Parametric Equations 2 **Name:** _____

 Period:

Within the quizmaster http://www.mathguide.com/cgi-bin/quizmasters3/PE.cgi, the object hits the ground at exactly 4 seconds. This can be explained by using a skill called factoring.

a) Go to http://www.mathguide.com/cgi-bin/quizmasters3/PE2.cgi and write down the parametric functions.

$$\begin{cases} x(t) = \\ y(t) = \end{cases}$$

b) Now, complete the work as written on the webpage:

$$-16t^2 + \quad = 0$$

$$-16(t^2 - \square) = 0$$

$$-16(t - \square)(t + \square) = 0$$

$$t - \square = 0 \quad \textbf{OR} \quad t + \square = 0$$

$$t = \square \quad \textbf{OR} \quad t = \square$$

This object will stay in the air for $\square$ seconds

c) You are now invited to go to http://www.mathguide.com/cgi-bin/quizmasters3/PE3.cgi for a follow up problem. The goal is to create your own parametric function that defines the height of an object over time that also hits the ground at a known time value.

The webpage wants you to create a function so that the object lands in ____ seconds.

$$y(t) = -16(t - \square)(t + \square)$$

$$y(t) = -16(t^2 - \square)$$

$$y(t) = -16t^2 + \square$$

The object whose height is defined by y(t) above will stay in the air for exactly _____ seconds.

d) Now, create another parametric function that causes an object to land in 25 seconds.

e) According to your solution to part (d) above, conclude how high the object had to be at t=0 seconds so that it freefalls and lands in 25 seconds.