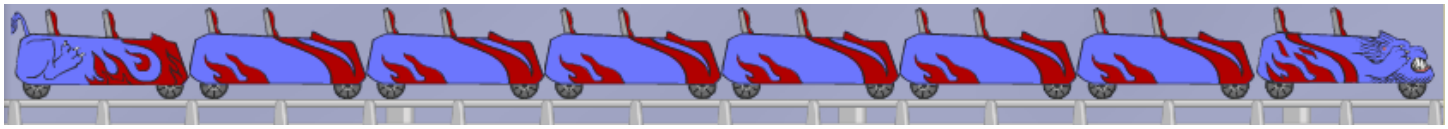
Name _____ per____ due date_____ mailbox_____

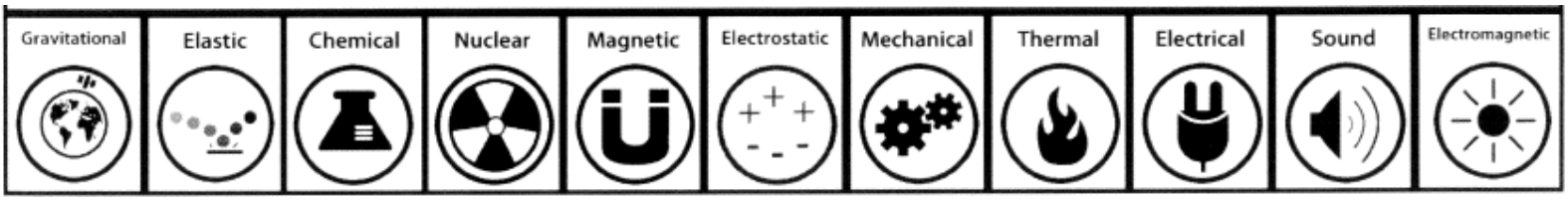
ROLLER COASTER CREATOR LAB

http://content3.jason.org/resource_content/content/digitallab/4859/misc_content/public/coaster.html -Link



Lab QUESTIONS:

1. What forms of energy are involved in a roller coaster? Circle all that apply.



2. Write down the name of your roller coaster? _____

3. How many carts are you selecting for your initial run? _____

Directions for labeling sketches.

To receive full credit you must: (Option colored pencils)

1- Label **potential energy** *spots* along the coaster track. Label as follows:
*For greatest potential (1ST hill)→(**PE3**) & then second hill→ **(PE2)**, **(PE1)**,* etc.

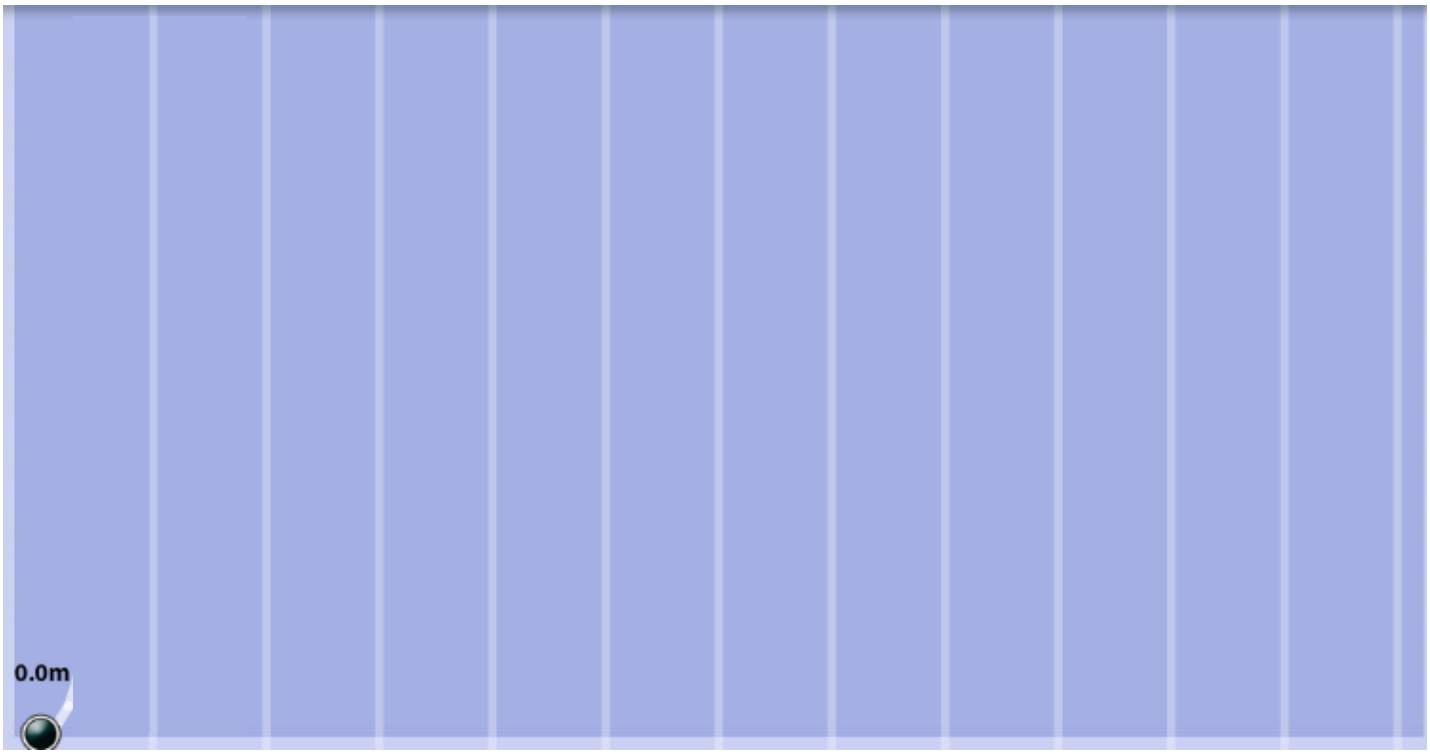
2- Label these **kinetic energy** *spots* along the coaster track. Label as follows:
*For highest speed near bottom of 1st hill → **(KE3)**, then **(KE2)**, **(KE1)**,* etc.

