



# **RELEASED ITEMS**

**SCIENCE  
GRADE 5**

**Fall 2007**

**MICHIGAN STATE BOARD OF EDUCATION  
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# PART 1

## DIRECTIONS

In this test, you will demonstrate your understanding of science.

This test includes both multiple-choice and written-response questions. For the multiple-choice questions, use only a No. 2 pencil to mark your answers. Make a dark mark that completely fills the corresponding circle in your **Answer Document**. If you are not sure of the answer to a multiple-choice question, mark your *best* choice and go on to the next question. If you change an answer, be sure to erase the first mark completely. Remember, mark only one answer for each question.

Mixed in with the multiple-choice questions are written-response questions. These questions require you to write sentences or paragraphs in your **Answer Document**. Try to show all that you know about the topics by writing as much as you can in response to the questions you are asked. Make sure you at least attempt to answer each question. Record your written responses in the **Answer Document** on the lines or spaces provided using only a No. 2 pencil. Make sure the number of the question corresponds to the number in the **Answer Document**.

If you finish early, you may check your work for Part 1 only. Do **NOT** work on Part 2 of this test until you are told to do so.

If you do not understand any of these directions, please raise your hand.

You may now begin.

- 1** In his research, Josh finds that coyotes have good eyesight, hearing, and sense of smell. How would these best help a coyote to survive in its environment?
- A** They would help insulate a coyote.
  - B** They would help a coyote move.
  - C** They would help the coyote hunt its prey.
  - D** They would help the coyote eat its food.
- 2** Classify animal in groups with & without a body feature
- A** Correct
  - B** Selected a feature only true for 1 animal in 1 group
  - C** Selected feature common to some animals in both groups
  - D** Selected feature common to some animals in both groups

- 3 Which of the following properties can be used to classify the coins into 5 groups?



- A size  
B color  
C flexibility  
D temperature
- 4 Identify a characteristic of mammals not found among reptiles
- A Chose characteristic found in both mammals and reptiles  
B Correct  
C Chose a reptile characteristic not found among mammals  
D Chose characteristic found in both mammals and reptiles

- 5 Which of the following *best* describes the four-stage life cycle of an insect?
- A egg, pupa, larva, adult
  - B egg, larva, pupa, adult
  - C pupa, egg, larva, adult
  - D larva, egg, pupa, adult
- 6 Identify the best opinion statement based on an investigation
- A Selected an opinion contrary to investigation
  - B Selected a fact not related to the investigation
  - C Correct
  - D Stated a fact based on the investigation
- 7 Identify the tool used to separate white light into colors
- A Chose a tool inappropriate for task
  - B Correct
  - C Chose a tool inappropriate for task
  - D Chose a tool which produces non-colored light
- 8 Recognize why an animal adapts to environment to survive
- A Selected a survival benefit unrelated to adaptation
  - B Selected a behavior unrelated to animal's adaptation
  - C Correct
  - D Selected a behavior for species, not individual, survival

- 9 Shani found a metal object under her desk. How should she find out if the object is made of iron?
- A Drop the object in water to see if it floats.
  - B Hit the object with a hammer to see if it breaks.
  - C Place the object next to a magnet to see if it attracts.
  - D Rub the object on a piece of wool and see if she gets a shock.
- 10 Identify set of materials that make a complete electrical circuit
- A Chose materials insufficient for making a complete circuit
  - B Chose materials insufficient for making a complete circuit
  - C Correct
  - D Chose materials insufficient for making a complete circuit

**ANSWER THE FOLLOWING CONSTRUCTED-RESPONSE ITEM IN YOUR ANSWER DOCUMENT.**

**11 Constructed-Response  
(3 points)**

Claire is given a mixture of iron filings, gravel, and sand. She is asked to separate the mixture into its three parts.

- List two tools Claire should use to separate the mixture into its three parts.
- Describe the steps for using these tools in order to separate the mixture.

