Acceleration and Circular Motion

Read from **Lesson 1** of the **Circular and Satellite Motion** chapter at **The Physics Classroom**:

http://www.physicsclassroom.com/Class/circles/u6l1b.html

MOP Connection: Circular Motion and Gravitation: sublevel 2

Review:

1. Accelerating objects are _____. Choose the one *most inclusive* answer.
   a. going fast
   b. speeding up (only)
   c. speeding up or slowing down
   d. changing their velocity

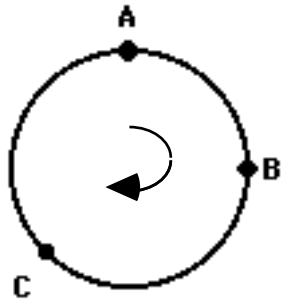
2. Identify the three controls on an automobile that are responsible for causing the car to accelerate.

Acceleration and Circular Motion:

3. A car that is moving in a circle at a constant speed of 30 mi/hr is _____.
   a. not accelerating since there is no change in velocity
   b. not accelerating despite the fact that there is a change in velocity
   c. accelerating since there is a change in velocity
   d. accelerating despite the fact there is no change in velocity.
   e. accelerating, but not for either reason mentioned above.

4. An object that is moving in a circle at a constant speed has a velocity vector that is directed _____and an acceleration vector that is directed _____.
   a. tangent to the circle, tangent to the circle
   b. tangent to the circle, outwards
   c. tangent to the circle, inwards
   d. inwards, tangent to the circle
   d. inwards, outwards
   f. outwards, tangent to the circle

5. An object moves in a clockwise direction along the circular path as shown in the diagram at the right. Three points along the path are labeled - A, B and C. For each location, **draw** a straight-line vector arrow in the direction of the velocity vector; label this vector as **v**. Then **draw** a straight-line vector arrow in the direction of the acceleration vector; label this vector as **a**.



6. An object that is moving in uniform circular motion will **definitely** have a large acceleration if it is _____.
   a. moving very fast
   b. moving along a sharp turn
   c. turning at a rapid rate

   Justify your answer:

Interesting Fact:
The moon orbits about the Earth with an average speed of just over 1000 m/s; yet its acceleration is less than 0.003 m/s^2. The moon is a fast-moving object with a low acceleration.

