

SCIENCE GRADE 8

A. Open-Ended (OE) 4 points

Mean: 0.48

Standard: II.b.A.2

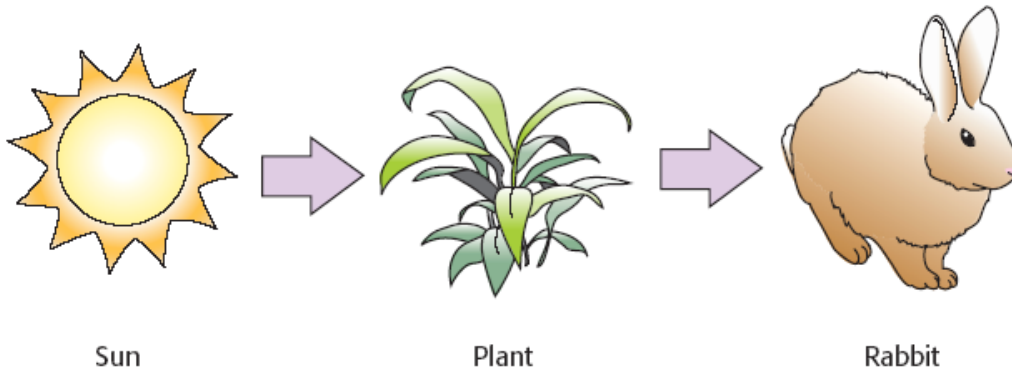
Strand: Content of Science

Content Standard: Life Science: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.

Explain the diverse structures and functions of living things and complex relationships between living things and their environments.

2. Describe how energy flows through ecosystems (e.g., sunlight, green plants, food for animals).

The figure shows how a rabbit gets the energy it needs to be active and grow.



- A. Describe how the energy changes form as it travels from the sun through green plant into the rabbit.
- B. Explain how the amount of energy available to the rabbit is different from the amount of energy available to the plant.

A.

B.

B. Rubric

Top score response:

Part A. The student gives a reasonable description of the energy transformation in the food chain. Such as the light energy from the sun is converted into chemical energy in the plant and that the chemical energy in the plant is transformed into mechanical energy by the rabbit.

Part B. The student will provide a reasonable explanation for the difference in available energy between the plant and the rabbit. The energy available to the plant is greater because they convert light energy from the sun. The amount of energy available to the rabbit is less than the plant because the rabbit's source of energy is the plant and not the sun.

Score	Description
4	The student demonstrates thorough understanding of the relevant scientific concepts and/or procedures. The student completes the task correctly, using scientifically sound procedures and provides clear and complete explanations and interpretations. The response may contain minor flaws that do not detract from the demonstration of thorough understanding.
3	The student demonstrates an understanding of the relevant scientific concepts and/or procedures. The student completes most of the task correctly, but the scientific procedures, explanations and/or interpretations are incomplete or only partially supported. The response may contain minor flaws that indicate some misunderstanding of the scientific concepts and/or procedures.
2	The student demonstrates partial understanding of the relevant scientific concepts and/or procedures. The response includes some correct information, but indicates a lack of essential understanding of the scientific concepts and/or procedures. Explanations and/or interpretations are incomplete or only partially supported. The response may contain flaws that indicate misunderstanding of the task or of the scientific concepts and/or procedures.
1	The student demonstrates a minimal understanding of the relevant scientific concepts and/or procedures. The student has reached an inadequate conclusion and/or provided reasoning that is faulty or incomplete. The response is incomplete and exhibits many flaws, but does contain some correct work that addresses the task.
0	The student demonstrates no understanding of the relevant scientific concepts and/or procedures. The response is incorrect or irrelevant to the skill or concept being measured, or no response is provided.

C. Student Responses

High

24

A. When the plant collects energy it uses it to make food then the rabbit eats the plant and absorbs whatever energy is left.

B. The plant gets to use up the energy it needs first so the rabbit can only have what's left.

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24

A. The sun releases rays with energy. The plant uses this light energy to make food for itself and grow. The rabbit eats the plant & gets energy from eating it & therefore growing also.

B. The plant receives more energy from the sun than the rabbit receives from the plant.

A. The Sun gives the plant radiant energy which changes to food for the plant for photosynthesis. Then the bunny eats the plant and gets energy to escape its enemies.

B. The amount of energy is different because the plant used some of the energy to grow so the bunny doesn't get as much energy as the plant did.

24

A.

From the energy given by the sun, plants can grow. The energy in the plants, a rabbit can eat it, and be active, making its own energy.

B.

The amount of energy the plant gets depends on how much sun light it gets. The amount of light the sun gives is used to help grow other plants, so it gets less energy than the rabbit, because the rabbit's energy depends on how many plants it eats.

24

A. The energy from the sun is absorbed by the plant and it uses the energy to make for for the plant to stay alive. When the rabbit eats the plant, the rabbit takes the nutrients from the plant and uses the energy from the nutrients.

B. The Amount of energy available to the plant is much more because it is out in the sun all day to absorb energy. The Rabbit, however, is basically limited to the amount of energy it gets from the plant.

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24

A. The sun gives off energy, and the plant absorbs it and uses it to make food. Then the rabbit, eats the plant and gets its nutrients.

B. The energy in the plant is needed, but the plant doesn't need the energy so much as the rabbit does, because the rabbit can quickly die if it does not get the nutrients it needs.

24

A. The sun gives off energy, and the plant absorbs it and uses it to make food. Then the rabbit, eats the plant and gets its nutrients.

B. The energy in the plant is needed, but the plant doesn't need the energy so much as the rabbit does, because the rabbit can quickly die if it does not get the nutrients it needs.

24

A. The sun is giving off energy and green plants need sun light to grow and the plants are food or energy to the Rabbit.

B. The Rabbit eats plants because it is food for them. And the sun gives off light and the plants store the light as food or sugar.

24

A. The Sun's energy will travel from the sun to the plant and whatever is left of the sun's energy will then travel through the plant to the rabbit.

B. First of all the rabbit has a coat of fur that keeps the sun's energy so the rabbit can stay warm. Then the plant doesn't really have fur at all and can easily travel through the plant to the rabbit.

24

A. The Sun gives off energy to the plant. What makes the plant grow, then gives energy to the rabbit because the rabbit eats it.

B. The rabbit gets more energy than the plant.