Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_                                                  Date\_\_\_\_\_\_\_\_\_\_\_\_\_



**Gravity Lab**

**This lesson is aligned with the following target*—I can describe gravity***

**In your journals, please list the following:**

**PRELAB – in journal Be sure to include headings for each part of the lab**

**INQUIRY QUESTION(S)**

Do you agree with Aristotle (heavier things fall faster) or Galileo (all things fall at the same rate?

**PREDICTION/HYPOTHESIS** - Tell me what you think will happen when you drop the orange at

the same time as the grape.   (Use an If …then…because… statement)

**MATERIALS** - Please list the equipment used in this experiment.

**ILLUSTRATION** - Draw a detailed, labeled illustration of the lab set up

**PROCEDURE**:

**PART ONE**

* + 1. Spread newspapers under chair and around area where you are going to conduct experiment.
		2. One person will **sit** on the counter.
		3. The person on the counter will drop an orange while another person will lie on the floor and judge which of the objects hit the floor first.
		4. The person on the counter will then **simultaneously** drop an orange from one hand and a grape from the other hand. **Practice** this a few times before taking data.
		5. The team member on the floor judges which piece of fruit hits the ground first (or if they fall at the same time). Place an “X” in the box on the data table to show which hit the ground first. An “X” in both boxes means they hit at about the same time.
		6. Please fold up paper and cleanup area.

**PART ONE RESULTS**:

 Title:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| What hit first | Trial 1 | Trial 2 | Trial 3 | Trial 4 | Trial 5 | Trial 6 | Trial 7 | Trial 8 | Trial 9 | Trial 10 | CLASSDATA |
| Orange |  |  |  |  |  |  |  |  |  |  |  |
| Grape |  |  |  |  |  |  |  |  |  |  |  |

**POST-LAB**

**OBSERVATIONS** – Underneath the data table, tell me EXACTLY what you saw happen with the

fruit. Summarize your findings. Compare your data to the class data. This needs to be a minimum of **2 FULL** sentences.

**ANALYSIS** – Write a paragraph. Answer the inquiry questions for part one in detail using the CLEAR format. Support your answer with evidence from your data.

**PART TWO PRE-LAB**

**INQUIRY QUESTION: What other factors can affect the rate at which things fall? What will happen when we drop crumpled paper and a flat sheet of paper?**

**PREDICTION/HYPOTHESIS** - Tell me what you think will happen when you drop the crumpled and flat paper and WHY.   (Use an If …then…because… statement)

**MATERIALS** - Please list the equipment used in this experiment.

**ILLUSTRATION:** draw a detailed, labeled illustration of the lab set up

**PROCEDURE**:

**PART TWO**

1. Repeat part I procedure using a sheet of paper and a crumpled sheet of paper.

**PART TWO RESULTS**:

 Title:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| What hit first | Trial 1 | Trial 2 | Trial 3 | Trial 4 | Trial 5 | Trial 6 | Trial 7 | Trial 8 | Trial 9 | Trial 10 | CLASSDATA |
| crumpled |  |  |  |  |  |  |  |  |  |  |  |
| flat |  |  |  |  |  |  |  |  |  |  |  |

**POST-LAB**

**OBSERVATIONS** – Underneath each data table, tell me EXACTLY what you saw happen with the

paper. Summarize your findings. Compare your data to the class data. This needs to be a minimum of **2 FULL** sentences.

**PART II ANALYSIS** - Answer the inquiry question(s) for part II. Support your answer with evidence from your data.

**REFLECTION QUESTIONS**

1. Define gravity.
2. In what direction does the force of gravity always act?
3. Which fruit had a greater mass? Does the more massive object always hit first, as Aristotle thought?
4. Do you think a banana and a blueberry would hit the ground at the same time or do you think they would hit differently?
5. Did the two pieces of paper have the same mass? The same air resistance?
6. Which affects the rate at which things fall, mass or air resistance?
7. How do you think a parachute works? Draw a force diagram and explain.

**A.A.** Research more about gravity and answer the following: Does the force of gravity pull down on all objects with equal force? Explain in detail