

2008

Green River
*Regional Educational
Cooperative*

GRADE 5
MATHEMATICS

MULTIPLE CHOICE
AND
CONSTRUCTED RESPONSE



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Multiple Choice Items

Multiple Choice Item 1

Standard: MA-05-1.3.01: Number Operations - Students will analyze real-world problems to identify appropriate representations using mathematical operations, and will apply operations to solve real-world problems with the following constraints: add, subtract, multiply, and divide whole numbers (less than 100,000,000), using technology where appropriate; add and subtract fractions with like denominators through 16, with sums less than or equal to one; and add and subtract decimals through hundredths.

Bloom's Taxonomy	Depth of Knowledge	Portion of Standard Being Addressed This item requires the student to solve real-world problems by multiplying a whole number by a fraction.
Knowledge	Level 1	
Comprehension	Level 2	
Application	Level 3	
Analysis	Level 4	
Synthesis		
Evaluation		
Answer Key: D		

1. Ms. Kirkland is baking muffins. Each batch of muffins uses $\frac{3}{4}$ of a pound of flour. How many batches of muffins can she bake with 5 pounds of flour?
- A. $3\frac{3}{4}$ batches
 - B. $4\frac{1}{4}$ batches
 - C. $5\frac{3}{4}$ batches
 - D. $6\frac{2}{3}$ batches

Multiple Choice Item 2

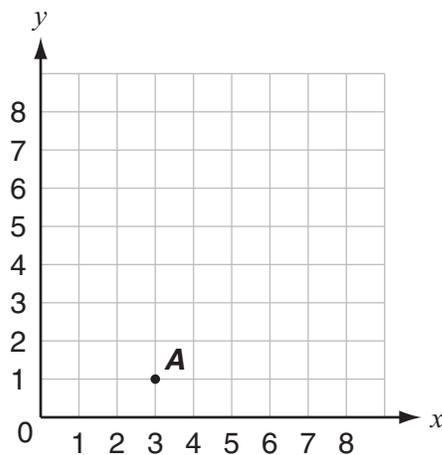
Standard: MA-05-3.3.01: Coordinate Geometry — Students will identify and graph ordered pairs on a positive coordinate system scaled by ones, twos, threes, fives, or tens; locate points on a grid; and apply graphing in the coordinate system to solve real-world problems.

Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Depth of Knowledge
Level 1
Level 2
Level 3
Level 4
Answer Key: C

Portion of Standard Being Addressed
This item requires the student to locate a point on a grid.

2. Use the graph below to answer the question.



Which point is located 2 units from point A?

- A. (1, 2)
- B. (2, 3)
- C. (5, 1)
- D. (5, 3)

Multiple Choice Item 3

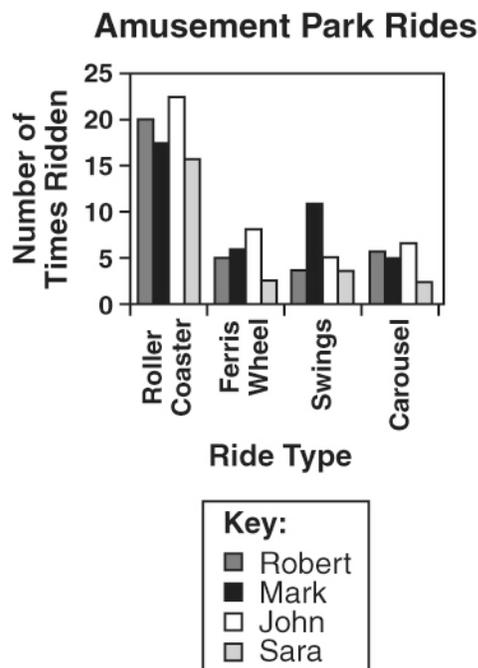
Standard: MA-05-4.1.01: Data Representations — Students will analyze and make inferences from data displays (drawings, tables/charts, tally tables, pictographs, bar graphs, circle graphs, line plots, Venn diagrams, line graphs).

Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Depth of Knowledge
Level 1
Level 2
Level 3
Level 4
Answer Key: C

Portion of Standard Being Addressed
This item requires the student to analyze data in a bar graph.

3. The graph shows the number of times 4 friends rode different rides at the theme park.



Who rode the roller coaster the **most** times?

