Bell Work

You are at a fair and in order to win a prize you need to toss a ball into the basket. I don’t know why, but after throwing the ball for some reason you notice that the path it is traveling on is modeled by the equation where h(t) is the height of the ball after t seconds. You also know that the center of the basket is located at the point (4, 5).   
***Do you make the shot?*** Give time to think, discuss, work, create, play, etc.

Lead a Conversation

How did you decide if the ball went in? Graph and see or check: h(4) = 5 ??

What could you change in order to make the shot?

-Move the hoop (realistically unlikely choice at the fair)

-Shoot it higher (adjust the lead coefficient, graph needs to narrow down)

-Move the graph back (take a step back, shift left)  
 -What does this say about time being negative?! Adjustment before the shot

-Move the graph down (take a knee to lower initial position, shift down)

-Throw it faster (straight line in, why is this unlikely to go in? what could   
 you do to make the chances better…   
 stand on a box and throw down at hoop, etc)

Make it happen! Win the Price! Adjust the equation to ensure the shot goes in…

Compare students answers, they will vary (graph them all on same graph, discuss   
 Intersection point)

\*\*\*Check it algebraically\*\*\*

What does h(4) = 6 in the original equation mean?   
 --after 4 seconds the ball is at a height of 6 (too high above the basket)  
 Now h(4) should = 5 to ensure after 4 seconds it’s at a height of 5 (in the basket)

Post Activity Discussion

What else could we be asked or find out based on our knowledge?

How high does the ball go?  
 How long did it take to get there?  
 How long is the ball in the air?   
 -How does this compare to its max height? \*\*Symmetry!\*\*   
 (why isn’t it “perfect”?)  
 How tall is the person shooting it?   
 Why does h(0) help us estimate this?   
 \*Intercepts  
 What does it mean if h(t) = 0?   
 \*Intercepts

Why does shooting the ball higher force it to travel a shorter distance?