Centripetal Acceleration –> Force Problem Set 2:   **Name:**_____

12. A 3.00 kg body is whirled around in a horizontal circle at the end of a string. Assume that the radius of the circle was 2.00 m and that one circle was completed each 1.50 s.

a. What was the speed of the body?

b. What was the centripetal acceleration?

c. What was the tension in the string?

15. A car (1.00×10^3 kg) goes around an unbanked circular corner (r = 100. m) at 30.0 m/s. Sketch a top down picture:

a. Find the centripetal acceleration.

b. What force must the car experience to stay in the circle?

c. What kind of force is it (name)?

16. A certain thread will withstand 100. N of force without breaking (and no more).

a. How fast can a 1.00 kg mass be whirled in a 1.00 m radius horizontal circular orbit without breaking the thread?

b. What is the smallest orbit allowing a speed of 100. m/s?

17. Young King David was practicing with his sling. With a 0.100 kg rock he whirled the sling in a circular motion with a period of 0.200 seconds.
    1. If the radius was 1.50 m, what was the centripetal force?

    2. How fast was the rock moving when he let it fly?