

2007

Green River
*Regional Educational
Cooperative*

GRADE 8
MATHEMATICS
MULTIPLE CHOICE



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MA-08-5.3.1: Equations and Inequalities

Multiple Choice Item 1

Standard: MA-08-1.1.1: Number Sense — Students will provide examples of and identify rational numbers and irrational numbers (square roots and π only).

Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

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

Portion of Standard Being Addressed
This item requires the student to identify rational numbers and irrational numbers.

1. Which number is irrational?

- A. $-\frac{2}{3}$
- B. $5\frac{1}{4}$
- C. $-\sqrt{36}$
- D. $\sqrt{6}$

Multiple Choice Item 2

Standard: MA-08-1.1.2: Number Sense — Students will describe and provide examples of representations of numbers (rational, square roots, and π) and operations in a variety of equivalent forms using models, diagrams and symbols (e.g., number lines, 10 by 10 grids, rectangular arrays, number sentences) based on real-world and mathematical problems.

Bloom's Taxonomy
Knowledge
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Synthesis
Evaluation

Depth of Knowledge
Level 1
Level 2
Level 3
Level 4

Answer Key: A

Portion of Standard Being Addressed
This item requires students to identify equivalent rational numbers represented in different forms.

2. Which of the numbers below is **not** equal to the other three?

- A. 1.2×10^2
- B. 120 %
- C. $\frac{12}{10}$
- D. $\sqrt{1.44}$

Multiple Choice Item 3

Standard: MA-08-1.1.2: Number Sense — Students will describe and provide examples of representations of numbers (rational, square roots, and π) and operations in a variety of equivalent forms using models, diagrams and symbols (e.g., number lines, 10 by 10 grids, rectangular arrays, number sentences) based on real-world and mathematical problems.

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 describe representations of numbers based on mathematical problems.

3. Between which two numbers does $\sqrt{15}$ fall?
- A. 3 and 4
 - B. 4 and 5
 - C. 14 and 15
 - D. 15 and 16

Multiple Choice Item 4

Standard: MA-08-1.1.3: Number Sense — Students will convert, compare and order multiple numerical representations (e.g., fractions, decimals, percentages) of rational numbers and irrational numbers (square roots and π only).

Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

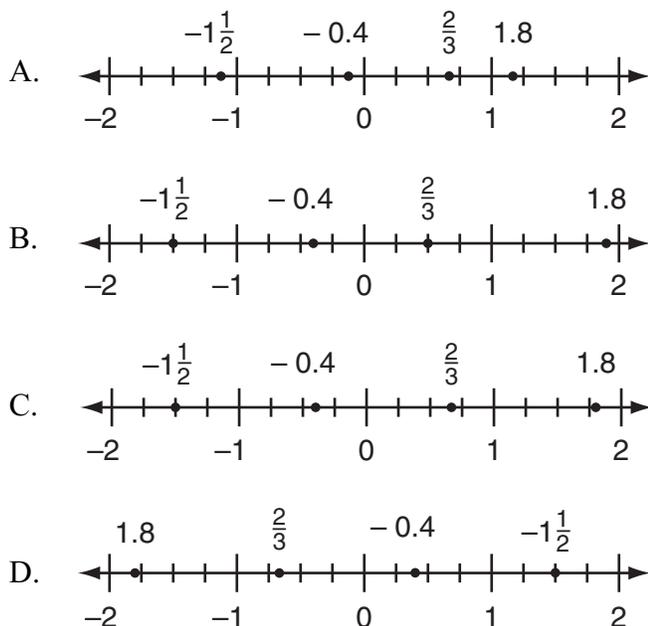
Depth of Knowledge
Level 1
Level 2
Level 3
Level 4
Answer Key: C

Portion of Standard Being Addressed
This item requires the student to compare and order multiple numerical representations of rational numbers.

4. Look at the numbers listed below.

$$1.8, -0.4, \frac{2}{3}, -1\frac{2}{3}$$

Which number line has these numbers plotted correctly?



