

Name _____ Date: _____

2025-2026 Incoming 8th Grade Science Summer Packet

Part I - Scientific Method (Big Idea 123)

For the following experiments, define the independent variable, dependent variable, and control group.

Vocabulary Word	Definition	Example
Test Variable	<ul style="list-style-type: none">• The variable being changed. Only one variable can be changed per experiment.	Height of dropping the ball
Outcome Variable	<ul style="list-style-type: none">• The variable being measured.• Must be numerical (such as height, mass, distance, volume, etc...)	Size of the Crater
Control	<ul style="list-style-type: none">• Not all projects will have a control.	None
Constants	<ul style="list-style-type: none">• The factors that stay the same.	The ball, the person dropping the ball, weather conditions, surface

1. You decide to clean the bathroom. You notice that the show is covered in a stange green slime. You try to get rid of this slime by adding lemonade juice. You spray half of the shower with lemonade juice and spray the other half of the shower with water. After 3 days of spraying equal amounts 3 times a day, there is no change in the appearance of the green slime on either side of the shower.

Independent Variable:

Dependent Variable:

Control Group:

2. You decide to clean your bedroom. You notice that your floor is covered with clothes. You try to get rid of the clothes by throwing them into the air. You throw clothes from 1/3 of the room into the closet and a second 1/3 of the room straight up in the air. The last 1/3 of the room you leave the clothes on the floor. After 30 minutes of "cleaning" the floor of the room is now visible.

Independent Variable:

Dependent Variable:

Control Group:

Name _____ Date: _____

3. You want to test which size of soccer ball is easiest to juggle with your feet. You test a size 3, size 4, and size 5 ball. You count the seconds the ball stays in the air for each of the trials. You allow yourself to use both of your feet, knees, and head to juggle the ball.

Independent Variable:

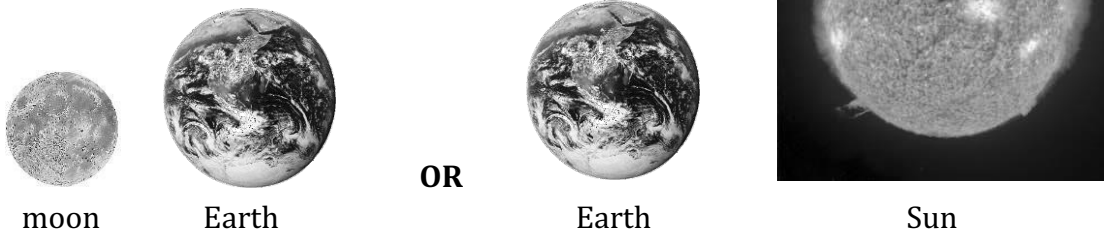
Dependent Variable: Control Group:

PART II: GRAVITY (Big Idea 13)

Read the following information and then complete the exercise.

GRAVITY is the force of attraction between objects that is due to their masses and the distance separating the objects.

EXERCISE: Evaluate each pair of objects. **Circle** the pair that has the greatest gravitational pull. **EXPLAIN** underneath the pictures, why you chose this answer.



Explanation:

PART III. STATES OF MATTER (Big Idea 8 & 9)

All gases, liquids and solids are made up of sub-atomic particles that behave differently.

Directions: Complete the chart by filling out the characteristics that correspond to the three states of matter listed.

You may use the following website for assistance, if needed:

<https://www.chem.purdue.edu/gchelp/atoms/states.html>

Name _____ Date: _____

Characteristic	Solid	Liquid	Gas
Does it have a definite volume or a non-definite volume?			
Does it have a definite shape or a non-definite shape?			
Are the particles fixed in place or not fixed in place?			
Are the particles close together or not close together?			
How do the particles move?			
What do the particles look like in this state of matter? Draw a picture.			

Part IV - Variables (Big Idea 123)

For his science fair experiment, Cole decided to determine how different types, of surface material, affect how fast a matchbox car will go. He chose to use a tile floor, concrete patio and carpet. He used the same car for each of the 20 trials. He measured the distances the car went after riding down a 1-meter ramp.

What is Cole's *test (independent) variable*? _____

What is Cole's *outcome (dependent) variable*? _____

What must be kept *constant* (the same) for every trial? _____

What do you **predict** will happen and **explain** why. _____