E.T.S. Motion Lab

(Extra-Terrestrial Surface)

Purpose:

To design and carry out an **experiment** to find the **fastest method of human movement** that only utilizes a single human's arms and/or legs and does **not** involve running. NASA and JPL are looking into alternative, rapid ways for humans to safely move on the planet's surface without requiring astronauts to run on the planet's surface. Your group is going to find the fastest way to move.

Background:

Running is the fastest method of motion for humans traveling on flat ground without the use of any device other than the human's feet. Olympic sprinters can reach top speeds of 28 mph or 45 km/h. It has been suggested (read the article: "Humans Could Run 40 mph, in Theory") that humans may one day reach speeds of up to 40 mph or 64 km/h. This article suggests that we humans may one day be much, much, faster.

The Challenge

1. Your team (3 members) needs to test which mode of motion will be the fastest (other than running of course) for humans to use on an ETS.
2. **Conduct an experiment** that will allow you to **test and record data** to see which method of motion takes the **least amount of time** to get from **Point A** to **Point B**.
3. You need to test **3 different forms of motion**. You should have a **minimum of 4 runs** per motion type.
4. Include a **data table** to **record the data** you collect. Please **use rulers** so you will have nice **straight** lines.
5. **Each person** in your group will participate in **each motion type tested**. Each person will have **their data entered** into **their data table**.
6. **Be safe**, stretch and good luck…

Once you have **created a group of 3** and read the directions do the following **in your notebook (using complete sentences)**:

1. **PURPOSE**: state what you are trying to do.
2. **BACKGROUND**: Come up with some possible **ideas** (min 3) or **solutions** and write them down.
3. **HYPOTHESIS**: Develop a **hypothesis** on which of the 3 types of motion will be the fastest and **why**.
4. **EXPERIMENTAL DESIGN**: Sketch a **picture or model** of your experimental setup (start/finish, distance, and 3 types testing).
5. **DATA**: Create a place to put your **data** (**Quantitate** and **Qualitative**).

This is a data table that you may (or not) want to use to collect data.

Data Table: Modes of Motion

"Experiment 1"		
"Event #1"	_____( )	_____( )
1		
2		
3		
4		
Average:		
"Experiment 2"		
"Event #2"	_____( )	_____( )
1		
2		
3		
4		
Average:		
"Experiment 3"		
"Event #3"	_____( )	_____( )
1		
2		
3		
4		
Average:	( )	( )