Multiple Choice Item 5

Standard: MA-08-1.3.1: Number Operations — Students will add, subtract, multiply and divide rational numbers to solve real-world problems and apply order of operations (including positive whole number exponents) to simplify numerical expressions.

Bloom's Taxonomy	Depth of Knowledge	Portion of Standard Being Addressed
Knowledge	Level 1	This item requires the student to estimate to apply order of operations to simplify numerical expressions.
Comprehension	Level 2	
Application	Level 3	
Analysis	Level 4	
Synthesis		
Evaluation		
	Answer Key: A	

5. Look at the expression below.

$$5(4 - 2)^3 + 12 \div 4$$

What is the value of the expression?

- A. 43
- B. 25
- C. 15
- D. 13

Multiple Choice Item 6

Standard: MA-08-1.4.1: Ratios and Proportional Reasoning — Students will apply ratios and proportional reasoning to solve real-world problems (e.g., percents, constant rate of change, unit pricing, percent of increase or decrease).

Bloom's Taxonomy	Depth of Knowledge	Portion of Standard Being Addressed
Knowledge	Level 1	This item requires the student to apply ratios and proportional reasoning to solve real-world problems.
Comprehension	Level 2	
Application	Level 3	
Analysis	Level 4	
Synthesis		
Evaluation		
	Answer Key: B	

6. Gayle and Fred agreed to share the net profits of their summer business in a ratio of 3 to 2, respectively. If the net profits of the business are \$3450, how much money should Fred receive?
- A. \$1150
 - B. \$1380
 - C. \$1725
 - D. \$2070

Multiple Choice Item 7

Standard: MA-08-1.5.2: Properties of Numbers and Operations — Students will identify the use of properties (commutative properties of addition and multiplication, the associative properties of addition and multiplication, the identity properties for addition and multiplication, inverse properties and the distributive property of multiplication over addition and subtraction) to justify a given step in solving problems.

Bloom's Taxonomy	Depth of Knowledge	Portion of Standard Being Addressed
Knowledge	Level 1	This item requires the student to use the distributive property to justify a given step in solving problems.
Comprehension	Level 2	
Application	Level 3	
Analysis	Level 4	
Synthesis		
Evaluation		
	Answer Key: B	

7. Manuel bought 3 CDs that cost \$8 each and 3 notebooks that cost \$2 each. He used the expression below to calculate his total bill.

$$(3 \times 8) + (3 \times 2)$$

What is another way Manuel can calculate his total bill?

- A. $3 \times 8 \times 2$
- B. $3 \times (8 + 2)$
- C. $3 + 8 + 2$
- D. $(3 \times 8) + 2$

Multiple Choice Item 8

Standard: MA-08-2.1.1: Measuring Physical Attributes — Students will measure lengths (to the nearest sixteenth of an inch or the nearest millimeter) and will determine and use in real-world or mathematical problems:

- area and perimeter of triangles and quadrilaterals;
- area and circumference of circles;
- area and perimeter of compound figures composed of triangles, quadrilaterals and circles;
- area from circumference or perimeter and
- circumference or perimeter from area.

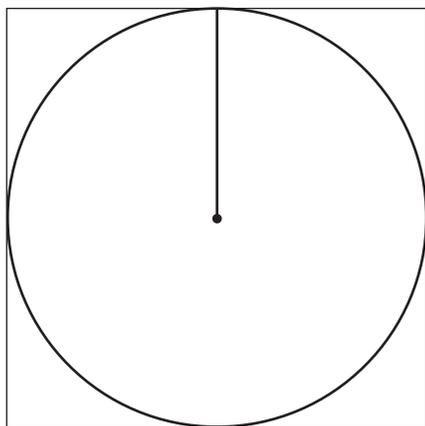
Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Depth of Knowledge
Level 1
Level 2
Level 3
Level 4

Answer Key: B

Portion of Standard Being Addressed
This item requires the student to use the perimeter of a square to determine the circumference of a circle.

