# Centripetal Acceleration Notes

*Basic Notes*

A. What does the term "centripetal" mean?

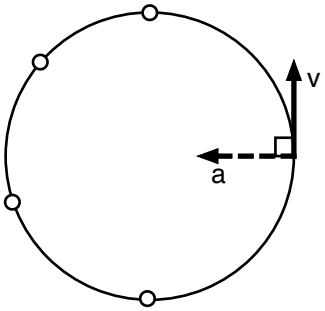
B. If you go in a circle with a constant speed, why are you accelerating?

C. What is always true about the direction you move when you go around in a circle?

D. In which direction are you accelerating when you go around in a circle?

E. What is the equation that relates centripetal acceleration, speed and radius?

F. The diagram to the right represents something going in a circle with a constant speed and constant radius. At one point, the velocity and acceleration are shown. Draw appropriate vectors to represent the velocity and acceleration for the other points on the circle.




*Questions*

1. How does the direction of your velocity compare to the direction of your acceleration if you are going in a circle with a constant speed?

2. If you tried to go around a circle twice as fast (but same radius), what has to happen to your acceleration?

3. If you tried to go around a circle with twice the radius (but the same speed), what has to happen to your acceleration?

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4. If somehow your acceleration was always perpendicular to your velocity, describe your motion.

5. For each of the following amusement park rides, describe the direction of your acceleration:
   a. On a Ferris Wheel, when you are at the highest point.

   b. On a Ferris Wheel, when you are at the lowest point.

   c. On a loop-the-loop coaster, when you are at the highest point.

   d. On a loop-the-loop coaster, when you are at the lowest point.

   e. On the Turkish Twist.