



Gulping for Gravity

Cola cans on other worlds

Cola cans are weighted differently to reflect their downward force due to gravity on other planets (and the moon).

Materials:

- One full and closed can of regular cola for each group
- Nine full and empty cans (to represent the other eight planets and the moon)
- Various substances to be placed in the can - see hints below
- Tape
- Scales
- Access to computers, the internet or calculators



To do and notice:

In this activity, you are to create a can of cola that has the same “heft” or weight as full can of cola on another planet. For example, if a can of cola weighs “1 cola unit” on earth, then that same can will weigh “. 4 cola units” on mars (based on the chart below). On earth, this mars cola can will feel much easier to lift.

Cans of cola can be filled or emptied with various substances to achieve their hypothetically calculated weight. Students should be encouraged to work in groups and experiment with various methodologies to achieve their gravitationally differing cans of cola.

Hints for making weight calculations:

Use a ratio table- see below

Make a spreadsheet

Use the web (i.e. <http://www.exploratorium.edu/ronh/weight/index.html>)

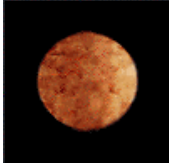


Hints for methods of creating cans of differing weights:



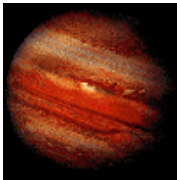

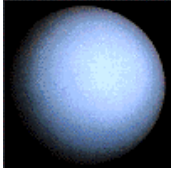
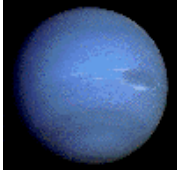

Use a scale and add or subtract matter (i.e. such as cola, sand, salt, water, nuts, bolts...)

Use objects of known weight units inserted into cans (i.e. pennies, nuts, bolts...)

Use substances of known density inserted into cans (i.e. water with a graduated cylinder)

Weight Chart for other Planets

Planet Picture (not to scale)	Planet Name	Multiply your Earth weight by:	Weight on other Planet
	Mercury	0.4	
	Venus	0.9	
	Earth	1	

	Moon	0.17	
	Mars	0.4	
	Jupiter	2.5	
	Saturn	1.1	
	Uranus	0.8	
	Neptune	1.2	
	Pluto	0.01	

What's going on:

Gravity is the force that pulls objects towards each other such as a can of cola and a planet. Mass is the amount of matter in an object. Weight is the pull of gravity acting on an object. Some planets have more gravity than others. Therefore objects with the same amount of mass will be pulled towards differing planets with differing forces.

Since this activity was done on earth (more than likely), in order to simulate the weight of a can of cola on another planet, the mass had to be changed because the gravity could not.

- This lesson is an adaptation of a lesson presented by a Project SPICA participant.
- Planetary images from www.nasa.gov