8. A circle is inscribed in a square as shown below.



The perimeter of the square is 24 cm. What is the circumference of the circle?

- A. 3π cm
- B. 6π cm
- C. 8π cm
- D. 24π cm

Multiple Choice Item 9

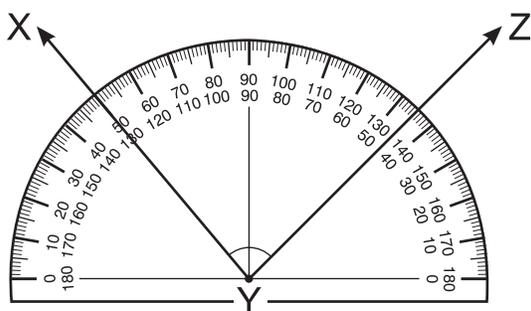
Standard: MA-08-2.1.3: Measuring Physical Attributes — Students will evaluate the measures of angles by estimation, measurement with a protractor or angle ruler and determine angle measures in mathematical and/or real-world situations (e.g., supplementary, external, vertical).

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 evaluate the measures of angles by measurement with a protractor.

9. Use the diagram below to answer the question.



What is the measurement of $\angle XYZ$?

- A. 130°
- B. 95°
- C. 85°
- D. 45°

Multiple Choice Item 10

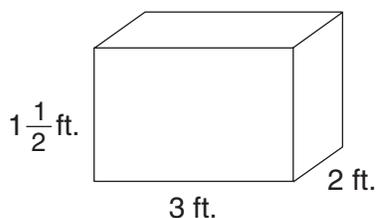
Standard: MA-08-2.1.5: Measuring Physical Attributes — Students will use formulas to find surface area of right rectangular prisms in real-world and mathematical problems.

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 apply formulas to find surface area of right rectangular prisms in mathematical problems.

10. The chest shown below is used to store blankets.



What is the total surface area of the chest?

- A. 27 square feet
- B. 21 square feet
- C. $13\frac{1}{2}$ square feet
- D. 9 square feet

Multiple Choice Item 11

Standard: MA-08-2.2.1: Systems of Measurement — Students will convert units within the same measurement system and use these units to solve real-world problems.

Bloom's Taxonomy	Depth of Knowledge	Portion of Standard Being Addressed This item requires the student to convert units within the same measurement system and use these units to solve real-world problems.
Knowledge	Level 1	
Comprehension	Level 2	
Application	Level 3	
Analysis	Level 4	
Synthesis		
Evaluation	Answer Key: B	

11. Mr. Todd is trying to lower his sodium intake to 2.5 grams per day. For lunch he ate a ham and cheese sandwich.

- The bread contained 300 milligrams of sodium,
- the ham contained 600 milligrams of sodium, and
- the cheese contained 270 milligrams of sodium.

What is the maximum number of milligrams of sodium he can eat for the remainder of the day and stay within his limit?

- A. 133 milligrams
- B. 1,330 milligrams
- C. 2,383 milligrams
- D. 23,830 milligrams

Multiple Choice Item 12

Standard: MA-08-3.1.1: Shapes and Relationships — Students will describe and provide examples of basic geometric elements that include points, segments, rays, lines, angles, and planes and will use these elements in real-world and mathematical problems.

Bloom's Taxonomy	Depth of Knowledge	Portion of Standard Being Addressed This item requires the student to use basic geometric elements in mathematical problems.
Knowledge	Level 1	
Comprehension	Level 2	
Application	Level 3	
Analysis	Level 4	
Synthesis		
Evaluation	Answer Key: A	

12. Point M is the midpoint of \overline{AB} . Point N is the midpoint of \overline{AM} . Point P is the midpoint of \overline{AN} . If $AB = 24$, what is the length of \overline{AP} ? (Hint: Draw a diagram.)
- A. 3
 - B. 4
 - C. 6
 - D. 12

Multiple Choice Item 13

Standard: MA-08-3.1.2: Shapes and Relationships — Students will identify and compare properties of two-dimensional figures (circles, triangles [acute, right, obtuse, scalene, isosceles, equilateral], quadrilaterals [square, rectangle, rhombus, parallelogram, trapezoid], regular/irregular polygons), and will apply these properties and figures to solve real-world and mathematical problems.

