Online Roller Coaster Lab

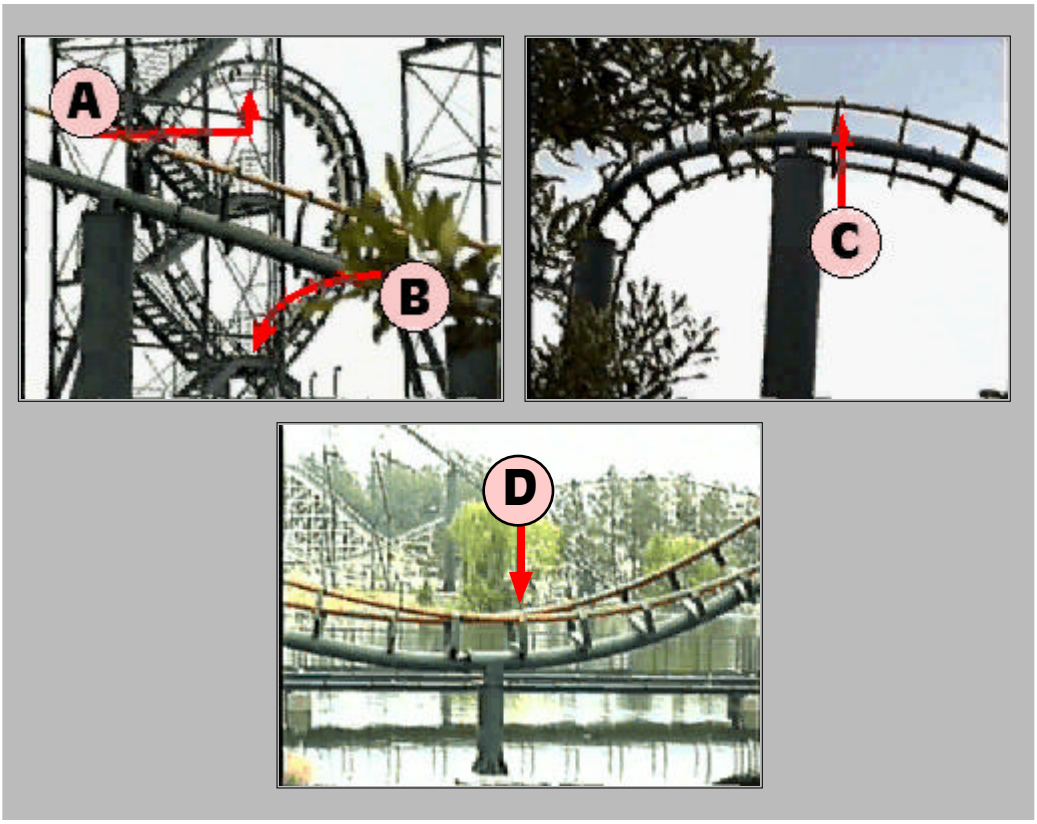
"Anaconda" roller coaster at Paramount's King's Dominion, Doswell, Virginia

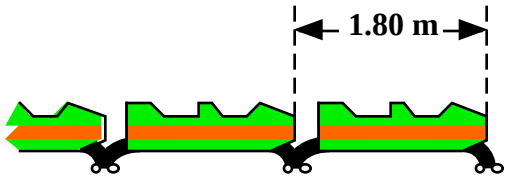
Materials

- Computer with access to the coaster QuickTime movies.
- Stopwatch

If needed review the velocity measurement methods on the web site. This lab uses method one.

The measurements revolve around the four locations shown below. You will need to decide which locations can be used to answer the appropriate question.





Coaster car's dimensions.

These are not the train's real dimensions. You will have to go to Paramount's King's Dominion to get those.

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Show your work for all answers. Ignore all frictional forces.

1 What is the train of car's total length?

ANSWER:

2 Location "**A**" is at the top of the loop. What is the coaster's speed at location "**A**?"

ANSWER:

3 Location "**B**" is just when the train exits the loop. What is the coaster's speed at location "**B**?"

ANSWER:

4 What is the difference in height between locations "**A**" and "**B**" assuming no energy is added or removed from the ride between these locations?

ANSWER:

5 If a rider feels a force factor of 1.80 g's at location "**A**," then what is the radius of curvature at location "**A**?"

ANSWER:

6 Location "**C**" is around a curve somewhere after location "**B**". What is the speed at location "**C**?"

ANSWER:

7 What is the difference in height between locations "**A**" and "**C**" assuming no energy is added or removed from the ride between these locations?

ANSWER:

8 Location "**D**" is farther along the ride after location "**C**." What is the speed at location "**D**?"

ANSWER:

9 What is the difference in height between locations "**C**" and "**D**" assuming no energy is added or removed from the ride between these locations?

ANSWER:

10 If the radius of curvature is 7.0 meters at location "**D**," then what is the centripetal acceleration a this location?

ANSWER:

11 How many g's of acceleration does a rider <u>feel</u> at location "**D**" ?

ANSWER: