

Constructed Response L.8.A.1

1. Mr. and Mrs. Smith recently had a baby. The nurses at the hospital were not careful and mixed up the name tags of 3 babies (**A, B, and C**), one of which belongs to the Smiths. Baby **A** has type O blood and freckles. Baby **B** has type A blood, and no freckles. Baby **C** has type B blood, and freckles. Use this and the following information to determine which baby belongs to the Smiths. Be sure to justify your answer with both an explanation and by drawing the Punnett squares for each trait.
- A. Freckles (F) are dominant over no freckles (f). Mr. Smith is homozygous dominant for freckles, while Mrs. Smith has no freckles.
 - B. Type A and B blood are codominant to type O blood. Mr. Smith is heterozygous type A blood, while Mrs. Smith has type AB blood.

Constructed Response L.8.A.1 Score Rubric:

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|-----------------|--|----|---|---|---|----|----|---|----|
| 3 points | <i>Response addresses all parts of the question clearly and correctly.</i> | | | | | | | | |
| | Both Punnett Squares are drawn and completed correctly. Note that the letters may be different for freckles as long as the capitalization is the same. For blood type, the letters must be the same. The Punnett squares show that Mr. and Mrs. Smith can only have children with freckles, so baby B cannot be theirs because it does not have freckles. The Punnett squares also show that Mr. and Mrs. Smith can only have babies with the blood types A, B, or AB. Baby A has type O blood and cannot be theirs. Therefore, by the process of elimination, Baby C is their baby. | | | | | | | | |
| | Freckles | | | | | | | | |
| | <table border="1" style="margin-left: auto; margin-right: auto;"><tr><td style="background-color: black;"></td><td>F</td><td>F</td></tr><tr><td>f</td><td>Ff</td><td>Ff</td></tr><tr><td>f</td><td>Ff</td><td>Ff</td></tr></table> | | F | F | f | Ff | Ff | f | Ff |
| | F | F | | | | | | | |
| f | Ff | Ff | | | | | | | |
| f | Ff | Ff | | | | | | | |

| | | |
|---|----|----|
| | A | O |
| A | AA | AO |
| B | AB | BO |

| | |
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| 2 points | <i>Response addresses all parts of the question and includes only minor errors.</i> |
| 1 point | <i>Response does not address all parts of the question.</i> |
| 0 points | <i>Response is totally incorrect or no response provided.</i> |

Constructed Response Question L.8.A.2

Imagine that you are a doctor and you need to give the following patient advice.

A pregnant mother is diagnosed with skin cancer and concerned that her child will be born with skin cancer.

- a. Use your knowledge of mutations and inheritance to give a detailed explanation to the mother why the baby will or will not be born with skin cancer.
- b. Provide the mother with a reason for how she may have developed skin cancer and give advice on how to prevent skin cancer in the future.

Constructed Response L.8.A.2 Score Rubric:

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| 3 Points | <p><i>Response addresses all parts of the question clearly and correctly.</i></p> <p>Student needs to recognize that skin cancer is caused by a mutation in a body (skin) cell, not a sex cell. In order for a mutation to be passed from the parent to the offspring, the mutation must be present in a sex (egg or sperm) cell. Even though the baby will not be born with skin cancer, the baby may have inherited a skin type that is prone to skin cancer. The mother should be aware of mutagens that cause skin cancer, such as overexposure to UV light. In order to protect herself and her baby, she should use sunscreen and limit her time in direct sunlight.</p> |
| 2 Points | <i>Response addresses all parts of the question and includes only minor errors.</i> |
| 1 Point | <i>Response does not address all parts of the question or the response addresses all parts of the question, but includes major errors.</i> |

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| 0 Points | <i>The response is totally incorrect or no response.</i> |

Constructed Response L.8.B.1

1. Cells have a variety of organelles, each with a specific function. The organelles must work together in order for the cell to survive.
 - a. Describe the function of a chloroplast and mitochondria. Include a basic description of the chemical reaction that takes place in each organelle.
 - b. Describe how the chloroplast and mitochondria work together to help a plant cell survive.
 - c. Predict what would happen if a plant cell lacked mitochondria. Justify your answer.

Constructed Response L.8.B.1 Score Rubric:

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| 3 points | <p><i>Response addresses all parts of the question clearly and correctly.</i></p> <p>A. The chloroplast is the site of photosynthesis where sunlight energy, carbon dioxide and water are converted to simple sugars (food). The mitochondria is the site of cellular respiration where glucose is broken down into usable cellular energy.</p> <p>B. A plant cell contains both chloroplasts and mitochondria. Food (simple sugars) is made in the chloroplast. The sugars are stored until the cell needs energy. The sugars are then transferred to the mitochondria to be broken down into usable energy (ATP?) to carry out cellular activities.</p> <p>C. A plant cell that lacked mitochondria would be able to make food but would be unable to convert the food into cellular energy. The cell would die.</p> |
| 2 points | <p><i>The response addresses all parts of the question and includes only minor errors.</i></p> |
| 1 point | |

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| | <i>Response does not address all parts of the question.</i> |
| 0 points | <i>Response is totally incorrect or no response provided.</i> |

Constructed Response L.8.B.5

1. A group of students took potato salad made with mayonnaise to a picnic on a very hot day. Explain how eating the potato salad could cause food poisoning. Describe something that could be done to the potato salad to prevent the people who eat it from getting food poisoning, and why this would work.