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 identify properties of two-dimensional figures and use these properties to solve mathematical problems.

13. A diagonal of a square divides the square into two triangles. Which two words describe these triangles?
- A. right, isosceles
 - B. right, equilateral
 - C. acute, isosceles
 - D. acute, equilateral

Multiple Choice Item 14

Standard: MA-08-3.1.4: Shapes and Relationships — Students will:

- provide examples of congruent and similar figures;
- apply congruent and similar figures to solve real-world and mathematical problems and
- apply proportional reasoning to solve problems involving scale drawings and proportional figures.

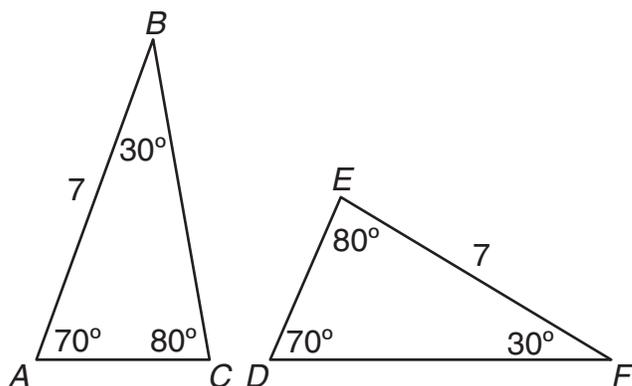
Bloom's Taxonomy
Knowledge
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Analysis
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Evaluation

Depth of Knowledge
Level 1
Level 2
Level 3
Level 4

Answer Key: B

Portion of Standard Being Addressed
This item requires the student to provide examples of similar figures.

14. Look at triangle ABC and triangle DFE .



not drawn to scale

What is the relationship between $\triangle ABC$ and $\triangle DFE$?

- They are congruent.
- They are similar but not congruent.
- They are neither similar nor congruent.
- There is not enough information to tell.

Multiple Choice Item 15

Standard: MA-08-3.1.4: Shapes and Relationships — Students will:

- provide examples of congruent and similar figures;
- apply congruent and similar figures to solve real-world and mathematical problems and
- apply proportional reasoning to solve problems involving scale drawings and proportional figures.

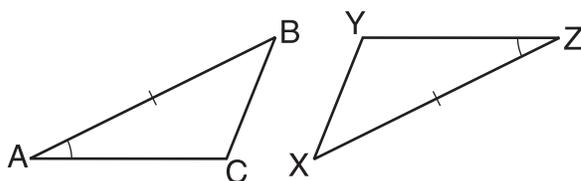
Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Depth of Knowledge
Level 1
Level 2
Level 3
Level 4

Answer Key: D

Portion of Standard Being Addressed
This item requires the student to apply congruent figures to solve mathematical problems.

15. Congruent parts are marked on the triangles below.



Which additional fact would guarantee that the two triangles are congruent?

- A. $BC = YZ$
- B. $AC = XY$
- C. $\angle C \cong \angle X$
- D. $\angle C \cong \angle Y$

Multiple Choice Item 16

Standard: MA-08-3.2.2: Transformations of Shapes — Students will transform (translations, reflections, and dilations with the center of dilation at the origin) figures in a coordinate plane and determine the new coordinates of the image after the transformation.

