Uniform Centripetal Motion

Practice Your Understanding

Name: _____
Date: _____

1. Using the Uniform Centripetal Motion simulation, set the radius of the circle to $15m$. What happens when you increase the velocity of the object? Does the acceleration increase or decrease? What direction is the object rotating when the velocity is positive. What happens if you decrease the velocity so that it is negative? What happens to the acceleration? Does it change in any way? What about the direction of the object? Does that change? What direction does it change to? Record your observations and answers in the box below.

2. Now repeat question 1 with a smaller and larger radius. What happens when you increase the velocity of the object at a small and large radius? Does the acceleration increase or decrease? What direction is the object rotating when the velocity is positive? What happens if you decrease the velocity so that it is negative? What happens to the acceleration? Does it change in any way? What about the direction of the object? Does that change? What direction does it change to? Record your observations and answers for the case of a small radius and larger radius in the box below.

3. You will now go to the Programming Exercises Uniform Centripetal Motion Graph and plot centripetal acceleration vs. radius. What is the curve of the graph? Is it linear? Parabolic? What can you understand from the graphical trend relating the acceleration with the radius? Record your answer in the box below.