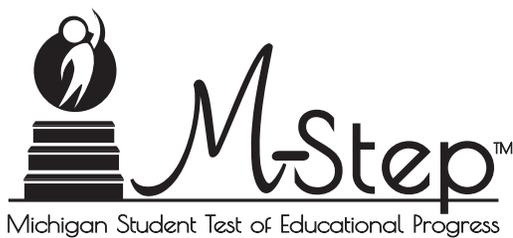


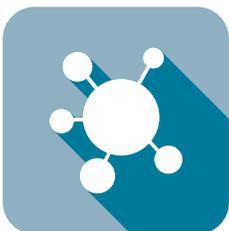
5th



Grade 5 Science



8th

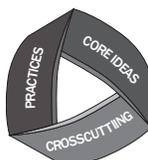


11th



Sample Items

FS



**MICHIGAN STATE BOARD OF EDUCATION
STATEMENT OF ASSURANCE OF COMPLIANCE WITH FEDERAL LAW**

The Michigan State Board of Education complies with all Federal laws and regulations prohibiting discrimination and with all requirements and regulations of the U.S. Department of Education. It is the policy of the Michigan State Board of Education that no person on the basis of race, color, religion, national origin or ancestry, age, sex, marital status, or handicap shall be discriminated against, excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination in any program or activity for which it is responsible or for which it receives financial assistance from the U.S. Department of Education.

The sample items included in this set can be used by students and teachers to become familiar with the kinds of items students will encounter on the paper/pencil summative assessments. The sample items demonstrate the rigor of Michigan’s academic content standards. They are not to be interpreted as indicative of the focus of the M-STEP assessments; they are simply a collection of item samples. Every standard is not included in this sample set.

PART X DIRECTIONS:

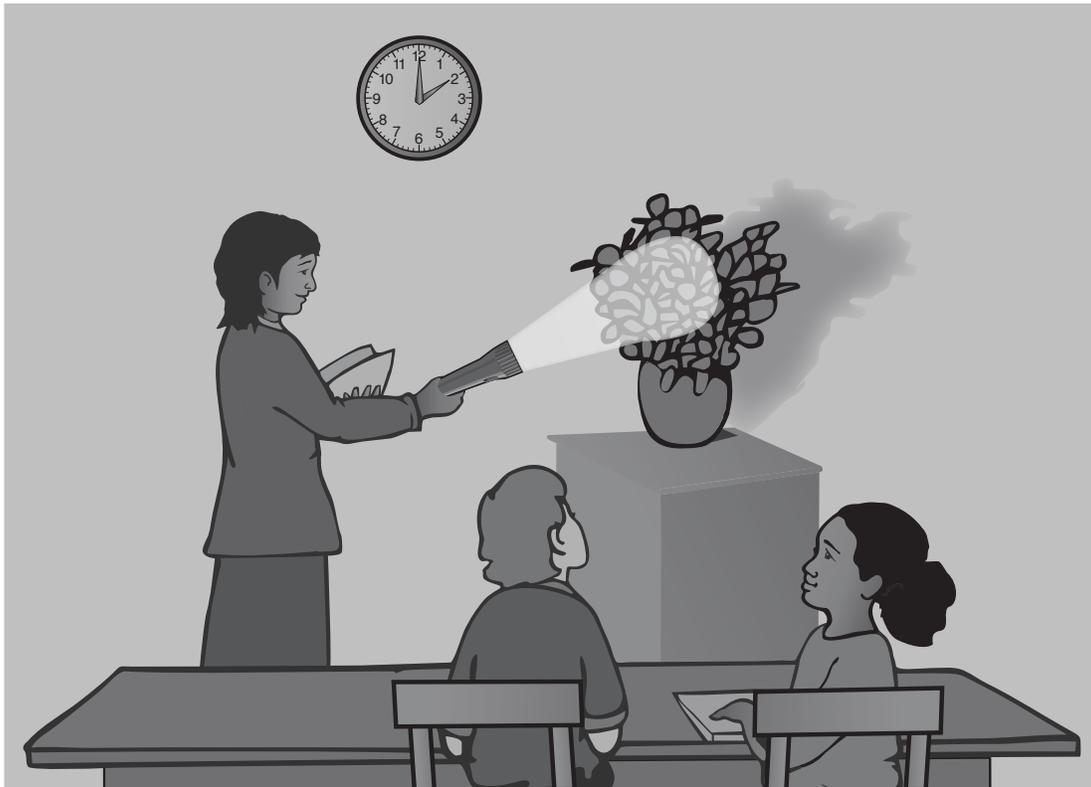
You will be taking the Science M-STEP. This test includes passages and pictures that you will read and use to answer different types of questions. Some of the items give the student a model with the answer options provided in the answer document. For this reason, an answer document has been provided for practice.