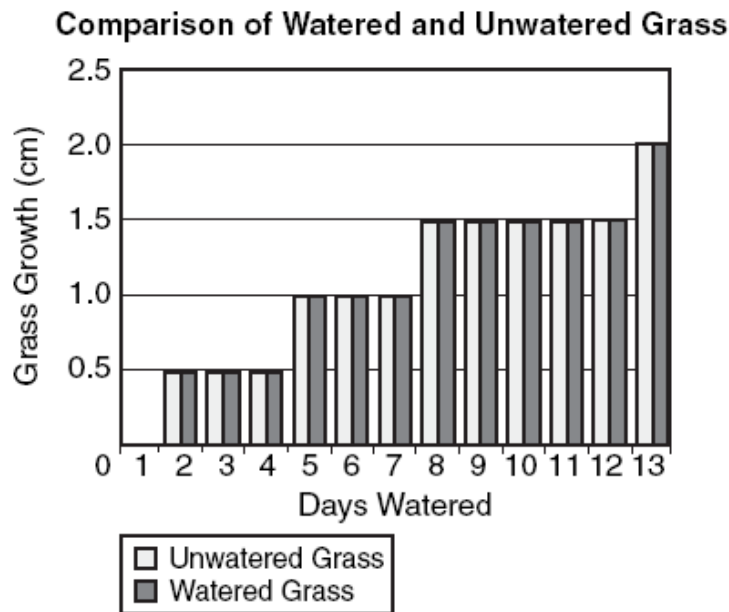
**NOTHING WRITTEN IN THIS TEST BOOKLET WILL BE SCORED.**

**ANSWER THE FOLLOWING CONSTRUCTED-RESPONSE ITEM IN YOUR ANSWER DOCUMENT.**

**12 Constructed-Response  
(3 points)**

Maria conducted an experiment to test the following prediction: "The grass will not grow in a certain area because the house is blocking the rain there. The grass needs more water to grow."

She divided the area into two sections. She watered one section for 10 minutes each night and left the other section dry. The graph below compares grass growth in the two areas.



- Was Maria’s prediction correct? Give evidence to support your answer.
- Based on the results of Maria’s experiment, what should she do next?

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**Use the following information to answer questions 13 through 16.**

Elephants survive in only a few places on Earth. Scientists are working to learn more about elephants so that the animals can be protected.

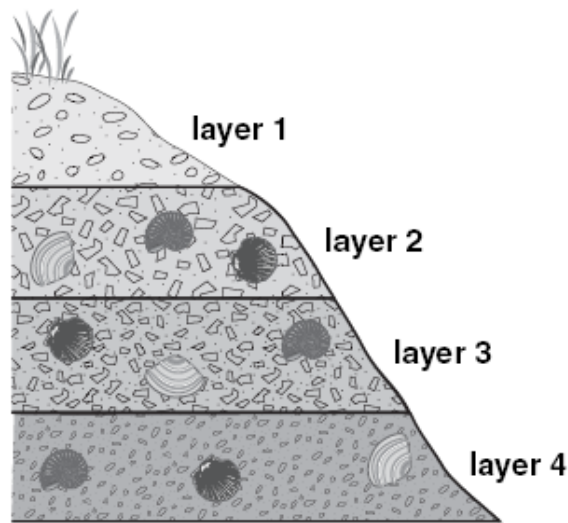
**13** Elephants in the wild have few predators. Predators that feed on large animals usually have sharp

- A** scales.
- B** claws.
- C** horns.
- D** quills.

**14** A large animal like an elephant that eats only plants *probably* has

- A** flat teeth.
- B** large ears.
- C** two tusks.
- D** thick skin.

- 15 Fossils provide information about how elephants' ancestors changed over time.



Which layer *most likely* contains the oldest fossils?

