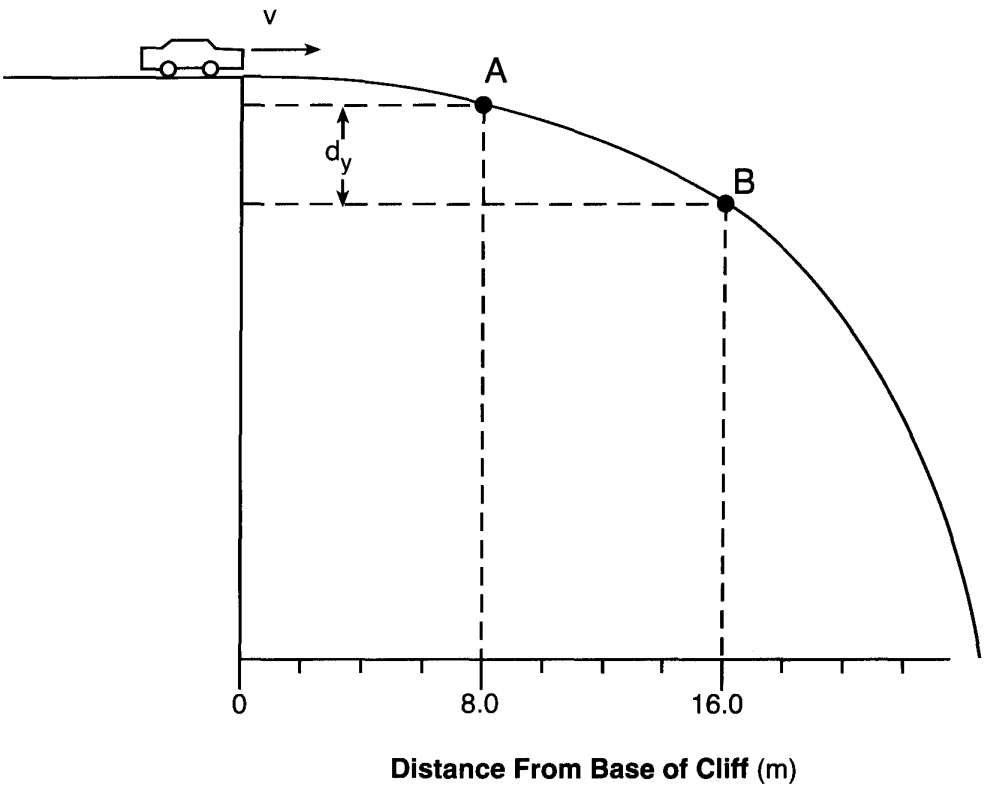
Name **Part 2 Review J**

Base your answers to questions **1** through **3** on the information below.

The path of a stunt car driven horizontally off a cliff is represented in the diagram below. After leaving the cliff, the car falls freely to point *A* in 0.50 second and to point *B* in 1.00 second.



1. Calculate the magnitude of the vertical displacement, d_y, of the car from point *A* to point *B*. [Neglect friction.] [Show all work, including the equation and substitution with units.]

2. Determine the magnitude of the vertical velocity of the car at point *A*.

3. Determine the magnitude of the horizontal component of the velocity of the car at point *B*. [Neglect friction.]

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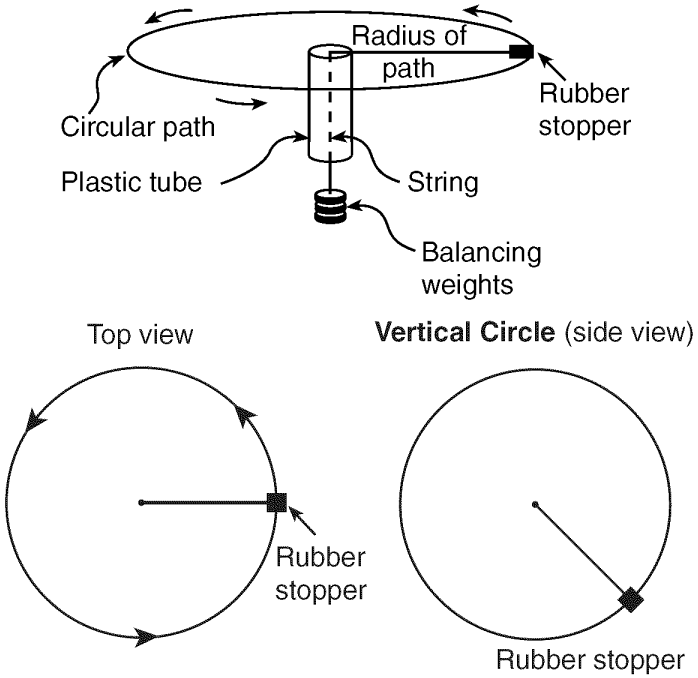
Base your answers to questions **4** through **7** on the information and diagram below.

In an experiment, a rubber stopper is attached to one end of a string that is passed through a plastic tube before weights are attached to the other end. The stopper is whirled in a horizontal circular path at constant speed.



4. The rubber stopper is now whirled in a vertical circle at the same speed. On the diagram, draw and label vectors to indicate the direction of the weight (F_g) and the direction of the centripetal force (F_c) at the position shown.

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5. List *three* measurements that must be taken to show that the magnitude of the centripetal force is equal to the balancing weights. [Neglect friction.]

6. Describe what would happen to the radius of the circle if the student whirls the stopper at a greater speed without changing the balancing weights.

7. On the diagram of the top view, draw the path of the rubber stopper if the string breaks at the position shown.