Carefully read each passage and look at each picture before answering the questions that follow. Mark your answers in your Answer Document.

Read the passage, look at the pictures, and answer the questions.

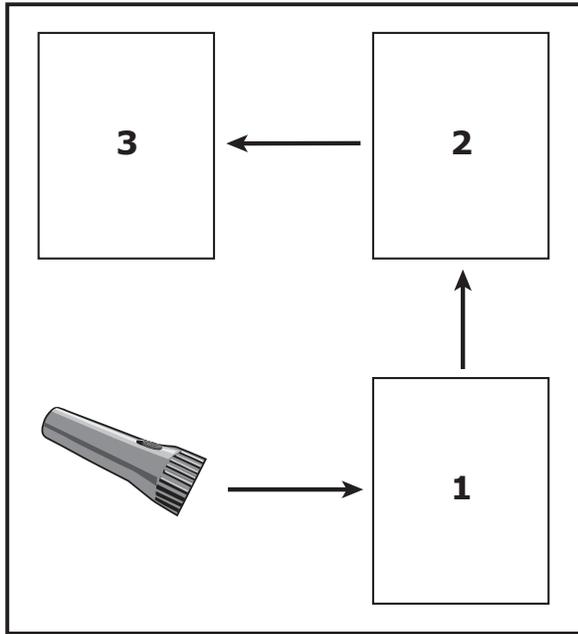
Lights Out!

Students are learning about eyes in science class. During their class discussion, a power outage occurs and the lights go out in the classroom. While the teacher looks for a flashlight, one student exclaims, "I can't see anything!" The teacher turns on a flashlight and points it across the classroom to a plant on a table. The teacher says, "This makes me wonder how we are able to see the plant."



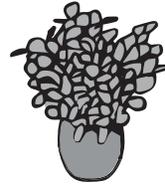
- 1** Which statement **best** describes how the students are able to see the plant?
- A** Once the plant produces its own light, the students can observe the plant.
 - B** Once the plant absorbs all the light from the flashlight, the students can observe the plant.
 - C** The light from the flashlight is reflected toward the students' eyes and then back to the plant.
 - D** The light from the flashlight is reflected off of the plant and then enters the students' eyes.
- 2** Eyes collect information about the world in the form of light. Which statement **best** describes how this information is processed?
- A** Light is sensed by the brain and then transferred to the eyes.
 - B** Light is processed in the eyes, allowing the object to be seen immediately.
 - C** The eyes reflect light back to the object as the information about the object is processed.
 - D** The eyes have structures that sense light, and then the information is sent to the brain to be processed.

3 Complete the model by selecting the pictures to show the path that light and information follow to allow the plant to be seen.



eye

A



plant

B



brain

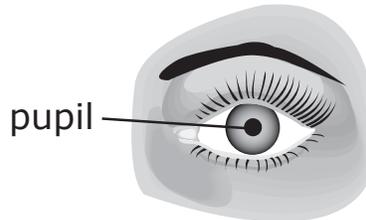
C

You may use this model as a work space. Be sure to mark your answers in your answer document.

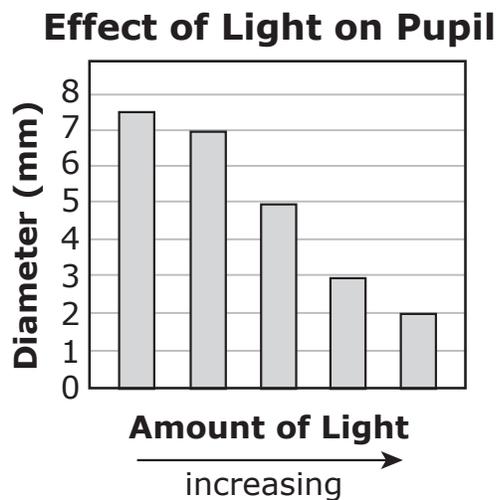
Read the passage, look at the pictures, and answer the questions.

