

MEA 2007–2008

Mathematics Grade 5

The table below shows the entire MEA mathematics 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 | | | EMBEDDED FIELD TEST | | | TOTAL ITEMS PER STUDENT | | | BASE TESTING TIME | POINTS |
|--------------|--------|----|----|---------------------|----|----|-------------------------|----|----|-------------------|--------|
| | MC | CR | SA | MC | CR | SA | MC | CR | SA | | |
| MATHEMATICS | 32 | 2 | 4 | 8 | 2 | 1 | 40 | 4 | 5 | 105 MIN. | 48 |

Each item on the MEA measures a grade level expectation based on Maine’s 1997 *Learning Results*. Score points for items are accumulated and reported in clusters. Each content standard is included in a cluster as indicated below.

Mathematics Clusters

1. Numbers and Operations

Numbers and Number Sense (A)
Computation (B)

2. Shape and Size

Geometry (E)
Measurement (F)

3. Mathematical Decision Making

Data Analysis and Statistics (C)
Probability (D)

4. Patterns

Patterns, Relations, and Functions (G)
Algebra Concepts (H)
Mathematical Communication (K)

Item Information Chart

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

Short-Answer and Constructed-Response Scoring Guides

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

Student Work

Student work samples to supplement these scoring guides are found in the file labeled “Student Work.”

Grade 5 Mathematics Released Item Information

| Released Item Number | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|----------------------------------|----|----|----|----|------|----|----|----|----|----|----|----|----|----|----|----|----|------|------|
| Practice Test Page Number | 2 | 2 | 2 | 2 | 3 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 8 | 8 |
| Calculator | N | N | N | N | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Grade Level Expectation (GLE) | B1 | E1 | B1 | F2 | F2 | A1 | A3 | E3 | H1 | H6 | G3 | E1 | A1 | H1 | G3 | G3 | C1 | B2 | D1 |
| Cluster | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 4 | 4 | 4 | 2 | 1 | 4 | 4 | 4 | 3 | 1 | 3 |
| Item Type | MC | MC | MC | MC | CR | MC | MC | MC | MC | MC | MC | MC | MC | MC | MC | MC | MC | SA | SA |
| Possible Points | 1 | 1 | 1 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |
| Answer Key | C | B | A | D | | A | C | D | C | B | D | D | C | B | D | D | C | | |
| % Who Chose A or Earned 1 Point | 14 | 5 | 47 | 12 | 15 | 54 | 9 | 5 | 26 | 2 | 9 | 8 | 8 | 14 | 7 | 30 | 14 | 18 | 29 |
| % Who Chose B or Earned 2 Points | 20 | 51 | 11 | 27 | 41 | 33 | 14 | 22 | 23 | 89 | 23 | 23 | 6 | 71 | 28 | 5 | 36 | 58 | 21 |
| % Who Chose C or Earned 3 Points | 55 | 8 | 19 | 9 | 17 | 6 | 72 | 14 | 44 | 4 | 11 | 8 | 75 | 9 | 9 | 11 | 37 | | |
| % Who Chose D or Earned 4 Points | 10 | 35 | 23 | 51 | 12 | 7 | 5 | 59 | 6 | 5 | 57 | 60 | 9 | 5 | 56 | 54 | 12 | | |
| Statewide Average Student Score | | | | | 1.97 | | | | | | | | | | | | | 1.34 | 0.71 |

Calculator: This row indicates whether use of a calculator is allowed for this item.

Grade Level Expectation (GLE): See “State of Maine 2007 Grade Level Expectations for Grades 3–8” document available at the Maine Department of Education’s Web site at <http://www.maine.gov/education/lsalt/gles.htm>.

Cluster: A group of content standards. (See previous page for groups.)

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

Answer Key: the letter of the correct answer choice

Constructed-Response Item 5

- 5 Jared wants to cook a turkey that weighs 10 pounds. The turkey needs to be cooked for 20 minutes for each pound it weighs.
- How long does the turkey need to cook? Show or explain how you found your answer.
 - When the turkey is done cooking, it needs to cool for 20 minutes. Jared wants to eat at 6:00 P.M. What is the latest time Jared can start cooking the turkey? Show or explain how you found your answer.

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

Scoring Guide for Constructed-Response Item 5

| Score | Description |
|-------|--|
| 4 | 4 points |
| 3 | 3 points |
| 2 | 2 points |
| 1 | 1 point: Student shows minimal understanding of problem. |
| 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 5

- Part a: 2 points for correct answer, **(200 minutes or 3 hours and 20 minutes)**, and sufficient work shown or explanation given to indicate correct strategy
- OR
- 1 point for correct answer with insufficient work or no work shown, or no explanation given
- or
- 1 point for correct strategy shown for solving the problem, but incorrect answer
- Part b: 2 points for correct answer, **2:20 (p.m.)**, and sufficient work shown or explanation given to indicate appropriate strategy
- OR
- 1 point for correct answer with insufficient work or no work shown or explanation given
- or
- 1 point for correct strategy shown for solving the problem, but incorrect answer

Notes:

Do not give credit for incorrect units. If units are missing, only penalize for a 4 score.

Ignore 1 transcription error, unless for a 4 score.

Give 1 point in part b if the student forgets cooling time but correctly handles cooking time with complete work or explanation.

Sample Responses:

- a. $20 \text{ minutes} \times 10 \text{ pounds} = 200 \text{ minutes}$ or $200 \text{ minutes} \div 60 \text{ minutes} = 3 \text{ hours and } 20 \text{ minutes}$
- b. To eat at 6:00 P.M. you need to count back 3 hours and 20 minutes from 6:00 P.M., which is 2:40 P.M. Then you need to count back 20 minutes from 2:40 P.M. which is 2:20 P.M. This is the time Jared needs to starting cooking the turkey to eat at 6:00 P.M.

Short-Answer Item 18

- 18 Hank sells small and large bags of apples. He charges \$4 for a small bag and \$6 for a large bag. He sold 18 small bags and 29 large bags. How much money was Hank paid for the bags of apples he sold? Show or explain how you found your answer.

Scoring Guide for Short-Answer Item 18

| Score | Description |
|-------|--|
| 2 | Correct answer, 246, with correct work shown or explanation given. |
| 1 | Correct answer with no work shown or explanation given. OR Correct strategy shown or explanation given with a computation error. |
| 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 Short-Answer Item 18

$$18 \times 4 = 72$$

$$29 \times 6 = 174$$

$$174 + 72 = 246$$

Short-Answer Item 19

- 19 The cook made 10 sandwiches for box lunches. There are
- 2 tuna,
 - 5 peanut butter,
 - 1 ham, and
 - 2 cheese sandwiches.

A student picked one sandwich without looking. What is the probability the student picked a peanut butter sandwich? Show or explain how you found your answer.

Scoring Guide for Short-Answer Item 19

| Score | Description |
|-------|---|
| 2 | Correct answer, $\frac{5}{10}$ or $\frac{1}{2}$, with correct work shown or explanation given. |
| 1 | Correct answer with no work shown or explanation given. OR Correct strategy shown or explanation given with incorrect answer. |
| 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 Short-Answer Item 19

There are 5 peanut butter sandwiches out of 10 sandwich choices. So the probability of a student picking a peanut butter sandwich is five tenths.

Student may go further by saying $\frac{5}{10} = \frac{1}{2}$.