

# The Centripetal Force

## Practice Your Understanding

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. Using the Centripetal Force simulation, set the radius of the circle to  $15.2m$ , the velocity to  $6 \frac{m}{s}$ , and the mass to  $8 \text{ kg}$ . What happens when you increase the velocity of the object? What happens when you decrease the velocity of the object? Does the acceleration increase or decrease for both? Does the force increase or decrease for both? 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 force when the object is moving either in the positive or negative direction? Record your observations and answers in the box below.

2. Now repeat question 1 choosing a smaller radius, velocity, and mass. with a smaller and larger radius. What happens when you increase the velocity of the object? What happens when you decrease the velocity of the object? Does the acceleration increase or decrease for both? Does the force increase or decrease for both? 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 force when the object is moving either in the positive or negative direction? Record your observations and answers in the box below.

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