Bloom's Taxonomy	Depth of Knowledge	Portion of Standard Being Addressed
Knowledge	Level 1	This item requires the student to determine the new coordinates of the image after a transformation.
Comprehension	Level 2	
Application	Level 3	
Analysis	Level 4	
Synthesis		
Evaluation	Answer Key: A	

16. The point (5,2) is reflected over the x -axis, and then the result is reflected over the y -axis. What are the coordinates of the final point?
- A. (-5,-2)
 - B. (-2,-5)
 - C. (5,2)
 - D. (2,5)

Multiple Choice Item 17

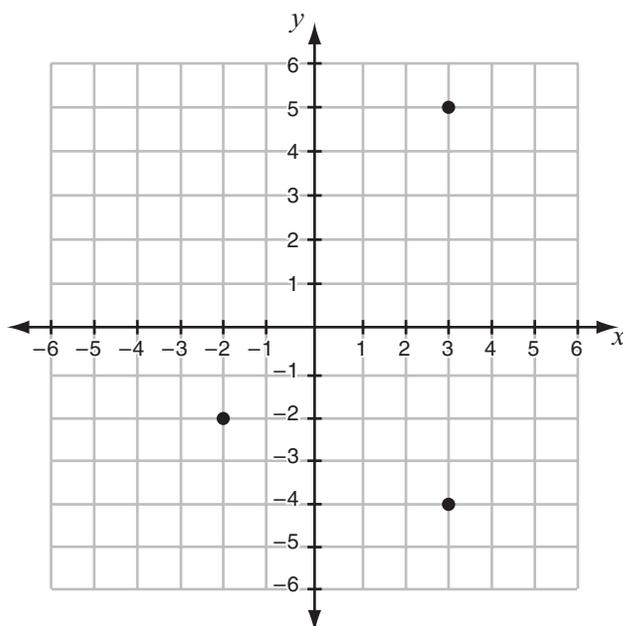
Standard: MA-08-3.3.1: Coordinate Geometry — Students will identify and graph ordered pairs on a coordinate system, correctly identifying the origin, axes and ordered pairs; and will apply graphing in the coordinate system to solve real-world and mathematical problems.

Bloom's Taxonomy
Knowledge
Comprehension
Application
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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 apply graphing in the coordinate system to solve mathematical problems.

17. The three vertices of an isosceles trapezoid are $(-2, -2)$, $(3, -4)$, and $(3, 5)$ as shown below.



Which ordered pair could be the coordinates of the fourth vertex?

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

Multiple Choice Item 18

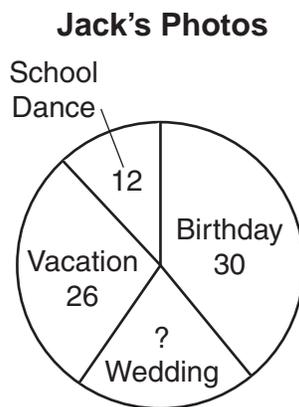
Standard: MA-08-4.1.1: Representations of Data Sets — Students will analyze and make inferences from data displays (drawings, tables/charts, pictographs, bar graphs, circle graphs, line plots, Venn diagrams, line graphs, stem-and-leaf plots, scatter plots, histograms, box-and-whiskers plots).

Bloom's Taxonomy
Knowledge
Comprehension
Application
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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 displays.

18. The circle graph below shows the number of photos Jack took with his camera at different events.



Jack took a total of 90 photos.

How many wedding photos did Jack take?

- A. 32
- B. 28
- C. 22
- D. 10

Multiple Choice Item 19

Standard: MA-08-4.1.4: Representations of Data Sets — Students will:

- construct data displays (Venn diagrams, tables, line graphs, stem-and-leaf plots, circle graphs, scatter plots);
- explain why the type of display is appropriate for the data and
- explain how misleading representations affect interpretations and conclusions about data (e.g., changing the scale on a graph).

