Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Homeroom: \_\_\_\_\_\_\_\_\_\_\_Date:\_\_\_\_\_\_\_\_ **1.4**

**Avoiding Faulty Interpretation of Data (SPI.INQ.5)**

|  |  |
| --- | --- |
| **Key Points** | **Notes** |
| **Experimental Error** | **Experimental error is:*** Not necessarily a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Difference between the “\_\_\_\_\_\_\_\_\_” measurement and what you measure
* Occurs because no one is perfect and because tools are not perfect
* Example: Measuring a seed length:
	1. One scholar measures 6 mm, another scholar measures 7 mm. Actual is 6.5 mm
* Too much experimental error means a **conclusion is NOT \_\_\_\_\_\_\_\_\_\_\_.**
* To limit experimental error:
	1. \_\_\_\_\_\_\_\_\_\_\_\_ many measurements and average!
	2. Have several \_\_\_\_\_\_\_\_\_\_\_\_ in your experiment
 |
| **Valid Conclusions** | You may have a **valid** conclusion if:* + You have only one independent variable and one dependent \_\_\_\_\_\_\_\_\_\_\_ in your experiment
	+ You have a control group used for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ There is little experimental error and no human \_\_\_\_\_\_\_\_\_\_ in your experiment
	+ There is evidence of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ relationship
	+ There are no \_\_\_\_\_\_\_\_\_\_\_ in your conclusion

Otherwise, you have a **FAULTY conclusion** |

**Classwork (Avoiding Faulty Interpretation of Data Stations):**

*As the experiments rotate to you, answer the following questions for each experiment:*

1. What is the independent variable in the experiment?

2. Is there more than one independent variable?

3. What is the dependent variable in the experiment?

4. Is there a control group used for comparison in the experiment? If so, what is it?

5. Is there any experimental or human error? If so, what is it?

6. Is there evidence of a cause and effect relationship?

7. Are there any biases affecting your conclusion? If so, what are they?

**8. What is the mostly source of error in your experiment?**

**9. How could you fix this experiment to make it more reliable?**

**Experiment #1: The Pendulum Experiment**

1.

2.

3.

4.

5.

6.

7.

8.

9.

**Experiment #2: The Rocket Experiment**

1.

2.

3.

4.

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**Experiment #3: The Density Experiment**

1.

2.

3.

4.

5.

6.

7.

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9.

**Experiment #4: The Gummy Bear Experiment**

1.

2.

3.

4.

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7.

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9.

**Experiment #5: The Rust Experiment**

1.

2.

3.

4.

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9.

**Experiment #6: The Bowling Ball Experiment**

1.

2.

3.

4.

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