

MEA 2008–2009

Science Grade 5

The table below shows the entire fifth grade MEA science test design. Scores are based on common items only, half of which are released and can be found in this document.

Test Design

CONTENT AREA	COMMON		FIELD TEST ITEMS		TOTAL ITEMS PER STUDENT		BASE TESTING TIME	POINTS
	MC	CR	MC	CR	MC	CR		
SCIENCE	32	4	8	1	40	5	90 MIN.	48

Each item on the MEA measures a content standard of Maine's 2007 *Learning Results*.

Science Content Standards Assessed on the MEA

D. The Physical Setting

1. Universe and Solar System
2. Earth
3. Matter and Energy
4. Force and Motion

E. The Living Environment

1. Biodiversity
2. Ecosystems
3. Cells
4. Heredity and Reproduction
5. Evolution

Item Information Chart

Please refer to the item information chart on the next page for in-depth information on each science released item. The released item numbers in the chart correspond to item numbers in the practice test and on the MEA Class Analysis Report.

Constructed-Response Scoring Guides

A constructed-response scoring guide includes score point descriptions used to determine the score. Training notes that follow the scoring guide provide in-depth descriptions or particular information also used to determine the score.

Student Work

At least one sample student response is provided for each score point with annotations that explain the reasoning behind the assigned score.

Grade 5 Science Released Item Information

Released Item Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Practice Test Page Number	2	2	2	2	3	3	3	3	4	4	4	5	5	6	6	7	8	9
Content Standard	E2	E1	D3	E4	D4	D1	E4	D2	D2	D1	E5	E3	D3	D2	E3	E1	E5	D4
Item Type	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	CR	CR
Possible Points	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	4
Answer Key	A	D	B	C	D	C	B	C	B	B	C	D	B	D	B	D		
% Who Chose A or Earned 1 Point	64	1	58	16	22	5	12	10	6	14	1	17	28	4	20	23	1	30
% Who Chose B or Earned 2 Points	30	2	27	2	4	6	73	40	42	50	5	12	49	11	68	3	25	32
% Who Chose C or Earned 3 Points	3	1	6	80	3	78	2	40	46	27	93	17	17	11	6	8	43	2
% Who Chose D or Earned 4 Points	2	96	9	2	71	10	13	9	5	8	1	54	6	74	6	66	25	2
Statewide Average Student Score																	2.79	1.09

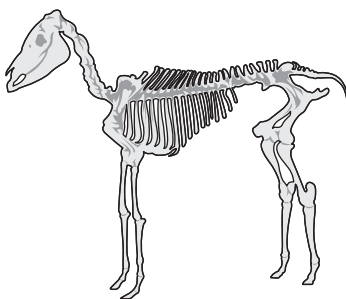
Content Standard: See “MDOE Regulation 132—Learning Results: Parameters for Essential Instruction” at <http://www.maine.gov/education/lres/pei/index.html>.

Item Type: MC = multiple-choice, CR = constructed-response

Answer Key: the letter of the correct answer choice

Constructed-Response Item 17

- 17 The picture below shows the fossil of an organism that lived over 55 million years ago.



- Identify two organisms living today that have body parts similar to those of the fossil.
- Describe the two body parts for each organism in part a that are similar to the fossil shown above.
- Explain why organisms living today could have body parts similar to organisms living 55 million years ago.

Be sure to label parts a, b, and c in your answer booklet.

Scoring Guide for Constructed-Response Item 17

Score	Description
4	Response demonstrates a thorough understanding of the similarities and differences between fossils and living species today. Response identifies two organisms with similar body parts, describes two of the body parts of the organisms identified, and explains why organisms today could have body parts similar to fossils. Response has no errors or omissions.
3	Response demonstrates a general understanding of similarities and differences between fossil and living species today. Response has one error or omission.
2	Response demonstrates a limited understanding of similarities and differences between fossil and living species today. Response has two errors or omissions.
1	Response demonstrates a minimal understanding of similarities and differences between fossil and living species today. Response has one correct piece of information.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes for Constructed-Response Item 17

- horse, deer, cow, zebra, dog, giraffe, cat, goat, or other appropriate mammal with head and tail
- Similarities—tail, mouth, skeleton, number of legs, overall body shape, head
- Those body parts help or do not harm the survival of the organism over time or show that the organisms are related over time.

Part (a) is worth 2 points, part (b) is worth 2 points, and part (c) is worth 1 point.

Score Conversion

5 points = 4

4 points = 3

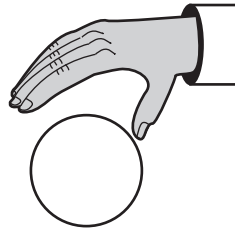
2 or 3 points = 2

1 point = 1

Constructed-Response Item 18

- 18 In Picture A below, a person releases the ball. No extra push, pull, or twist is added to the ball, and the wind is not blowing.

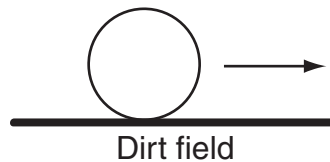
Picture A



- Name a force acting on the ball.
- Describe how the force you named in part a affects the motion of the ball.

In Picture B below, the ball is rolling along a level dirt field, and the wind is not blowing.

Picture B



- Identify a force that is acting on the ball.
- Describe how the force you identified in part c affects the motion of the ball.

Be sure to label parts a, b, c, and d in your answer booklet.

Scoring Guide for Constructed-Response Item 18

Score	Description
4	Response demonstrates a thorough understanding of the ways in which a given force will affect the motion of an object. Response identifies two forces and their effects on the balls. Response has no errors or omissions.
3	Response demonstrates a general understanding of the ways in which a given force will affect the motion of an object. Response has one error.
2	Response demonstrates a limited understanding of the ways in which a given force will affect the motion of an object. Response has two errors or omissions.
1	Response demonstrates a minimal understanding of the ways in which a given force will affect the motion of an object. Response is minimal.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes for Constructed-Response Item 18

- a. The force is gravity.
- b. Gravity or Earth is **pulling** down on the ball.
- c. The force from the dirt or air (also friction, air resistance, drag, or traction)
- d. The force from the dirt or air (also friction, air resistance, drag, or traction) will slow the ball down.

Note: Response may answer part (a) and (b) in one sentence. The same is true for parts (c) and (d).

Part (a) is worth 1 point, part (b) is worth 1 point, part (c) is worth 1 point, and part (d) is worth 1 point.