- A layer 1, because it is a sandstone
- B layer 2, because it has more fossils
- C layer 3, because its fossils are largest
- D layer 4, because it is at the very bottom

**ANSWER THE FOLLOWING CONSTRUCTED-RESPONSE ITEM IN YOUR ANSWER DOCUMENT.**

**16 Constructed-Response  
(3 points)**

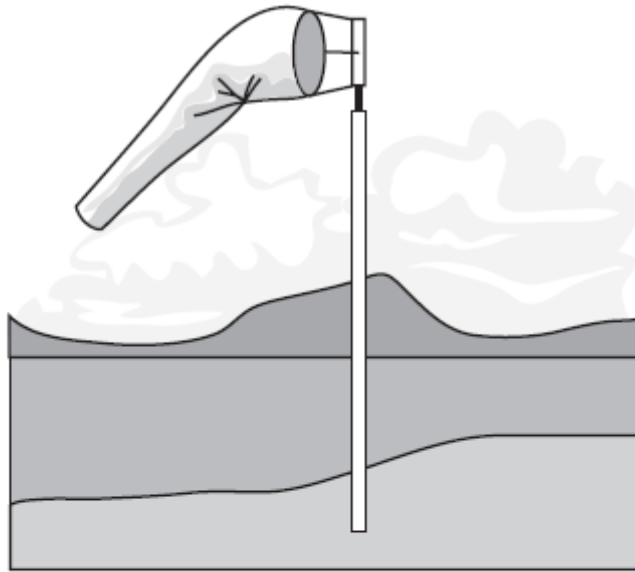
In some places, scientists locate elephants by using an electronic tracking device. This method involves putting a collar containing the device on the elephant so that the animal's position can be tracked.

- Describe two benefits of using electronic tracking technology on the elephants.
- Describe one risk to elephants if this system is used.

**NOTHING WRITTEN IN THIS TEST BOOKLET WILL BE SCORED.**

- 17 Identify an Earth surface feature most likely found in a desert
- A Chose a feature not found in a desert
  - B Chose a feature not found in a desert
  - C Correct
  - D Chose a feature that is very unlikely found in a desert

18



Which weather element is measured by the tool shown above?

- A average rainfall
- B air temperature
- C cloud cover
- D wind direction

- 19** Identify a common name for water in a gaseous state
- A** Chose a name for water in non gaseous state of matter
  - B** Chose a name for water in non gaseous state of matter
  - C** Correct
  - D** Chose a name for water in non gaseous state of matter
- 20** Identify the best source of evidence used to know Earth shape
- A** Chose source that is a few thousand years old
  - B** Correct
  - C** Chose evidence which minimally hints at Earth's shape
  - D** Chose observation that has no evidence of Earth's shape
- 21** Draw a conclusion based on a table of investigation data
- A** Selected a conclusion not supported by the data
  - B** Selected a conclusion not supported by the data
  - C** Selected a conclusion not supported by the data
  - D** Correct

## PART 2

### DIRECTIONS

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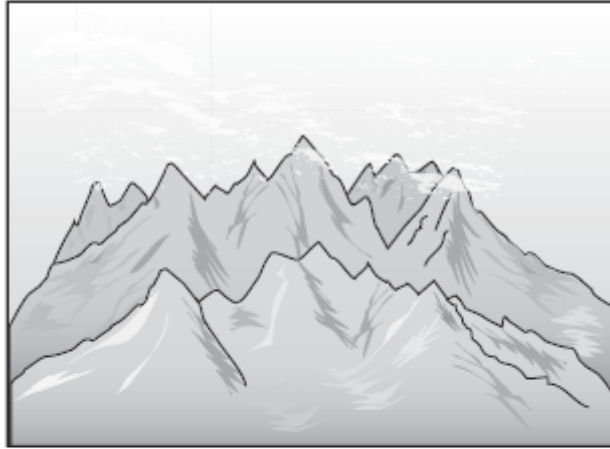
- 22** In the morning, a student observed snow on the ground and decided that she would need a jacket. Her decision was based on
- A** sampling.
  - B** opinion.
  - C** evidence.
  - D** rumor.
- 23** Water levels in Lake Michigan reached record lows in 2001. Thousands of dollars were spent dredging deep channels (removing bottom sand) so that boats could get into marinas on the lake. Why is it so important to Michigan's economy to keep the channels clear of sand?
- A** Clogged channels are a danger to swimmers.
  - B** Shallow water freezes faster during the winter months.
  - C** Deeper water provides fish populations with a place to hide from fishermen.
  - D** Recreational boating on Lake Michigan generates a lot of money for the state.
- 24** Recognize weather change between spring and summer in Michigan
- A** Chose weather change from summer to fall to winter
  - B** Chose weather change from summer to fall
  - C** Correct
  - D** Chose weather change from June 21 to December 22

- 25** Recognize how a magnetic mineral would affect iron
- A** Selected the opposite effect of a magnet on iron
  - B** Correct
  - C** Chose effect irrelevant to magnetic properties
  - D** Chose effect irrelevant to magnetic properties
- 26** Select source of information for a conclusion from investigation
- A** Correct
  - B** Selected information irrelevant to investigation outcome
  - C** Selected the hypothesis as support for conclusion
  - D** Selected opinion, not data, as support for conclusion
- 27** Know time required for phase cycle of Earth's moon
- A** Chose too short a time period
  - B** Chose too short a time period
  - C** Correct
  - D** Chose too long a time period
- 28** Coyotes eat deer. What type of energy do coyotes receive from deer?
- A** light energy
  - B** sound energy
  - C** food energy
  - D** electrical energy

- 29** Understand the advantage for using simple machines
- A** Chose idea that a simple machine reduces opposing force
  - B** Chose idea that a simple machine can reduce mass
  - C** Correct
  - D** Chose idea that a simple machine removes mass
- 30** Vibrations from a thick rubber band make a low-pitched sound. The vibrations from a thin rubber band make a high-pitched sound. This is *most likely* because the thin rubber band
- A** moves faster.
  - B** moves slower.
  - C** is shorter.
  - D** is longer.
- 31** Which of these should **NOT** affect how fast a ball will travel on an inclined plane?
- A** the texture of the ball
  - B** the shape of the ball
  - C** the color of the ball
  - D** the size of the ball



32



What *most likely* caused these mountains to have a rough surface?

- A Sunlight heated the surface and the rocks cracked.
  - B Rocks were slowly broken down and eroded.
  - C Seasons have gotten warmer over the past several years.
  - D Ocean waves crashed against the surface in the distant past.
- 33 Identify the procedure to separate parts of a given mixture
- A Selected an inappropriate procedure
  - B Selected an inappropriate procedure
  - C Correct
  - D Selected a procedure relying on sand to dissolve in water

Use the following information to answer questions 34 through 37.

Students and schools use paper in many ways. Reusing and recycling paper is becoming more important. Students at Smith Elementary School began a project in which they studied the importance of trees, and the making and recycling of paper.

- 34** Students at the school wanted to determine how much paper was thrown away every week. They counted the pieces of paper thrown away in each grade. The totals are listed in the table.

Grade	Number of Pieces of Paper
1	1,255
2	1,569
3	889
4	1,135
5	631

What is the *best* conclusion to draw from the data collected?

- A** First-grade students threw away the most paper.
- B** Fourth-grade students threw away the least paper.
- C** There is a decrease from third to fourth grade in the amount of paper thrown away.
- D** There is an increase from first to second grade in the amount of paper thrown away.

