**Acceleration Discovery Lab**

**Purpose:**

1. What does a Distance vs. Time Graph look like when the object is accelerating?
2. How is a graph showing acceleration different than a graph showing constant speed?

**Research:**

1. Read about acceleration pp56-57 iin the Physical Science book
2. Write a definition for acceleration; what does that mean to you?

**Hypothesis:**

1. Write an answer for the purpose questions,
2. Tell me what do you think will happen in lab tomorrow?
3. How will you use your video to calculate time and distance
	1. 1 m= \_\_\_\_\_\_\_\_\_\_cm
	2. 1 sec = \_\_\_\_\_\_\_\_\_\_ tenths of seconds

**Materials:** Write a list of what you used. ***Please include a drawing of your set up.***

**Procedure:** Write what you did, either in numbered steps or a paragraph.

**Data:**  You may need more data points, depending on your video.

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| --- | --- |
| Distance(Tenths or hundredths of m;0.1 m or 0.01m) | Time(tenths or hundredths of sec.; 0.1 s or 0.01 s)  |
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**Results:**  Create a Distance vs Time graph.

1. On the graph you will connect the dots with a ruler and calculate the speed for each interval.
2. Find the slope of 3 different intervals; beginning, middle and end.
3. Rank the speeds on your graph; fast, medium and slow.
4. Color-code the sections of the graph to match where on the line you calculated the 3 speeds. Make a key showing colors, speeds and descriptions.
5. Identify when the car was speeding up, slowing down or staying the same.

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**Conclusion:**

1. Acceleration is a change of velocity. What are 3 different ways an object could accelerate?
2. A car can be accelerating and going a constant speed. What has to be happening for this to be true?
3. How fast was the car going at its fastest speed? Slowest?
4. *When* was your car going the fastest? (beginning, middle or end?)Why, what caused that?
5. *When* was your car going slowest? (beginning, middle or end?) Why, what caused that?
6. *When* was your car going a medium speed? (beginning, middle or end?) Why, what caused that?
7. *Explain* how we calculate speed in m/s using a graph. What kind of graph does it need to be?
8. ***Write*** a Summary Paragraph.
	1. What did you learn? What did you discover?
	2. What worked and what didn’t?
	3. What did you do?
	4. How did you figure it out?
9. ***Write*** a Reflection Paragraph.
	1. What did you like about the lab? Your group? Your design and procedure?
	2. What was hard?
	3. How might you use it?
	4. Did you enjoy doing the lab? Why or why not?