



# Roller Coasters!!



Coaster Name: \_\_\_\_\_

Members: \_\_\_\_\_

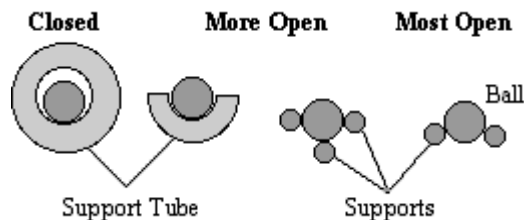
The scoring for our version will be weighted as follows: Technical Score + Creativity Score = YOUR GRADE!

Technical Score = 80 X (Openness Factor) X (Loop Factor) X (Time Factor)

## Openness Factor

Factor: \_\_\_\_\_

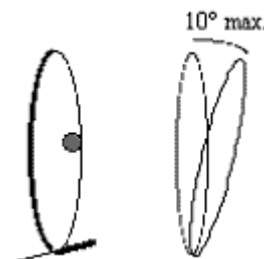
| % open    | factor |
|-----------|--------|
| < 50%     | 0.7    |
| 50% - 80% | 0.9    |
| > 80%     | 1.0    |
|           |        |



## Loop Factor

Factor: \_\_\_\_\_

| # of vertical loops | factor |
|---------------------|--------|
| 0                   | 0.6    |
| 1                   | 0.8    |
| 2                   | 1.0    |
| 3                   | 1.2    |
| 4                   | 1.5    |



Vertical loop is defined as any time the "rider" is upside down on a loop of track that is within 10° of vertical (see illustration). If the vertical loop is a portion of a corkscrew (helix), it counts as a vertical loop. Horizontal loops do not add bonus points.

**Time factor**    Your Time: \_\_\_\_\_    Max time: \_\_\_\_\_    Factor: \_\_\_\_\_

The points awarded for time will be based on the maximum time taken within the class. Assume the maximum time was 15 seconds and your coaster took 9 seconds: **Lowest factor is 0.6**

**Calculations:** Final score is reported to the tenth decimal place.

Technical Score: 80 x ( \_\_\_\_\_ ) x ( \_\_\_\_\_ ) x ( \_\_\_\_\_ ) = \_\_\_\_\_

Creativity Score: Engineering \_\_\_\_\_ + Theme \_\_\_\_\_ + Fun \_\_\_\_\_ x 2 = \_\_\_\_\_

**Final Score** \_\_\_\_\_

# Coaster Grading Rubrik

Your name (Chemistry Student) \_\_\_\_\_

**Directions:** You will be judging the Creativity portion of the Physics Students Roller Coaster Project. You can use the same number of points for different projects.

**This grade will counts towards each groups final grade for the project.**

| Coaster Name | Engineering and Unique Mechanical Design Features (1-10) | Theme including decoration, attention to detail and Unique Features (1-10) | Fun (1-10) |
|--------------|----------------------------------------------------------|----------------------------------------------------------------------------|------------|
| 1.           |                                                          |                                                                            |            |
| 2.           |                                                          |                                                                            |            |
| 3.           |                                                          |                                                                            |            |
| 4.           |                                                          |                                                                            |            |
| 5.           |                                                          |                                                                            |            |
| 6.           |                                                          |                                                                            |            |
| 7.           |                                                          |                                                                            |            |
| 8.           |                                                          |                                                                            |            |

How to grade

| # of Points | 1 – 3                                                                                       | 4 – 6                                                                                                                        | 7 - 10                                                                                                                                          |
|-------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Engineering | Basic Engineering; zero to few loops; short track; no unique features; appears quickly made | Average – good engineering; contains at least 2 loops; medium length coaster; 1 unique feature; solid work into construction | Excellent engineering; contains at least 3 loops; plenty of track; many unique features; appears much time was spent to make the coaster unique |
| Theme       | Relatively no theme; theme present is poorly made and with little effort                    | Average-good theme; good coverage of coaster supports (stool, bars, clamps) with design materials                            | Excellent theme; plenty of coverage of supports with design materials, unique features to their project make it standout from the others        |
| Fun         | This ride would be insanely boring to ride                                                  | Average fun; maybe stand in line for 20 minutes at a park                                                                    | Tons o’ fun! Riding this coaster would be a blast. You would wait for hours to ride this coaster                                                |

