you can on your sketch.
  - b. What point on your graph can tell you about the values of h and k in the equation? Write the values for h and k into the general equation. Is your equation finished?
  - c. With your team, find a strategy to find the value of a. Will any of the points on your diagram help? Be prepared to share your strategy with the class.
  - d. What are the domain and range for your model?
  
2. *[Further Practice]* Do problems 4-46, 4-48, and 4-49 in your book after finishing problem #1. You may split them amongst your team or work together to complete them, but please work to make sure that everyone understands every problem.