Constructed Response L.8.B.5 Score Rubric:

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| 3 Points | <p><i>Response addresses all parts of the question clearly and correctly.</i></p> <p>The potato salad may cause food poisoning if it is not refrigerated. As the temperature of the potato salad increase, the rate that the microbes reproduce in the salad also increases. Over time, the bacteria in the potato salad will increase and if the students eat the potato salad then they may get sick because the bacteria produce toxins that harm people. If the potato salad was refrigerated, then the bacteria would not reproduce as quickly and the students would not get food poisoning.</p> |
| 2 Points | <i>Response addresses all parts of the question and includes only minor errors.</i> |
| 1 Point | <i>Response does not address all parts of the question.</i> |

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| 0 Points | <i>Response is totally incorrect or no response provided.</i> |

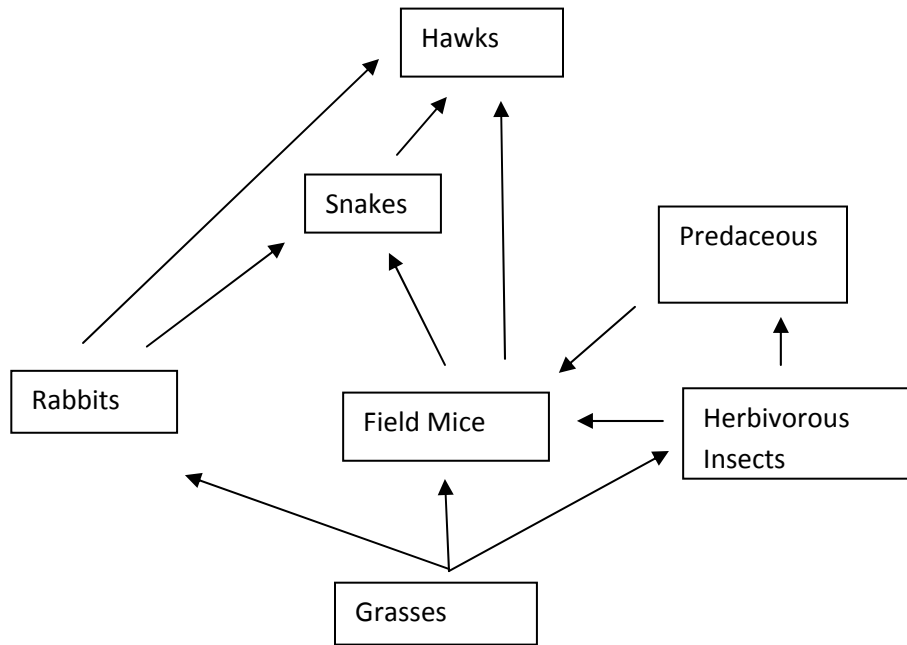
Constructed Response L.8.C.1

Use the passage below to help answer the three questions which follow.

In a grassland habitat, the rabbits, herbivorous insects and field mice eat the grasses. The herbivorous insects are eaten by predaceous insects. The mice eat both types of insects. Both the rabbits and field mice are eaten by snakes in this habitat. Hawks flying in the area eat the rabbits, field mice and the snakes.

- A. Draw a food web showing all of the organisms in this grassland habitat.
- B. Which organism is the primary producer? How does it obtain its energy?
- C. Identify which organism would have the smallest population and explain why.

Constructed Response L.8.C.1 Score Rubric:



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| <p>3 points</p> | <p><i>Response addresses all parts of the question clearly and correctly.</i></p> <p>The student can draw a food web (see sample above) using all organisms and include at least 8 arrows correctly showing the direction of the energy flow. The grasses are identified as the primary producer which obtain energy from the sun and make food by photosynthesis. The hawks are the least common. Being at the top of the food chain, less energy is available as energy is lost from one trophic level to the next on the food web. Energy is lost as waste or used for respiration and maintenance.</p> |
| <p>2 points</p> | <p><i>Response addresses all parts of the question and includes only minor errors.</i></p> |
| <p>1 points</p> | <p><i>Response does not address all parts of the question.</i></p> |

| | |
|-----------------|---|
| | |
| 0 points | <i>Response is totally incorrect or no response provided.</i> |