- A. Robert
- B. Mark
- C. John
- D. Sara

Multiple Choice Item 4

Standard: MA-05-4.1.01: Data Representations — Students will analyze and make inferences from data displays (drawings, tables/charts, tally tables, pictographs, bar graphs, circle graphs, line plots, Venn diagrams, line graphs).

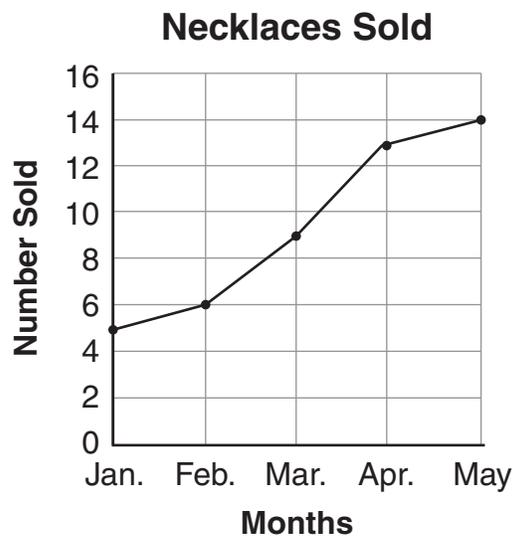
Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Depth of Knowledge
Level 1
Level 2
Level 3
Level 4

Answer Key: A

Portion of Standard Being Addressed
This item requires the student to analyze data in a line graph.

4. The graph below shows how many necklaces a store sold each month.



What is true about the sales in each of the months from January through May?

- A. The number increased each month.
- B. The number decreased each month.
- C. The number stayed about the same each month.
- D. The number sometimes increased and sometimes decreased.

Multiple Choice Item 5

Standard: MA-05-4.4.03: Probability — Students will describe and give examples of the probability of an unlikely event (near zero) and a likely event (near one).

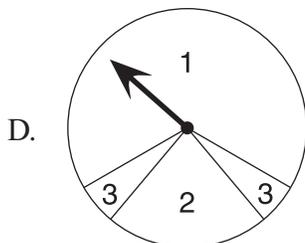
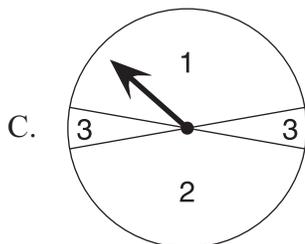
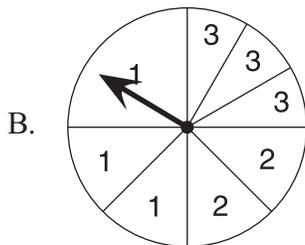
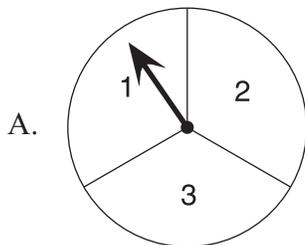
Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Depth of Knowledge
Level 1
Level 2
Level 3
Level 4

Answer Key: A

Portion of Standard Being Addressed
This item requires the student to give an example of the probability of a likely event.

5. Which spinner would give you the **best** chance of spinning a 3?



Constructed Response Items

Constructed Response Item 6 Emily's Lawn Mowing

Standard: MA-05-1.3.03: Number Operations — Students will multiply decimals through tenths.

Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Depth of Knowledge
Level 1
Level 2
Level 3
Level 4

6. The shaded area of the picture below shows the part of a lawn Emily mowed in 30 minutes.



- a. About how long, in hours, will it take Emily to mow the whole lawn? Explain how you found your answer.
- b. Emily charges \$5.75 for each hour she mows this lawn. How much money will she charge to mow the whole lawn? Show or explain how you found your answer.

Emily's Lawn Mowing

Scoring Guide

Score	Description
4	The student demonstrates excellent problem-solving skills by correctly analyzing and solving a real-world problem involving estimation of a fractional part of an area and multiplication of decimals.
3	The student demonstrates good problem-solving skills by correctly analyzing and solving a real-world problem involving estimation of a fractional part of an area and multiplication of decimals with only minor errors or omissions. The response indicates the student could readily correct any errors and omissions if given written feedback.
2	The student demonstrates basic problem-solving skills by correctly completing a significant portion of the required tasks. The response indicates the student would require some instruction to successfully complete the tasks.
1	The student demonstrates minimal problem-solving skills. The response indicates the student would require significant instruction to complete the tasks.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Sample Response:

Part a: It will take about 4 hours to mow the whole lawn because it takes 30 minutes to mow $\frac{1}{8}$ of the yard. Since there are 8 pieces to mow, she needs 8×30 minutes, 240 minutes or 4 hours.

