

Constant Velocity Lab

or

The Great Balloon Race

The **objective** of this lab is to collect data, calculate, and graph the velocity of a moving object.

Students will work in groups of four, each with one of the following duties:

1) Timer; 2) inflates the balloon; 3) hold other end of string horizontally; 4) observer/recorder.

Materials: Balloon Straw String (6 meters) Masking tape
Duck tape Marker Timer (TI-84)

Procedures:

1. Obtain a section of string, tie an approximate 15 cm loop at one end. Obtain a 10 cm length of duck tape, place the duck tape through the loop and tape the string to the shelf in the classroom.
2. Use the marker to mark the string every 50 cm.
3. Obtain a straw, cut to a length of 10 cm and slide it onto the string.
4. Use the masking tape to tape a balloon onto the straw. Take into consideration the balloon with increase in size while inflated.
5. One person will hold the end of the string level while another person inflates the balloon. When the balloon is released, the person timing will start the timer and stop the timer after the balloon has traveled between the points indicated in the data table below.
6. Record your measurements and calculations in the data table.

Data Table (copy this data table into your composition book):

	x_i	x_f	? x	? t	v
Trial Run 1	1m	2m			
Trial Run 2	1m	3m			
Trial Run 3	1m	4m			
Trial Run 4	1m	5m			

Analysis – Answer with complete sentences:

1. List all equations you used for this lab.
2. Is the calculated velocity average or instantaneous? Explain.
3. Describe the slope of the line if the velocity is constant.
4. Construct a graph in your composition book.
5. What would the graph look like as the balloon's velocity increases (acceleration) at the beginning of the run **and** as the velocity decreases (deceleration or -acceleration) at the end of the run?
6. Describe the difference between velocity and speed. Is this lab labeled correctly?