Lights Out!

Human eyes have specialized structures to help people see. One of these structures is the pupil. The pupil is the dark center opening in the middle of the eye.



The size of a pupil can be measured by its diameter. A scientist shines different amounts of light on a pupil and measures the diameter of the pupil. The graph shows the data collected by the scientist.



4 This question has **two** parts.

Part A

After a while, the lights come back on in the classroom. How will the students' pupils **most likely** change?

- A The students' pupil diameters will increase.
- B The students' pupil diameters will decrease.

Part B

Which statement **best** explains the change in pupil diameter described in Part A?

- A Pupil diameter increases when there is low light.
- B Pupil diameter increases when there is bright light.
- C Pupil diameter decreases when there is low light.
- D Pupil diameter decreases when there is bright light.

5 This question has **two** parts.

Based on all of the information, complete the scientific explanation about the effect of light on pupil diameter.

Claim: The pupil diameter changes with different amounts of light.

Choose **two** evidence statements and **one** reasoning statement that support the claim for the effect of light on pupil diameter.

Part A: Evidence Statements

- A** The diameter was largest in the lowest light and smallest at the brightest light.
- B** The diameter was the largest in the brightest light and smallest at the lowest light.
- C** The diameter of the pupil increased as the light increased.
- D** The diameter of the pupil decreased as the light increased.

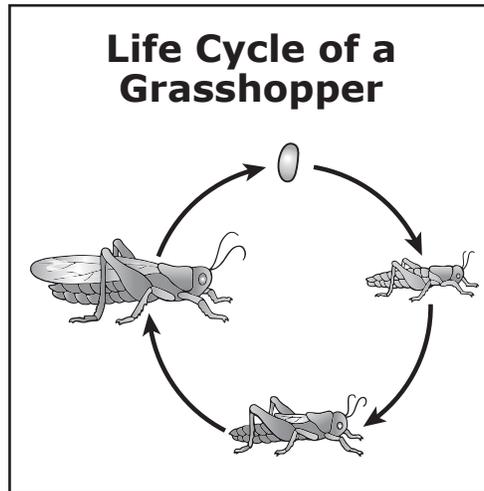
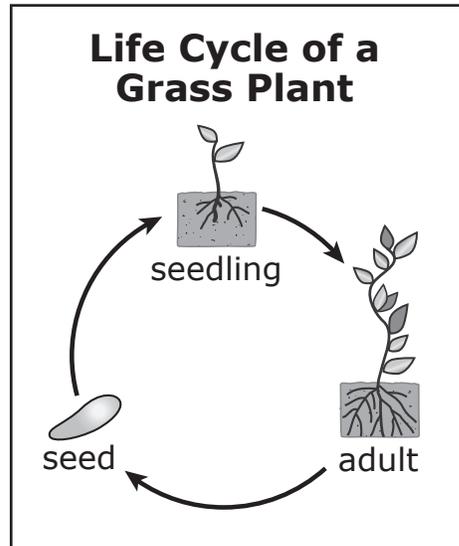
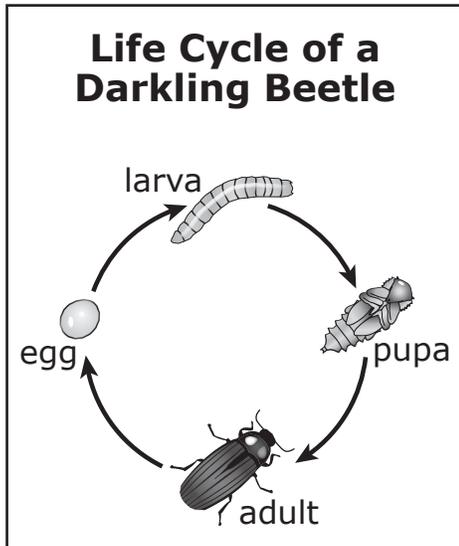
Part B: Reasoning Statements

- A** When there is less light, the pupil gets bigger to take in more light.
- B** When the pupil is smaller, it lets in more light so a person can see better in less light.
- C** When there is bright light, the pupil lets in more light so a person can see better.

