Life Science

Baseline Cornerstone

Assessment

Montgomery County Public Schools

2014-2015

Directions to provide <u>AND</u> read to students: Today you will be taking a Life Science Assessment to evaluate your skills in the areas of scientific investigation and problem solving. Please read the experiment on the next page carefully and use your skills to provide the best answer or discussion response to each question.

Please make sure your responses are complete and legible.

Directions: The following is an experimental scenario. Read the experiment and identify each of the parts of the scientific method by answering the questions as completely as possible.

Sam likes to help her mom in the garden. One day Sam went to the shed to get lima bean seeds out of the seed crate. When Sam opened the crate, she realized that the inside was wet and some of the seeds had started to sprout. Sam wondered how the seeds could begin sprouting without sunlight. Sam decided to design an experiment to test the effects of sunlight on seed sprouting. Sam thinks if the plants in the dark have their needs of water and soil met, their rate of sprouting should be the same as the plants in the sunlight.

Sam identified two areas in her house for the experiment. One area in the house has abundant sunshine throughout the day, and a shelf in a closet that receives no light at all. Sam planted 12 lima bean seeds in soil on the sides of clear cups so that she could see the root and stem development. She placed cups numbered 1-6 in the lighted area of the house. She put cups numbered 7-12 on the shelf in the closet. She watered all of the plants every other day with 10 mL of water. She observed the seeds over an 8 day period and recorded the day that sprouting was initially observed. The results of her experiment are listed below.

Seed Number	**Day of Sprouting**
1	**Day 5**
2	**Day 3**
3	**Day 5**
4	**Day 3**
5	**Day 6**
6	**Day 4**
7	**Day 2**
8	**Day 3**
9	**Day 2**
10	**Day 3**
11	**Day 3**
12	**Day 4**

Directions: Read each question and write the answers using complete sentences when necessary.

What is the problem or question that Sam is trying to solve? _____

_____

_____

What is Sam's hypothesis? _____

_____

What is the independent variable? _____

What is the dependent variable? _____

What are the constants in the experiment?

_____ _____

_____ _____

Explain the type of graph Sam should use to record her results.

List three sources of experiment error that could occur during the experiment.

What should Sam's conclusion be from this experiment?

Grading Rubric Life Science Baseline Assessment

Baseline Question	**3**	**2**	**1**	**0**
Problem	Clearly defined problem, legible, complete sentence written	Defined problem, legible/complete sentence written	Defined problem	No defined problem or left blank
Hypothesis	Hypothesis from scenario is clearly described using an if/then sentence.	Hypothesis is described without using an if/then sentence	Student wrote a hypothesis and was not included in the scenario	Student did not attempt a hypothesis
Independent Variable	N/A	Independent variable was identified using a complete sentence	Independent variable was identified without a complete sentence	Independent variable was not identified
Dependent Variable	N/A	Dependent variable was identified using a complete sentence	Dependent variable was identified without using a complete sentence	Dependent variable was not identified
Constants **see note below*	3 or 4 valid constants were listed	2 valid constants were listed	1 valid constant was listed	No valid constants were listed
Graph Explanation	Bar graph was the answer given with justification in a complete sentence	Bar graph was the answer given without clear justification in a complete sentence	Bar graph was given without justification	Incorrect graphing answer given
Experimental Error *@see note below*	3 valid errors were listed	2 valid errors were listed	1 valid error was listed	No valid error was listed
Conclusion	Complete sentence with correct conclusion that addresses hypothesis	Correct conclusion with complete sentence not addressing hypothesis	Correct conclusion with no sentence	No conclusion identified

* **Valid Constant** is defined as one described in the scenario.

@ Valid Experimental Error is defined as mistakes made during the experiment that could alter the recorded data.