

## Roller Coaster Interactive lab Activity

**Simulation: Building your own roller coaster.**

**Click Here!** <http://www.funderstanding.com/k12/coaster>

The following is a simulation of a real roller coaster. Since we can't take you to an amusement park we can do the next best thing. Before you start building the coasters for your challenge, you need to gather information like a scientist would. You will practice and manipulate the virtual track to see the effects of the changes you make. All of this information will be applied later when you start constructing your own.

Complete the following tasks:

Manipulate the roller coaster using the mouse to move the knobs up and down to increase and decrease the factors. Every time you make an adjustment there is a response to that adjustment. Manipulate the track below and answer the questions.

1. Can all the hills on a roller coaster be the same height? If not , why?
2. Can the hills get bigger as you move through the track or must they get smaller? Explain
3. Does steepness of the hills effect the coaster's ability to finish the track?
4. Is it better to be steep or not as steep?
5. If the speed of the coaster is too high when it goes over the crest of a hill, what happens? Why?

6. Why does the height of the second hill effect the ability of the coaster to go safely around the loop?

7. How do the heights of the first and second hills cause the coaster to either not get around the loop or crash through the loop?

8. What provides resistance on the roller coaster causing the car to slow down?

9. Manipulate the track until:

1) the car stays on the track the whole time without falling off

2) you get a speed between 60-63

3) a time between 40-45 seconds.

Make sure to **RESET** after each trial