



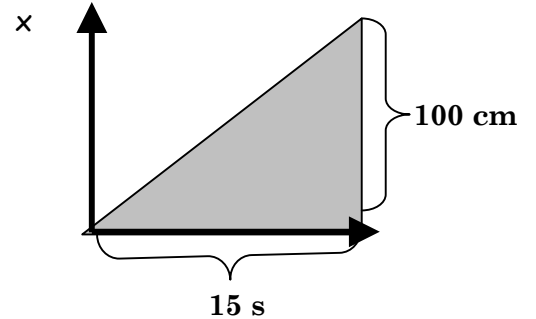
**Data Table:**

- After you have made your prediction, exchange your fast buggy for a slow one. Run the slow buggy experiment the same way you did the fast one. Record the data in the table.
- Graph your data and draw a best-fit line or smooth curve. Label "Slow Buggy"

**Calculating the Velocity From Your Graph:**

In order to calculate the velocity of both the fast and the slow buggy, data from the graph may be substituted into the equation for velocity. Examine the slow buggy line and read the axes to determine how far each buggy traveled during the time:

Ex.  $v = \frac{\Delta x}{\Delta t} = \frac{\text{Rise}}{\text{Run}} = \frac{100 \text{ cm}}{15 \text{ s}} = 6.7 \text{ cm/s}$



Show your calculations below:

Slow Buggy:

Fast Buggy:

$v = \frac{\Delta x}{\Delta t} = \underline{\hspace{2cm}}$

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**Conclusion:**

- Explain:
- how the graph shows constant velocity, and
  - the relationship between the steepness of the line on the graph and the velocity of the buggy.

**Post-Lab:**

1. What could cause the fast buggy to go faster than the slow buggy?

2. So far you have used three different ways to represent the motion of an object:

1. Distance and time data
2. Graphing Distance vs. Time
3. Mathematical Equation:  $\text{Velocity} = \text{Displacement}/\text{Time}$

There is another way to represent the motion of the object using diagrams or pictures. Imagine watching the motion of the fast buggy as it moves along the floor and having the ability to take a photograph of the buggy every three seconds. If all of the snapshots are placed in sequence, the motion can be represented by a picture known as a "strobe" diagram:

**Fast Buggy Strobe Diagram:**



3. a) Now it is time for you to draw a strobe diagram that represents the motion of the slow buggy. Use the spacing shown above for the faster fast buggy as a guide to draw cars for the slower, **slow buggy**:



b) Explain how you decided on the spacing between the cars:

4. Imagine that you have a super fast buggy that can travel **twice as fast** as the fast buggy. Draw a strobe diagram that could represent the motion for this super fast buggy:



# Investigating Velocity: Graph

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(Title)

