

## Parabolas and their uses in real life.

Name \_\_\_\_\_

Date \_\_\_\_\_

Go to Blackboard and open the assignment called, Parabolas in Sports

This activity highlighted one moment in one sport in which a parabola can be used to model the event mathematically. Although Harrison probably never calculated any parabolic equation, he has mastered the use of parabolas to make points consistently for his team.

1. The equation for a parabola has the general layout,  $f(x) = a(x - h)^2 + k$   
Drag the sliders for a, h, and k to make the parabola go through the 3 points marking the ball's path from Harrison's release point, the ball itself, and the goal where he scored the basket. List the values below for each variable.

a = \_\_\_\_\_

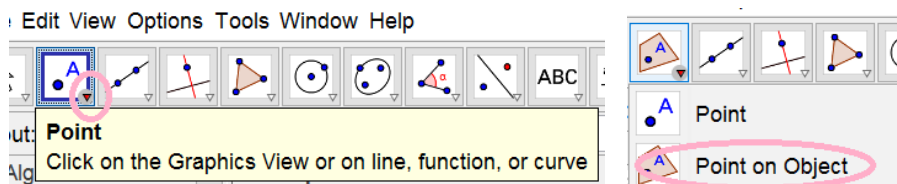
h = \_\_\_\_\_

k = \_\_\_\_\_

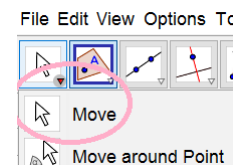
Now write the equation with those values replacing the corresponding letter:

$f(x) =$  \_\_\_\_\_

2. At the drop-down menu along the top of Geogebra, click on the little arrow on the Point tool. On the list of options, select **Point on Object**. Then click on the parabola.



3. Change the cursor to the **Arrow** and select move. Drag the point until it is on the highest location in the ball's path.



This is the vertex of the parabola. Write its coordinates here: \_\_\_\_\_

4. Compare and contrast your equation with the vertex coordinates. What did you discover?

\_\_\_\_\_

\_\_\_\_\_

## Parabolas and their uses in real life.

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5. Brainstorm with your group and list **at least 5** other real life happenings in which parabolas can model the event. Describe each event verbally and include a diagram showing the activity and the modeling parabola.