

Activity 1: Mabel Marble

SPECIFICATIONS

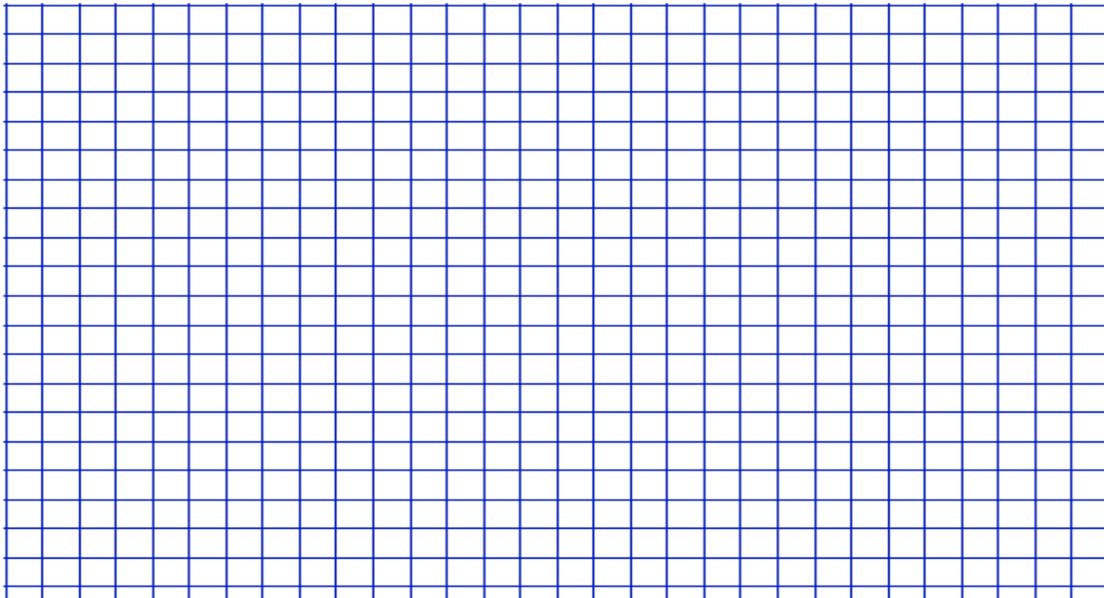
- Mabel meets Grandma at the bottom of the hill with a light kiss.
 - She can start anywhere along the top of the hill.
 - There cannot be a barrier behind Grandma.
- Mabel must be able to do this 2 consecutive times with the same setup.
 - To be successful, no adjustments to the design can be made between the runs.

DOCUMENTATION

Materials used: List the materials that you used in your design.

Picture: Sketch your final hill design (bird's eye view). Be sure to include the following information:

- Label for key elements in design
- Final hill height
- Initial location of Mabel
- Location of Grandma



Question: *Is there any one right design?*

Activity 2: Mabel’s Speed on Inclined Plane

DIRECTIONS

- Set the incline at a height. Record the height.
- Place Mabel at the top of the inclined plane. Using the stopwatch, time how long it takes Mabel to get from the top to the bottom of the incline. Record.
- Calculate average time (add the heights and divide by 10).
- Measure length of incline. Calculate speed.
- Do at least 2 different heights. If time remains, you can do a third.

Height: Perpendicular from floor to top of incline	Height #1 <i>___ centimeters</i>	Height #2 <i>___ centimeters</i>	Height #3 <i>___ centimeters</i>
Time: How long did it take Mabel to roll from the top to the bottom of the incline <i>(record at least 10)</i>			
Average time <i>Add times, divide by 10</i>			
Length of incline <i>In centimeters</i>			
Speed $= \frac{\textit{inclineLength}}{\textit{averageTime}}$			

WHEN YOU HAVE YOUR DATA COLLECTED

1. Calculate the speed for at least one height
2. Bring your data to the computer up front to be graphed

Questions: *Why do we stop measuring time at the bottom of the incline and not at the end of Mabel’s run? What seems to be the relationship between height and speed? How does this exercise inform the Mabel Marble Activity?*