

Centripetal Acceleration Notes

Basic Notes

- A. What does the term "centripetal" mean?

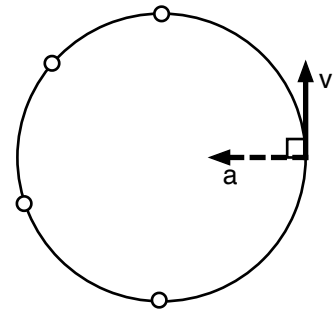
- B. If you go in a circle with a constant speed, why are you accelerating?

- 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?

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.