Read the passage, look at the pictures, and answer the questions.

Grasshoppers

Students are studying the ecosystem of three organisms: a darkling beetle, a grasshopper, and a grass plant. Grasshoppers and darkling beetles eat grasses. The ecosystem gets different amounts of rain based on the seasons.



6 This question has **two** parts.

Based on the models, identify the similarities and differences among the life cycle stages of the organisms.

Part A

Select **all** the similarities among the life cycle stages of the organisms.

- A** organisms grow
- B** reproduction occurs
- C** the number of life cycle stages
- D** adults look like their young

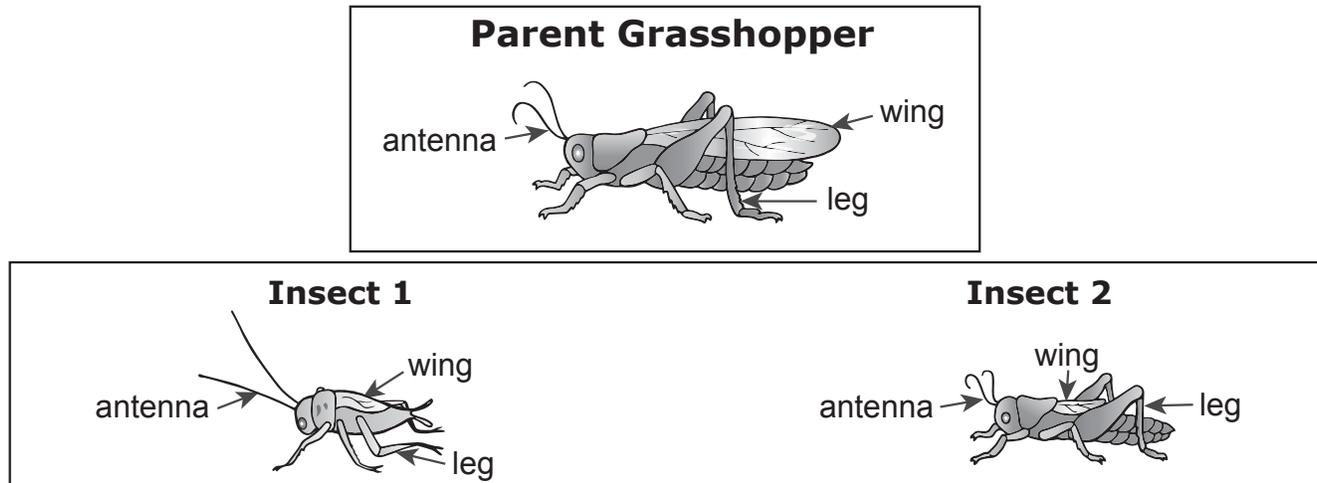
Part B

Select **all** the differences among the life cycle stages of the organisms.

- A** organisms grow
- B** reproduction occurs
- C** the number of life cycle stages
- D** adults look like their young

7 This question has **two** parts.

The students are given a container with an adult grasshopper and two insects in their young stages.



Part A

Which insect is **most likely** to be the offspring of the adult grasshopper?