OR

I divided the picture into 8 equal pieces. It would take Emily 30 minutes to mow each piece. I multiplied 8 times 30 minutes and I got 240 minutes or 4 hours.

30	30	30	30
30	30	30	30

Part b: 4 times 5.75 = \$23

Sample Student Responses

Emily's Lawn Mowing

A. After splitting the lawn into 8 parts, each part of the lawn was 30 min. Then I just added 30 8 times and came up with 4 hours.

B.

	5	7	5	
2	0	2	8	0
2	3	0	0	4

\$23.00

Score Point: 4

A.I. divided the box in to sections
 the same size as the smaller section
 already shaded. There are 8 sections.
 Each section is $\frac{1}{2}$ hour. So
 I did the math problem $\frac{1}{2} \times 8 = 4$
 hours.

b.)

$$\begin{array}{r} 5.75 \\ 23 \overline{) 230.80} \\ \underline{230} \\ 0 \\ \underline{0} \\ 80 \\ \underline{80} \\ 00 \\ \underline{00} \\ 0 \end{array}$$

23.00 for moving the lawn

Score Point: 4

a. It will take Emily 4 hours to mow the lawn. I know this because she mowed $\frac{1}{8}$ of the lawn in 30 minutes so in $\frac{2}{8}$ it would take 1 full hour. I know 2 divided by $\frac{1}{8}$ is 4 which means, since I divided it by the hours it will take her 4 full hours to finish mowing the lawn.

b. Emily will charge \$22.80 to mow the whole lawn. She will charge 23 dollars because it took her 4 hours to mow the lawn and \$5.75 multiplied by 4 is \$22.80 Or you can add \$5.75 4 times to get the same answer.

Score Point: 3

Constructed Response Item 7 Greg’s Input/Output Table

Standard: MA-05-5.1.02: Patterns, Relations, and Functions — Students will describe functions (input-output) through pictures, tables, or words, and will construct tables to analyze functions based on real-world or mathematical problems.

Bloom’s Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Depth of Knowledge
Level 1
Level 2
Level 3
Level 4

7. Greg made the input-output table shown below.

Input	Output
2	9
3	13
4	17
7	29
10	41

- Greg inputs the number 5 into his table. What is the output number?
- Greg inputs the number 13 into his table. What is the output number?
- The output number is 17. What number did Greg input into his table?
- Write a rule for Greg’s table that explains how to find the output number for an input number.

Greg's Input/Output Table

Scoring Guide

Score	Description
4	The student demonstrates a thorough understanding of an input-output table by correctly determining from given inputs the outputs, determining from given output the input, and writing a rule.
3	The student demonstrates a general understanding of an input-output table by correctly determining from given inputs the outputs, determining from given output the input, and writing a rule, with only minor errors or omissions. The response indicates the student could readily correct any errors and omissions if given written feedback.
2	The student demonstrates a basic understanding of an input-output table by correctly completing a significant portion of the required tasks. The response indicates the student would require some instruction to successfully complete the tasks.
1	The student demonstrates a minimal understanding of an input-output table. The response indicates the student would require significant instruction to complete the tasks.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Sample Response:

Part a: 21

Part b: 53

Part c: 4

Part d: Multiply the input number by 4 and then add 1.

Sample Student Responses

Greg's Input/Output Table

Greg made the input-output table shown below.

Input	Output
2	9
3	13
4	17
7	29
10	41

- a. Greg inputs the number 5 into his table. What is the output number? 21
- b. Greg inputs the number 13 into his table. What is the output number? 53
- c. The output number is 17. What number did Greg input into his table? 4
- d. Write a rule for Greg's table that explains how to find the output number for an input number.

multiply the number in
the input box by 4 then add 1.

Score Point: 4

$$A.) = 21$$

$$B.) = 53$$

$$C.) = \cancel{4}$$

$$D.) \text{ in Put } \times 4 + 1 = \text{Out Put}$$

Score Point: 4

a. 21

b. 53

c. 4

d. multiply the number in the input box by 4 then add 1.

Score Point: 4