

Name _____

Partner _____

VROOOOOOM!

The Relationship between Mass and Angle of Incline and Speed of a Car

Background Info:

Velocity is the speed of an object in a given direction. To calculate velocity, you need to know how far the object travels in a period of time. *Acceleration* is rate of change in velocity. You are going to test how the angle of incline affects the speed of an object, as well as how mass affect the motion of the same object.

Part 1 Question: How does the Angle of Incline affect the motion of your vehicle:

IV: Angle of Incline (20 degrees, 40 degrees, 60 degrees, 80 degrees)

DV: Speed

Materials:

- Protractor
- Ruler
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-
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Hypothesis:

Write a hypothesis about the relationship between the angle of incline (IV) and

_____ (your DV).

Constants:

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-
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-
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Methods:

1. Create a track with a 20 degree angle using a protractor.
2. Measure out a specific distance beyond the track and put down a piece of tape as an indicator.
3. Record measured distance in the data table.
4. Drop a car down the track and, using a stopwatch, record the time it takes to get from the top of the track to the pre-measured piece of tape.
5. Record time in the data table.
6. Repeat steps 1-5 2 more times to obtain 3 trials worth of data.
7. Repeat the steps 2-6 with a track at 40 degrees, 60 degrees, and also 80 degrees and record data in the table.

Individual Results

	Time Trial 1 (s)	Time Trial 2 (s)	Time Trial 3 (s)	Average Time (s)	Distance (m)	Average Speed (m/s)
20 degrees						
40 degrees						
60 degrees						
80 degrees						

Class Average Speed Results

20 degrees (m/s)	40 degrees (m/s)	60 degrees (m/s)	80 degrees (m/s)

Part 2 Question – How does the mass of your vehicle affect the motion of your vehicle?

IV: Mass of Car (2 pennies, 4 pennies, 6 pennies, 8 pennies)

DV: Speed

Additional Materials:

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Hypothesis: Write a hypothesis about the relationship between the mass of your vehicle (IV) and _____ (your DV).

Constants:

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-
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-
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Methods: Write your own!!

Results:

Individual Results

	Time Trial 1 (s)	Time Trial 2 (s)	Time Trial 3 (s)	Average Time (s)	Distance (m)	Average Speed (m/s)
2 pennies						
4 pennies						
6 pennies						
8 pennies						

Class Average Speed Data

2 pennies (m/s)	4 pennies (m/s)	6 pennies (m/s)	8 pennies (m/s)

Graphing: Create a graph that shows your data and class data for each of the IVs tested in the 2 parts of this experiment