- A Insect 1
- B Insect 2

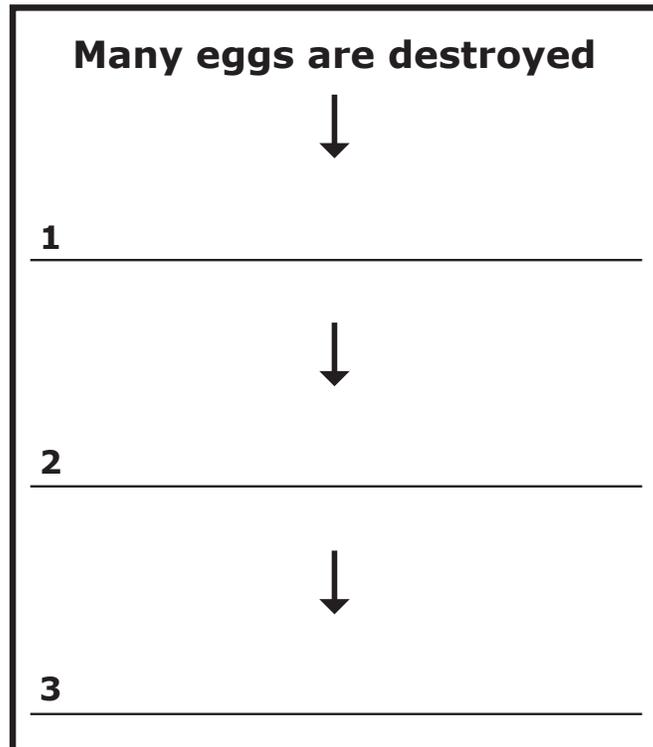
Part B

Select **one** evidence statement that supports your answer in Part A.

- A The leg shape is the same for both the adult and the offspring.
- B The leg shape of the adult is different from the leg shape of the offspring.
- C The antenna length is the same for both the adult and the offspring.
- D The antenna length of the adult is different from the antenna length of the offspring.

- 8** Grasshopper eggs must remain moist to survive. When very little rainfall occurs in the ecosystem, how might the population of grasshoppers be affected?

Select **three** events in the correct sequence from the list of **Possible Events** to complete the graphic organizer.



Possible Events:

- A** less reproduction
- B** more reproduction
- C** more young grasshoppers survive
- D** fewer young grasshoppers survive
- E** more grasshoppers become adults
- F** fewer grasshoppers become adults

You may use this model as a work space. Be sure to mark your answers in your answer document.

Read the passage, look at the pictures, and answer the questions.

Grasshoppers

A student wants to know if the traits of the grass plants eaten by the grasshoppers are affected by the environment. The student sets up an investigation to collect data using the procedure shown.

Investigation Procedure

1. Fill two containers with 300 grams of soil in each.
2. Place a grass plant into each container.
3. Set the containers near a window.
4. Measure the height of each grass plant on day 1.
5. Count the number of leaves on each grass plant on day 1.
6. Water the grass plants every 5 days.
7. Measure the height of each grass plant on day 15.
8. Count the number of leaves on each grass plant on day 15.

Plant Investigation Data

	Plant Height on Day 1 (cm)	Plant Height on Day 15 (cm)	Number of Leaves on Day 1	Number of Leaves on Day 15	Total Amount of Water Given (mL)
Plant A	3	8	2	2	3
Plant B	3	14	2	2	30

9 This question has **three** parts.

After the investigation the student makes the following claim.

Claim: Plants are affected by the amount of water in their environment.

The student wants to graph the data to show the evidence that **best** supports the claim. An incomplete graph is shown.



Use this model as a workspace. Be sure to mark your answers in the answer document.

Part A

Select the correct label that would replace the question mark on the left side of the graph.

- A** Plant Height (cm)
- B** Number of Leaves

Part B

Choose the height of the bar for **Plant A: Day 15** that **best** displays the student's data in the graph.

- A** 2
- B** 3
- C** 8
- D** 14
- E** 30

Part C

Choose the height of the bar for **Plant B: Day 15** that **best** displays the student's data in the graph.

A 2

B 3

C 8

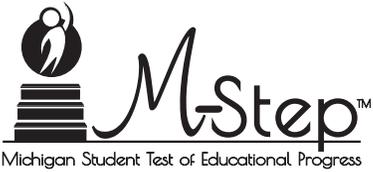
D 14

E 30

Answer Key

1. D
2. D
3. **Box 1** – B
Box 2 – A
Box 3 – C
4. **Part A** – B
Part B – D
5. **Part A** – A and D
Part B – A
6. **Part A** – A and B
7. **Part A** – B
Part B – A
8. **Event 1** – D
Event 2 – F
Event 3 – A
9. **Part A** – A
Part B – C
Part C – D

Grade 5 Science Sample Items



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