

MEA 2007–2008

Mathematics Grade 7

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	3	6	8	2	2	40	5	8	120 MIN.	56

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)

3. Mathematical Decision Making

Data Analysis and Statistics (C)
Probability (D)

2. Shape and Size

Geometry (E)
Measurement (F)

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 numbers in the chart correspond 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 can be found in the file labeled “Student Work.”

Grade 7 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	20
Practice Test Page Number	2	2	2	2	2	3	5	5	5	5	6	6	6	7	7	7	8	8	9	10
Calculator	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Grade Level Expectation (GLE)	B2	A1	B1	A3	H4	H6	H6	C1	G3	F1	G3	D4	E1	E3	H1	C1	C1	G1	B2	F3
Cluster	1	1	1	1	4	4	4	3	4	2	4	3	2	2	4	3	3	4	1	2
Item Type	MC	MC	MC	MC	MC	SA	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	SA	CR	CR
Possible Points	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	2	2	4
Answer Key	C	B	D	C	C		A	D	D	D	A	D	B	B	C	C	C			
% Who Chose A or Earned 1 Point	9	29	16	28	6	5	75	44	25	14	38	8	19	18	34	18	14	24	13	9
% Who Chose B or Earned 2 Points	18	51	46	12	10	29	9	8	18	31	4	30	47	46	28	13	10	24	44	19
% Who Chose C or Earned 3 Points	58	9	9	53	55		6	14	15	31	39	25	20	24	33	43	51		10	1
% Who Chose D or Earned 4 Points	14	12	29	6	29		10	34	42	24	18	37	14	11	4	26	24		13	4
Statewide Average Student Score						0.63												0.72	1.83	0.68

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

Short-Answer Item 6

- 6 Look at the equation below.

$$\frac{p}{4} - 12 = 8$$

What is the value of p ? Show your work or explain how you found your answer.

Scoring Guide for Short-Answer Item 6

Score	Description
2	2 points
1	1 point
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 6

2 points for a correct answer, $p = 80$, with work shown or explanation given.

$$\frac{p}{4} - 12 = 8$$

$$\frac{p}{4} = 20$$

OR

1 point for a correct answer and no work or explanation.

OR

1 point for work or explanation that shows correct strategy in solving the problem.

Short-Answer Item 18

- 18 A music store is having a special sale on CDs. All of the CDs are on sale for the same price. The table below shows the cost of buying some CDs.

Number of CDs (n)	Total Cost (c)
2	\$17.60
4	\$35.20
6	\$52.80

- a. Write an equation that can be used to calculate the total cost, c , of buying n CDs.
- b. Use the equation you wrote in part a to find the total cost of buying 9 CDs. Show your work or explain how you found your answer.

Scoring Guide for Short-Answer Item 18

Score	Description
2	For the correct equation, $c=8.80n$, (or equivalent) AND for using that equation to find the total cost, \$79.20 , AND providing work or explanation.
1	For the correct equation in part a OR the correct total cost in part b with or without the use of the equation given in part a.
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

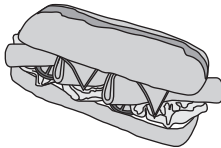
Part a: $c = 8.80n$

Part b: $c = 8.80n$
 $c = 8.80 \times 9$
 $c = \$79.20$

Constructed-Response Item 19

- 19 Jim and Kerry ordered food for a party using the ad shown below.

Party Catering



Party Sandwiches \$10.95 per foot

Order 6 or more feet
and get 15% off the
cost of the sandwich!

Potato salad \$1.89 per pound

- a. Jim ordered a 4-foot sandwich and 3 pounds of potato salad. How much did Jim pay for his order? Show or explain how you found your answer.
- b. Kerry ordered a 6-foot sandwich. With the discount, how much did Kerry pay for his order? Show or explain how you found your answer.
- c. To the nearest cent, with the discount, how much did Kerry pay per foot for his sandwich? Show or explain how you found your answer.

Scoring Guide for Constructed-Response Item 19

Score	Description
4	5 points
3	4 or $4\frac{1}{2}$ points
2	2 or $3\frac{1}{2}$ points
1	$\frac{1}{2}$ – $1\frac{1}{2}$ points OR Student demonstrates minimal understanding of computing and applying percents.
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 19

- Part a: 2 points for correct answer, **49.47**, with sufficient work or explanation given
OR
1 point for correct answer with insufficient work or explanation given
or
1 point for correct strategy, but there is a computation error
- Part b: 2 points for correct answer, **55.84 or 55.85**, with sufficient work or explanation given
OR
1 point for correct answer with insufficient work or explanation given
or
1 point for correct strategy, but there is a computation error
- Part c: 1 point for correct answer, **9.31 or 9.30**, with sufficient work or explanation given
OR
 $\frac{1}{2}$ point for correct answer with insufficient work or explanation given
or
 $\frac{1}{2}$ point for correct strategy, but there is a computation error

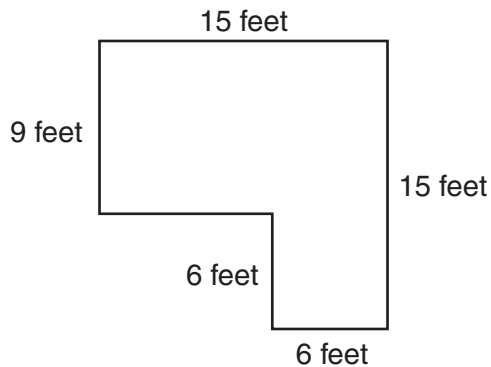
Sample Responses:

- a: The total for the order is 49.47.
 $(4 \times 10.95) + (3 \times 1.89) = 49.47$
- b: 6-foot sandwich = $(6 \times 10.95) - 15\%$ discount
 $6 \times 10.95 = 65.70$
 $65.70 \times 0.15 = 9.86$
 $65.70 - 9.86 = 55.84$
 $55.84 =$ amount Kerry pays
OR $65.7 \times 0.85 = 55.85$
- c: Kerry paid 55.84 for a 6-foot sandwich. That is about 9.30 or 9.31 per foot.

Note: All figures are assumed to be in dollars unless otherwise noted.

Constructed-Response Item 20

- 20 The picture below shows the dimensions of a room.



- a. What is the area, **in square feet**, of this room? Show or explain how you found your answer.
- b. The floor covering that will be used in this room is sold by the square yard. What is the area, **in square yards**, of this room? Show or explain how you found your answer.

Scoring Guide for Constructed-Response Item 20

Score	Description
4	4 points
3	3 points
2	2 points
1	1 point
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept that is being measured.
Blank	No response.

Training Notes for Constructed-Response Item 20

Part a. 2 points for the correct answer, **171** (square feet), with appropriate work or explanation.

$$\text{Area} = 15(9) + 6(6) = 135 \text{ sq. ft.} + 36 \text{ sq. ft.} = 171 \text{ sq. ft.}$$

OR

1 point for the correct answer, no or incomplete work shown.

or

1 point for correct strategy in finding area of a rectangle.

Part b. 2 points for the correct answer, **19** (square yards), with appropriate work or explanation.

$$171 \text{ sq. ft.} / 9 = 19 \text{ square yards}$$

OR

1 point for the correct answer, no or incomplete work shown.

or

1 point for correct strategy in converting square feet to square yards.

Note: If the student lists the answer to part a as 171^2 feet OR lists the answer to part b as 19^2 yards, the student cannot receive a 4 score.