**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Block:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Evidence:\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Pea Seed Energy Production**

**Research Question:** How do pea seeds utilize energy to grow?

**Hypothesis: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**Procedure**

1. Place a wet paper towel at the bottom of a container.

2. Place x number of pea seeds in the container on top of the paper towel.

3. Place another wet paper towel over the pea seeds and allow to germinate for 2-3 days.

4. Place about 25 pea seeds in a growing chamber.

5. Into the growing chamber insert both a CO2 detector and an O2 detector.

6. **Set a timer and record the concentration levels of CO2 and O2 every 5 minutes in a data table.**

**7. Construct a graph of the data you collected showing both CO2 and O2 on the same graph.** Be sure to provide a title and include labels and units for each axis of the graph.

Please follow the directions below. Use the headers (**Raw Data, Processed Data, Conclusion, Evaluation**) to organize your paper. You will later answer these questions in paragraph form on a typed sheet of paper. This will be used to assess your final grade.

**Raw Data and Processed Data**

* **correctly collect organize, transform and present** data in numerical and/or visual forms (Create a titled Data Table and a titled Graph of the data from the data table)

**Conclusion**

* **accurately interpret data** and **explain** results **using correct scientific reasoning**

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* **discuss** the validity of a hypothesis based on the outcome of a scientific investigation

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**Evaluation**

* **discuss** the validity of the procedure based on the outcome of a scientific investigation

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•**describe** improvements or extensions to the procedure that would benefit the scientific investigation

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| Achievement Level | Level Descriptor  The student is able to: |
| 0 | The student **does not** reach a standard identified by any of the descriptors below. |
| 1-2 | * **collect and present** data in numerical and/or visual forms * **interpret** data * **state** the validity of a hypothesis based on the outcome of ascientific investigation * **state** the validity of a method based on the outcome of ascientific investigation * **state** improvements or extensions to the method. |
| 3-4 | * **correctly collect and present** data in numerical and/or visual forms * **accurately interpret** data and **explain** results * **outline** the validity of a hypothesis based on the outcome of a scientific investigation * **outline** the validity of a method based on the outcome of a scientific investigation * **outline** improvements or extensions to the method that would benefit the scientific investigation |
| 5-6 | * **correctly collect organize and present data** in numerical and/or visual forms * **accurately interpret** data and **explain** results **using scientific reasoning** * **discuss** the validity of a hypothesis based on the outcome of a scientific investigation * **discuss** the validity of a method based on the outcome of a scientific investigation * **discuss** improvements or extensions to the method that would benefit the scientific investigation |
| 7-8 | * **correctly collect organize, transform and present** data in numerical and/or visual forms * **accurately interpret data** and **describe** results **using correct scientific reasoning** * **evaluate** the validity of a hypothesis based on the outcome of a scientific investigation * **evaluate** the validity of a method based on the outcome of a scientific investigation * **explain** improvements or extensions to the method that would benefit the scientific investigation |