**Marble Track**

**OBJECTIVE:**

Campers are given the task to shoot a marble into a cup as far as possible by manipulating Styrofoam tubes (such as ones used to insulate pipes) which the marbles will travel through.

**TERMS TO GO OVER:**

Position

Motion

Speed

Force

Friction

**LAB MATERIALS:**

* Styrofoam tubing
* Marble
* Cup
* Masking tape
* Wood blocks (or other height adjusters)

**GROUP LEADER/VOLUNTEER/TLC ROLE**

Assist the campers in taping the beginning of the tube at equal height as their peers. In general, assist with tape dispensing.

**LAB PROCEDURE**

* Demonstrate the lab to the campers:
	+ Secure one end of the tube to the edge of a surface (e.g. table) with tape
	+ Manipulate the tubing so that there is at least one point of contact with the ground
	+ Adjust the height of the unsecured end of the tube by placing wood blocks underneath
	+ If there are multiple wood blocks, tape them together before taping to the floor. Then tape the end of the tube to the wood block.
	+ Drop the marble through the top end of the tube (emphasize not pushing or throwing the marble) and note where the marble landed on the floor
	+ Tape the cup to the floor where you hypothesize the marble will land and test the marble again.
	+ Tell the campers to adjust the cup’s position until the marble is successfully launched into the cup. After they accomplish that, then manipulate the tube to see if they can make the marble shoot successfully into the cup at a further distance.
* After the demonstration, have the campers find a partner to begin the lab.