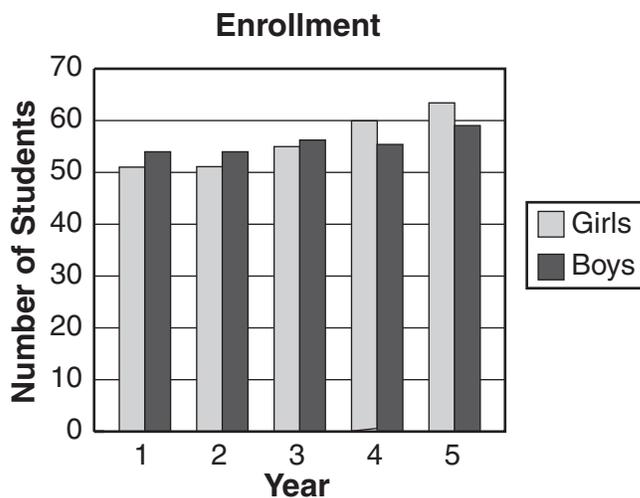
Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

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 explain how misleading representations affect interpretations and conclusions about data.

19. The bar graph below shows the enrollment at a performing arts school over a five-year period.



Without changing the overall size of the axes, which change would do the most to make the difference between the number of girls attending and the number of boys attending appear greater than it does in this graph?

- Have the vertical axis run from 40 to 70.
- Add 80, 90, and 100 to the vertical axis.
- Add horizontal lines at 5, 15, 25, 35, and so on.
- Rearrange the bars so all the “boy” bars are first.

Multiple Choice Item 20

Standard: MA-08-4.1.4: Representations of Data Sets — Students will:

- construct data displays (Venn diagrams, tables, line graphs, stem-and-leaf plots, circle graphs, scatter plots);
- explain why the type of display is appropriate for the data and
- explain how misleading representations affect interpretations and conclusions about data (e.g., changing the scale on a graph).

Bloom's Taxonomy
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Depth of Knowledge
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Level 3
Level 4

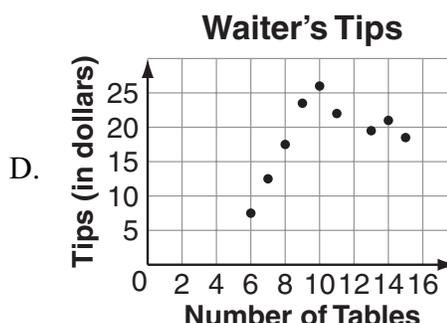
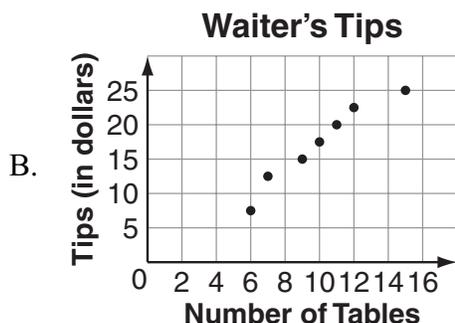
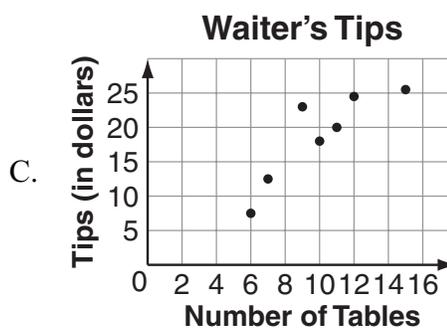
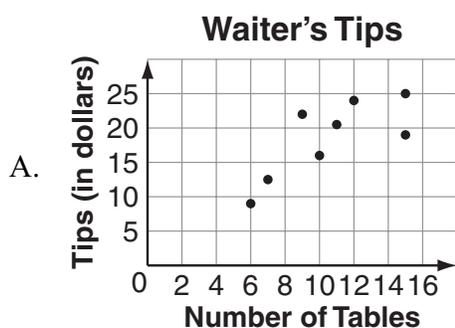
Answer Key: A

Portion of Standard Being Addressed
This item requires the student to identify data displays.

20. The number of tables a waiter served and the total amount of money he earned in tips are shown in the table below.

Number of Tables	6	7	10	12	15	9	15	11	12
Tips (in Dollars)	9.00	12.50	16.00	24.00	25.00	22.00	19.00	20.50	18.50

Which scatter plot shows the data in the table?



