

Testing Your Prototype:

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Recording Our Results:

Trial Number:	Time (s)	How far was it?

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Controlling Variables:

What are variables?

How can we control them?

We can try to control variables to learn what we can do to the parachute to make it stay up in the air longer and/or aim better. What are some ways we can change the variable of the canopy so that it would make the parachute stay up in the air longer and/or aim better?

Another word for controlling variables is called the independent variables or the constant variables. What variables did we hold constant every time we dropped the parachute?

What variable did not we hold constant? (Hit this is something we recorded)

The variables that we do not hold constant are called dependent variables. These variables we would not be able to find if we did not have the independent variables.

Vocabulary List

Canopy: The top part of a parachute made of a material that catches the air

Components: a part or element of something

Dependent variable: variable whose value is determined by that of one or more other variables in a function

Independent variable: a variable whose values are specified first or before an experiment is performed and are used to find values of an expression, another variable, or a function that depends on the first variable

Motion: means a continuous change in the location of an object. All motion is the result of an applied force.

Parachute: a device for slowing the descent of a person or object through the air that consists of a canopy beneath which the person or object is suspended

Payload: the load carried by an aircraft or spacecraft consisting of things (as passengers or instruments) necessary to the purpose of the flight

Procedure: a series of steps followed in a regular definite order

Prototype: an experimental model

Release: To free from; let go.

Scientific method: a method of research in which a problem is identified, relevant data are gathered, a hypothesis is formulated from these data, and the hypothesis is empirically tested.

Speed: The rate at which something moves.

Support cables: One of the ropes connecting the harness and canopy of a parachute.

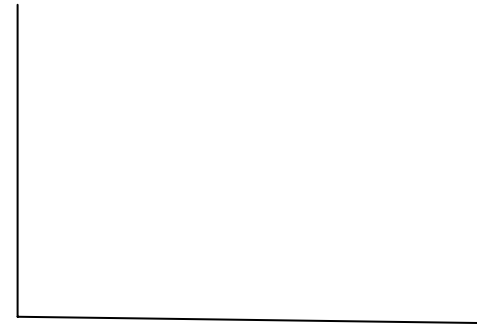
Variable: The characteristics that will change in an investigation.

Velocity: quickness of motion, the rate of change of position along a straight line with respect to time

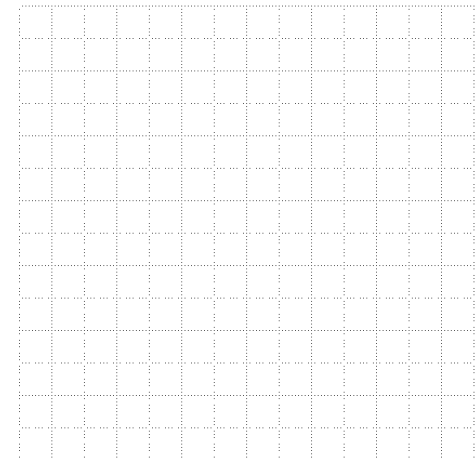
Graphing our Data:

We can graph to see results. Below are two different ways we can graph the information we collected today.

A Bar Graph:



Plotting Points:
Graph paper



Movement through the air

Scientific Method
And
Speed and Motion



Name: _____

Your mission:

To help us learn more about how things move in the air/wind, we have designed a lesson in which your group is an R&D team at the local parachute factory. Your task will be to work with your team to design and test a parachute that will stay in the air for as long as possible while falling straight enough to fall in a designated landing zone.

The CEO of your company will show up on the second day of your work on the project and lead the testing of your parachutes. The performance test will take place off the stage, dropping from the top on a meter stick. The team that has the parachute that stay in the air the longest after being dropped from a height specified by CEO will be awarded the contract.

What are we going to build?

How long do we have to build it?

What two things does the parachute have to be able to do?

What is a Parachute?

What are some different parts of a parachute?

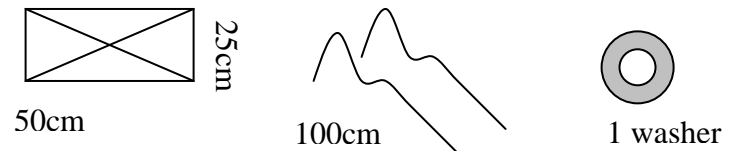
Prototype instructions:

What is a “prototype”?

Why do we need Prototypes?

Use the specifications below to build your original prototype parachute. While you’re building the prototype, think about and discuss in your group what you could change about the components of the parachute to make it “better.”

a) Specifications/procedure for building the prototype parachute green plastic sheet. two 100 cm pieces of string, one washer



b) Cut a 50 cm × 25 cm rectangle from your green plastic.

c) Cut two 100 cm lengths of string.

d) Tie one side of each string to neighboring corners of the rectangle.

e) Place both strings through the washer.

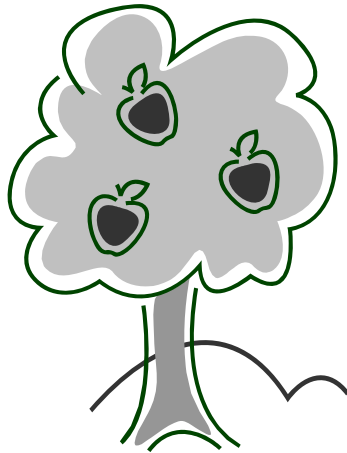
- Tie the free ends of each string to the diagonal corner of the rectangle, so that the strings cross to form an “X”.

Now, what do you think will happen?

Gilberto and the Wind

After listening to story of Gilberto and the Wind, answer the following questions:

- 1.) List one thing the wind moves.
- 2.) How does the wind affect our environment?
- 3.) How does the wind affect us?



Naming our Company:

It is now time to name our company. Name our company will help the CEO tell us a part from the other R&B companies. As a group think hard about what a good company name would be. As a group you can choose to be funny, or serious about what you call yourself, just remember your goal is to convince the CEO to hire your company.

Company Name:

Job in the Company

Like in any successful company, jobs are assigned. In your company you will have a task manager, data collector, time keeper, flight manager, and an observer.

Task Manager will be in charge of making sure the Company stays on schedule. Remember the CEO will be coming the next time we meet so you need to stay on schedule.

Data Collector will be in charge of making sure all the data gets collected, including the times of each drop and how far off target each drop is.

Time Keeper will keep track of the times during each drop.

Flight manger will be in charge of dropping the parachute.

Observer will keep note on how the parachute falls and in what manner the parachute is dropped.

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Changing our Variables:

Now, that we have talked about what ways we can change the parachute. Let's now see how changing the material of the company will affect our parachute.

Tissue paper

Cloth (nylon and cotton)

Press N seal

As a group please pick on the materials listed above. (circle it)

As a group we choose to change the canopy by change the

material to _____.

Now that we know what we are going to change lets take a second to take about what we are not going to change. But first let's list the parts of the parachute again. (hit there is)

On the above list you make underline the one that we are not changing.

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Scientific Method

Writing Hypothesis:

What is a Hypothesis?

There are three steps we can use to help us write a hypothesis.

- 1.) Make an educated guess to address one possible explanation.
- 2.) Make a prediction (try using an "If..., then .." statement).
- 3.) Write a hypothesis (try using a word because).

Now that we have our new parachute try to write a hypothesis of what you think the new parachute is going to do differently than your prototype.

Make an educated guess-

Make a prediction-

Write your hypothesis-