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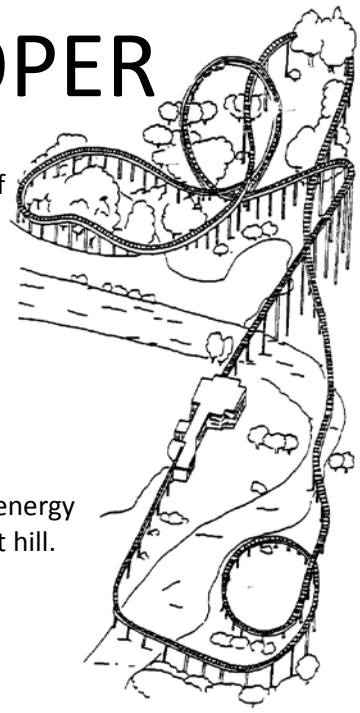

1. Determine the speed at the top of the first hill. The length of the train is 12.95 m. (Hint: see Appendix B.)

2. Use the answer from question one and the conservation of energy to determine the theoretical speed at the bottom of the first hill. The first hill has a height h of 24.69 m.

3. What is the experimental speed at the bottom of the first hill? Is there a difference? Why? (Hint: see Appendix B.)

4. Calculate the percent difference in the experimental and theoretical data for questions 2 and 3.

5. The height of the loop is 16.15m. Use the conservation of energy to determine the speed at the top of the loop.

6. Find the centripetal force at the top of the loop.

7. Draw and label a force diagram representing the train when it is at the top of the loop.

8. Using your value of the centripetal force and your force diagram, explain what you feel at the top of the loop.