# FERMI QUESTIONS (Answer 2 questions)

**(Questions from Kennywood Amusement Park Physics Test – Ed Henke, Retired Physics Teacher, Pittsburgh Public Schools)**

**SOME USEFUL INFO:** Kennywood is open 11 hours a day, about 112 days a year

**JUSTIFY YOUR ANSWERS (Don't just guess!)**

1. MILK BOTTLE STAND: Estimate how many baseballs are thrown at the milk bottles in the course of one day.

2. POTATO PATCH: Estimate the number of french fries sold today at the Potato Patch.

3. PHANTOM'S REVENGE: Estimate the total number of passengers the Phantom's Revenge could carry during one year of operation.

4. PHANTOM'S REVENGE: Estimate the number of pieces of chewing gum resting on the roof beside the Phantom's Revenge loading ramp.

5. COTTON CANDY: Assume that a bundle of Cotton Candy could be completely unwound into a single very long thread of Cotton Candy. Estimate the length of the Cotton Candy thread!

6. THUNDERBOLT: Stand by the tables near the Potato Patch. Look at the Thunderbolt. Near the top of the highest track you will see the bullwheel. This wheel is the wheel at the top end of the chain that pulls the Thunderbolt trains up the hills. You will notice that this wheel turns continuously. Estimate the number of revolutions made by the bullwheel since the Thunderbolt opened in 1980.

7. BUMBER CARS: The drivers of the bumper cars on the Gran Prix are not known for their ability to avoid collisions. Estimate the number of collisions occurring during one season.

8. PENNY ARCADE: Estimate how many people would be able to stand inside the Penny Arcade during a rain storm.

9. KENNYWOOD RAILROAD: For more than 50 years, a cutout of the front of a railroad train has rocked side to side in the area to the left of the Kennywood Railroad. Estimate how many complete rocking motions the cut out makes in one season.