**Six Flags Alternative Assignment - Conceptual Classes**

(Don’t do struck through problems – these are for advanced classes)

**ROLLERCOASTER #1**

***GREASED LIGHTNING***



Mass = 6500 kg

*Using the information shown on the rollercoaster diagram above, determine the correct answers to the following questions. Show all work on a separate sheet of paper.*

* 1. How much power was used to pull the coaster car up the first hill? (in watts and horsepower.)
1. How fast is the car traveling at location **A** if it coasted down the back side of the first hill? Don’t do this, but you’ll need the answer for Question 3: Answer = 41.0 m/sec
2. How many g's does the rider feel as he enters the bottom of the next element if its radius is 60.0 m, at location **B**?
3. ~~How fast is the car traveling when it reaches the banked curve?~~
4. ~~If the banked curve is at a 52.3° angle with the horizontal, then what is the radius of the banked curve?~~
5. ~~How many g's does the rider feel in the banked curve?~~
6. How many g's does a rider feel as he enters the bottom of the loop?
7. ~~How fast is the rider traveling at the top of the loop?~~
8. How many g's does the rider feel at the top of the loop?
9. As the car enters the station at the end of the ride, its brakes are applied. How much power do the brakes exert on the car? (in watts and horsepower.) t = 0.712 sec.

**ROLLERCOASTER #2**

***LICKETY SPLIT***



 r = 42.3 m

*Using the information shown on the rollercoaster diagram above, determine the correct answers to the following questions. Show all work on a separate sheet of paper.*

1. How much force is used to accelerate the train across the first 42.6 m? t = 2.21 sec.
2. How many g's does the rider feel as he is pushed by the initial accelerating force?
3. ~~How fast is the car traveling at location~~ **~~A~~** ~~if it coasted down the back side of the first hill?~~
4. At location **B** the incline is 90° of a circle. How many g's does the rider feel as he enters the loop at location "B?"
5. ~~How fast is the car traveling when it reaches location "C"?~~
6. ~~In the banked turn the rider is traveling 21.6 m/s. What is the optimum angle of the banked curve?~~
7. How many g's does the rider feel as he enters the loop?
8. ~~What is the height of the loop?~~
9. If the radius at the top of the loop is 7.45 m, then how many g's does the rider feel at this location?
10. How high does the coaster train coast at the end of the track?