- 35** Michigan trees are used for many things, including paper for school classrooms. Julie has been asked by her teacher to come up with a way for the school to help save trees. Which of these is the *best* way to save trees?
- A** Find new uses for paper products.
  - B** Replace wood with paper products.
  - C** Recycle paper in the school classroom.
  - D** Use paper products that are less expensive.
- 36** Paper is one of many products that come from trees. A tree is which part of a food chain?
- A** a consumer
  - B** a decomposer
  - C** a predator
  - D** a producer

Item 37 not scored for Fall 2007

- 38** Note similarities and differences among Earth, moon and Sun
- A** Selected untrue common feature for Earth and moon
  - B** Selected untrue size differences among Earth, moon & Sun
  - C** Correct
  - D** Selected untrue common feature for Earth and moon
- 39** Classify animal at the top of a food chain within an ecosystem
- A** Misclassified animal as provider of nutrients
  - B** Correct
  - C** Misclassified as providing Sun's energy to food chain
  - D** Misclassified animal as providing energy to consumers

- 40** Recognize animal remains not found as fossils
- A** Remains can be found as fossils
  - B** Remains can be found as fossils
  - C** Remains can be found as fossils
  - D** Correct
- 41** José found an insect on the sidewalk and put it into a jar. Which tool should he use if he wants to see the insect better?
- A** a light prism
  - B** a color filter
  - C** a telescope
  - D** a hand lens
- 42** Associate plant's described growth response with survival need
- A** Correct
  - B** Plant's growth response not related to this need
  - C** Plant's growth response not related to this need
  - D** Plant's growth response not related to this need
- 43** Identify a specific step made in a specific scientific investigation
- A** Misclassified the step as a hypothesis
  - B** Misclassified the step as the investigation question
  - C** Misclassified the step as the problem to investigate
  - D** Correct

## Scoring Key: Part 1

Item Number	Correct Answer	Standard/ Benchmark	Description
1	C	L.4.e.2	Adaptations
2	A	L.2.e.2	Classify familiar organisms
3	A	P.1.e.1	Classify substances
4	B	L.2.e.2	Classify familiar organisms
5	B	L.2.e.3	Life cycles
6	C	R.1.e.1	Need for evidence
7	B	P.4.e.3	Use of prisms and filters with light sources
8	C	L.4.e.2	Adaptations
9	C	P.3.e.3	Magnetic interactions
10	C	P.1.e.4	Construct simple circuits
11	E	C.1.e.3	Use scientific tools
12	E	C.1.e.6	Charts and graphs
13	B	L.2.e.1	Body parts
14	A	L.2.e.1	Body parts
15	D	E.1.e.4	Geological history of Earth
16	E	R.1.e.5	Contributions from people with diverse backgrounds
17	C	E.1.e.1	Earth features
18	D	E.3.e.1	Weather conditions
19	C	E.2.e.1	Water in 3 states
20	B	R.1.e.1	Need for evidence
21	D	C.1.e.2	Observe, investigate, reason

### Scoring Key: Part 2

Item Number	Correct Answer	Standard/ Benchmark	Description
22	C	R.1.e.1	Need for evidence
23	D	E.2.e.3	Sources and uses of water
24	C	E.3.e.2	Seasons in Michigan
25	B	E.1.e.2	Earth materials
26	A	R.1.e.1	Need for evidence
27	C	E.4.e.2	Motions of Earth and moon
28	C	P.1.e.3	Forms of energy
29	C	P.3.e.4	Simple machines
30	A	P.4.e.2	How sounds are made
31	C	P.3.e.1	Describe speed and direction
32	B	E.1.e.3	Changes in Earth's surface
33	C	P.2.e.2	Mixtures
34	D	C.1.e.2	Observe, investigate, reason
35	C	E.1.e.6	Conserve resources and reduce pollution
36	D	L.5.e.1	Food webs
37			Item not scored for Fall 2007
38	C	E.4.e.1	Sun, moon, Earth
39	B	L.2.e.4	Needs of organisms
40	D	L.4.e.1	Fossils
41	D	C.1.e.3	Use scientific tools
42	A	L.5.e.2	Needs of life
43	D	C.1.e.2	Observe, investigate, reason