3- Next label at least 2 sections of track where you would expect the greatest **dissipated energy** transfer or *friction zones as→ **(DE-1) & (DE-2)***

4- Record your mass; 1 car = 100kg, max height & max velocity in the table.

5- You will need to try & "*capture*" maximum velocity with careful observation. You can simply **pause [II]** while the cars are rolling down bottom of 1st hill.

A. Time to build to your first roller coaster design. Sketch your design here:



$PE = \text{Mass} \times g \times \text{Height}$ $KE = \frac{1}{2} \times \text{Mass} \times \text{Velocity}^2$

$g = 9.807\ m/s^2$

g=gravity

4. When your coaster reached the end of the run it… Circle one of the following:
   Crashed Success! Stuck

5. Record your Hills Loops and Difficulty Score _____
6. Record your Screams Top Speed and Stop Accuracy Score _____

7. Why do roller coasters crash at the end? Discuss using the following terms (**kinetic energy, dissipated energy & friction**). _____

_____

_____

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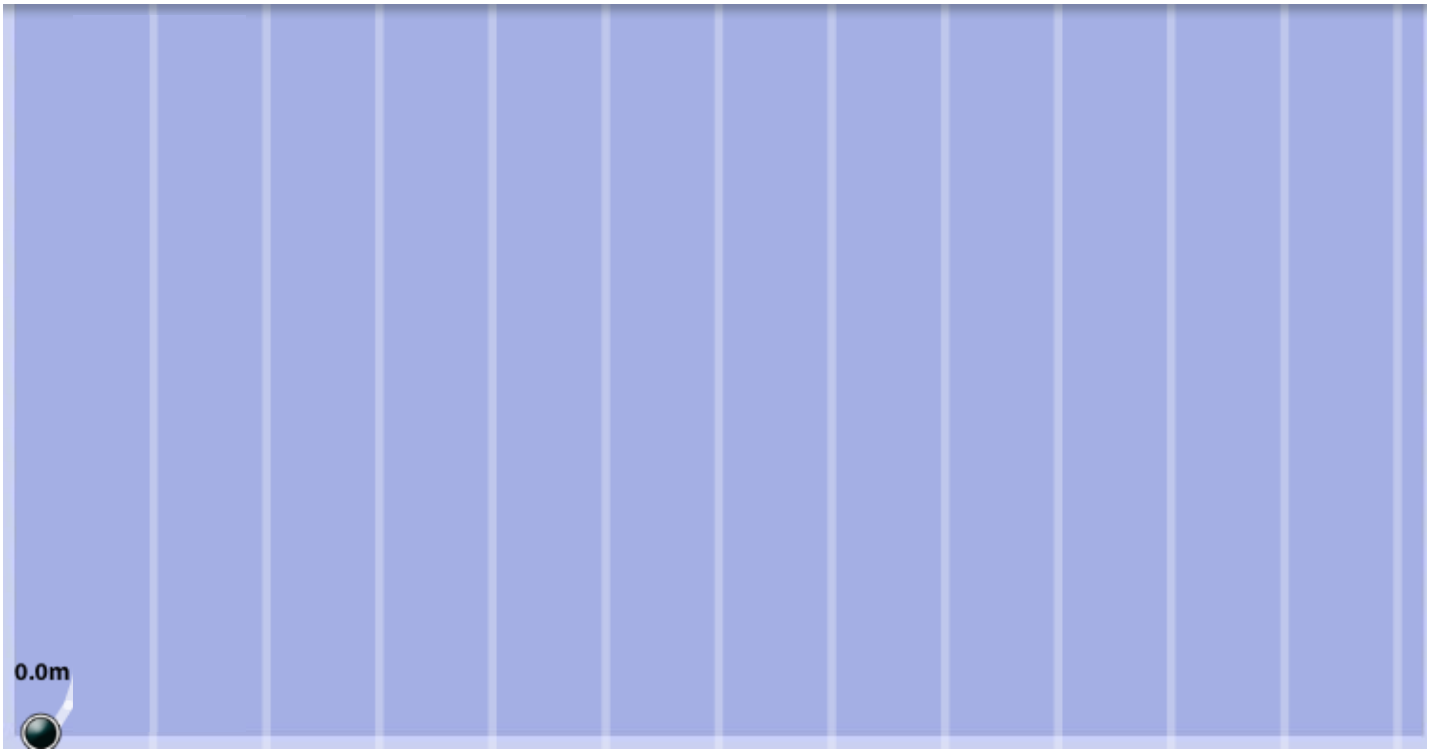
_____

