## Uniform Free Fall

## Practice Your Understanding

Name:	
Date:	

1. Using the Uniform Free Fall simulation enter a gravity of 9.81  $\frac{m}{s^2}$ , an initial velocity of 0  $\frac{m}{s}$ , and move your mouse to a height of 30 m. Drop the ball and record the time the ball took to reach each height on a piece of paper. (Determine the time for each height snapshot of the ball. Think about how you will determine and record each time and height data points separately). Then plug in those values into the Programming Exercises Uniform Free Fall Graph, which will generate a graph of position vs. time. Follow these directions again to obtain a similar graph, but with a gravity of 1.62  $\frac{m}{s^2}$ , (gravity of the moon) an initial velocity of 5  $\frac{m}{s}$ , and move your mouse to a height of 45 m. How do these graphs differ from each other? How are they similar? Record your answer in the box below.

2. What is the curve of the graph? Is it linear? Parabolic? How do these two graphs compare with the graph example provided at the top of the page? Record your answer in the box below.

3. Do two more simulation runs using a different gravity, initial velocity, and height of your choice. Now that you have a total of four graphs, what theorem (observation that you can write down in a sentence or two) can you come up with observing the trend of these graphs? Explain the theorem you came up with and how it matches the equation of Uniform Free Fall in the Lesson Section. Record your answer in the box below.