

## Answer Key with Questions

### Lesson Check: Flow of Energy

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1) Consumers produce their own food.

☐ True

☐ False

### Correct Answer

False

2) Energy cycles through ecosystems because it returns to the Sun.

☐ True

☐ False

### Correct Answer

False

3) Available energy increases as it is transferred from one organism to another in a food chain.

☐ True

☐ False

### Correct Answer

False

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4) Which of the following would eat a dead rabbit?

- ☐ A) carnivore
- ☐ B) detritivore
- ☐ C) herbivore
- ☐ D) omnivore

### Correct Answer

B) detritivore

5) Which of the following would eat a hamburger with lettuce on it?

- ☐ A) carnivore
- ☐ B) detritivore
- ☐ C) herbivore
- ☐ D) omnivore

### Correct Answer

D) omnivore

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6) Which of the following eats only eucalyptus leaves?

- ☐ A) carnivore
- ☐ B) detritivore
- ☐ C) herbivore
- ☐ D) omnivore

### Correct Answer

C) herbivore

7) Which is most likely the first step in a basic food chain?

- ☐ A) The snake obtains energy by eating the mouse.
- ☐ B) Plants make energy-rich food using sunlight.
- ☐ C) The Sun emits energy.
- ☐ D) The hawk obtains energy by eating the snake.

### Correct Answer

C) The Sun emits energy.

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**8)** Which of the following organisms would NOT be in the first trophic level of an energy pyramid?

- ☐ **A)** dog
- ☐ **B)** tree
- ☐ **C)** grass
- ☐ **D)** algae

### Correct Answer

**A)** dog

**9)** Which is a model of feeding relationships?

- ☐ **A)** protein building
- ☐ **B)** food map
- ☐ **C)** food web
- ☐ **D)** sugar molecules

### Correct Answer

**C)** food web

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**10)** As you move upward, from level to level, in an energy pyramid, available energy \_\_\_\_\_.

- ☐ **A)** decreases
- ☐ **B)** increases
- ☐ **C)** stays at the same level
- ☐ **D)** is destroyed

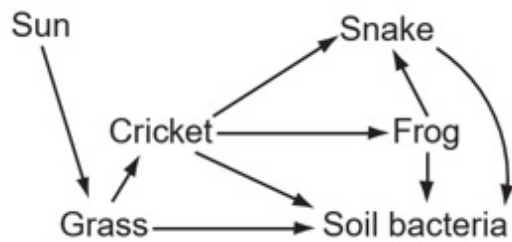
### Correct Answer

**A)** decreases

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11) This food web that shows the interaction of the organisms in an ecosystem.



a. Complete the table by matching the numbers with the organisms in the food web to show the interaction in the ecosystem.

**Organisms in an Ecosystem**

Organism	Energy Source	Eaten By
1	Cricket	Snake
2	Frog, cricket	—
3	Grass	Frog, snake
4	Sun	Cricket
5	All dead organisms	—

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b. Describe the cycling of matter and the flow of energy within the ecosystem.

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**Correct Answer**

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Answers may vary.

#### Explanation

a. 1 - frog, 2 - snake, 3 - cricket, 4 - grass, 5 - soil bacteria

b. Matter is recycled and energy flows one way, starting with input from the Sun.

- Cycling of matter: The matter recycles among the producer (grass), consumers (cricket, frog, and snake), and decomposers (soil bacteria). The grass uses molecules from the air and soil (carbon dioxide, water) to get the matter to make the sugar. The cricket eats the grass, the frog eats the cricket, and the snake eats the frog. Each animal gets matter [carbon compounds] to make the molecules they need from their food. When all these organisms die, the soil bacteria (decomposers) break down the carbon compounds from the organisms' bodies and so this matter becomes available for use by other organisms.
- Flow of energy: The grass (producer) absorbs energy from the Sun and stores this energy within sugars [complex carbon compounds]. When the cricket eats the grass, the frog eats the cricket, and the snake eats the frog, each animal gets energy for life processes by breaking down food molecules. The grass, the cricket, the frog, and the snake all release energy as heat. When all these organisms die, the soil bacteria (decomposers) break down the carbon compounds in the organisms' bodies to get energy for life processes. The soil bacteria (decomposers) also release heat as they use energy. The heat is not available to organisms in the ecosystem to use again for energy. This is why continual energy input from the Sun is necessary for the organisms in the ecosystem to live.



## Constructed-Response Rubric

PE: MS-LS2-3: <i>Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.</i>		
	Level of Understanding	Evidence of Understanding
3	<b>Demonstrating Expected Understanding</b>	Student response provides <b>clear</b> evidence of using the dimensions* to make sense of scientific phenomena and/or to design solutions to problems. Student is able to: § complete the table to explain the food web; <b>AND</b> § describe the cycling of matter and flow of energy within the ecosystem.
2	<b>Progressing toward Understanding</b>	Student response provides <b>partial</b> evidence of using the dimensions* to make sense of scientific phenomena and/or to design solutions to problems. The response lacks some critical information and details or contains some errors. Student is able to: § complete the table to explain the food web <b>AND</b> describe the cycling of matter and the flow of energy within the ecosystem <b>BUT</b> the table <b>OR</b> the description is incomplete or incorrect.
1	<b>Beginning to Develop Understanding</b>	Student response is incomplete or provides minimal evidence of using the dimensions* to make sense of scientific phenomena and/or to design solutions to problems.
0	<b>Not Showing Understanding</b>	Student does not respond or student response is inaccurate, irrelevant, or contains insufficient evidence of using the dimensions* to make sense of scientific phenomena and/or to design solutions to problems.
*As outlined in the Performance Expectations (PE) of the NGSS, the three dimensions are the disciplinary core ideas (DCI), science and engineering practices (SEP), and crosscutting concepts (CCC). Note that due to the complexity of the PEs, individual assessment items may not address all three dimensions.		

## Scoring Notes:

Possible answers include:

a. 1 - frog, 2 - snake, 3 - cricket, 4 - grass, 5 - soil bacteria

b. Matter is recycled and energy flows one way, starting with input from the Sun.

§ Cycling of matter: The matter recycles among the producer (grass), consumers (cricket, frog, and snake), and decomposers (soil bacteria). The grass uses molecules from the air and soil (carbon dioxide, water) to get the matter to make the sugar molecules. The cricket eats the grass, the frog eats the cricket, and the snake eats the frog. Each animal gets matter [carbon compounds] to make the molecules they need from their food. When all these organisms die, the soil bacteria (decomposers) break down the carbon compounds from the organisms' bodies and so this matter becomes available for use by other organisms.

§ Flow of energy: The grass (producer) absorbs energy from the Sun and stores this energy within sugars [complex carbon compounds]. When the cricket eats the grass, the frog eats the cricket, and the snake eats the frog, each animal gets energy for life processes by breaking down food molecules. The grass, the cricket, the frog, and the snake all release energy as heat. When all these organisms die, the soil bacteria (decomposers) break down the carbon compounds in the organisms' bodies to get energy for life processes. The soil bacteria (decomposers) also release heat as they use energy. The heat is not available to organisms in the ecosystem to use again for energy. This is why continual energy input from the Sun is necessary for the organisms in the ecosystem to live.

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