

On Track Learning

Calculating the slope of a ramp

In this activity you will calculate the slope of a ramp and determine the time it takes a vehicle to travel down the ramp.

Procedures:

1. Build a ramp. Take a board and put two textbooks under one end. To prevent you from having to chase the car after each release, place the lower end near the wall (but not up against it).
2. Measure the *rise* (the distance from the highest point on the ramp straight to the floor). Mark this spot on the floor with tape. You will need to use this same point to measure run. Record this measurement in the chart below.
3. Measure the *run* (the distance along the floor from where the ramp touches the floor to the point on the floor that you marked the rise in step 2). Record this measurement in the chart below.
4. Calculate the value of the slope. $Slope = rise \div run$. Record the result in the chart below.
5. To determine the time it takes for the car to travel down the ramp, designate three people to be timers and one person to release the car. The timers will measure the time from when the car is released until the back wheels leave the ramp. Average the three times and record your results. (A refresher from previous math classes: An *outlier* is a piece of data that is considerably different in value than the rest of the data. When comparing the three times, check for an outlier. If repeating the experiment will provide more accurate data, then release and time again before changing the ramp.)
6. For the second trial, add two more books and repeat steps 1 – 5.
7. For the third trial, add two more books and repeat steps 1 – 5.

Time Trial	Rise	Run	Slope	Time
#1				
#2				
#3				

Name _____

Answer the following questions:

1. In examining the data, what is the relationship between the values of rise and run?
2. In your own words, what is slope?
3. What impact does slope have on the time it takes the car to go down the ramp?
4. Where does slope have an impact in your life?