Design or modify your 2nd coaster 10pts

B. Time to build to your second roller coaster design. Sketch your design here:



g=9.807 m/s²
g=gravity

8. When your coaster reached the end of the run it… Circle one of the following:
Crashed Success! Stuck

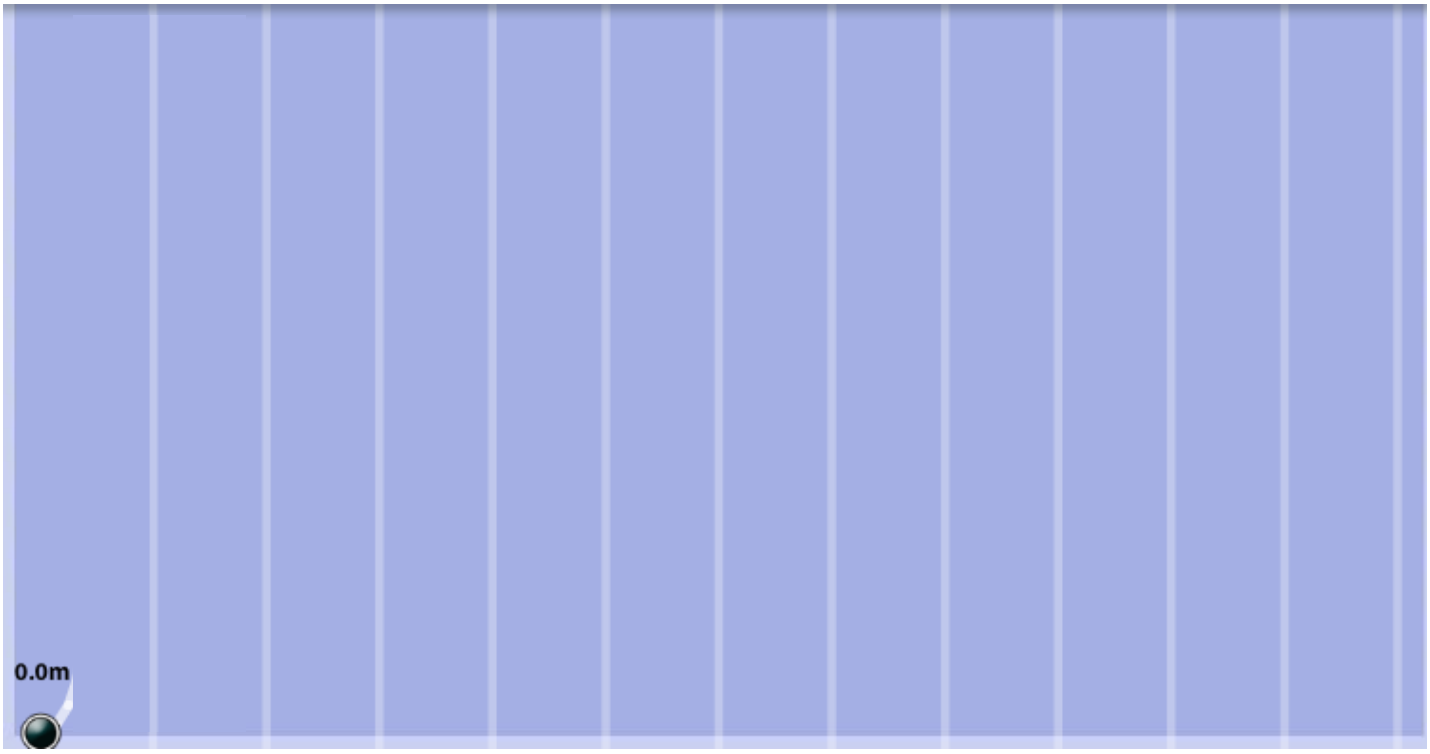
9. Record your Hills Loops and Difficulty Score _____

10. Record your Screams Top Speed and Stop Accuracy Score _____

11. What did you modify/engineer differently to change and stop the cars at the offloading platform. Use one or more of the following vocabulary: **mass "# of cars", GPE of hills, slope of track, friction zones**. _____
_____
_____
_____
_____

Design or modify your 3rd coaster bonus

C. Time to build to your third roller coaster. Sketch your design here:



12. When your coaster reached the end of the run it… Circle one of the following:
    Crashed Success! Stuck

13. Record your Hills Loops and Difficulty Score _____
14. Record your Screams Top Speed and Stop Accuracy Score _____

15. Was this coaster a success? Discuss using the following terms (**kinetic energy, dissipated energy & friction.**

_____
_____
_____
_____