Multiple Choice Item 21

Standard: MA-08-4.1.5: Representations of Data Sets — Students will construct box-and-whiskers plots.

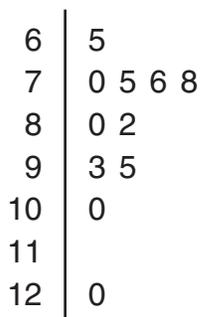
Bloom's Taxonomy
Knowledge
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Depth of Knowledge
Level 1
Level 2
Level 3
Level 4

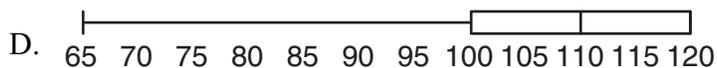
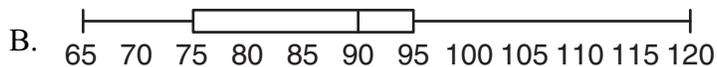
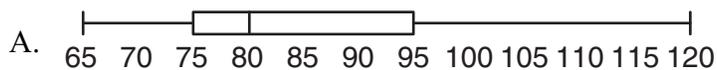
Answer Key: A

Portion of Standard Being Addressed
This item requires the student to construct box-and-whisker plots.

21. As part of a school assignment, Brittany collected data on the number of cars entering the national park entrance near her house. She displayed her data in the stem-and-leaf plot below.



Which sketch of a box-and-whisker plot represents Brittany's data?



Multiple Choice Item 22

Standard: MA-08-4.2.1: Characteristics of Data Sets — Students will:

- determine the mean, median, mode, and range of a set of data;
- identify clusters, gaps, and outliers and
- apply these concepts to compare sets of data.

Bloom's Taxonomy
Knowledge
Comprehension
Application
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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 apply the concepts of mean and median to compare sets of data.

22. The manager of Griffin's Groceries calculated these statistics for sales in one week from Monday through Friday.

Mean: \$2,200 Median: \$2,350

On Saturday of that week, the sales were \$2,850 and on Sunday they were \$2,150. What affect will the sales on Saturday and Sunday have on the mean and median?

- The mean will increase and the median will increase.
- The mean will increase and the median will decrease.
- The mean will increase and the median will stay the same.
- The median will increase and the mean will stay the same.

Multiple Choice Item 23

Standard: MA-08-4.4.1: Probability — Students will apply counting techniques to determine the size of a sample space for a real-world or mathematical situation.

Bloom's Taxonomy	Depth of Knowledge	Portion of Standard Being Addressed
Knowledge	Level 1	
Comprehension	Level 2	
Application	Level 3	
Analysis	Level 4	
Synthesis		
Evaluation	Answer Key: D	

This item requires students to apply the counting principle to solve a real-world problem.

23. The senior class at West High School is about to hold elections for class officers. The list of candidates is shown in the following table.

President	Vice President	Secretary	Treasurer
Leah	Gloria	Andrea	Lance
Mike	Jason	Francis	Sonia
Minh		José	Yosef

How many different slates of officers could be made from the above list if a slate consists of **one** candidate for **each** office?

- A. 4
- B. 11
- C. 18
- D. 54

Multiple Choice Item 24

Standard: MA-08-4.4.1: Probability — Students will apply counting techniques to determine the size of a sample space for a real-world or mathematical situation.

Bloom's Taxonomy	Depth of Knowledge	Portion of Standard Being Addressed This item requires the student to apply the counting principle to solve a real-world problem.
Knowledge	Level 1	
Comprehension	Level 2	
Application	Level 3	
Analysis	Level 4	
Synthesis		
Evaluation	Answer Key: D	

24. In how many different ways can the subjects mathematics, literature, social studies, and science be scheduled during four consecutive periods of a school day?
- A. 4
 - B. 8
 - C. 16
 - D. 24

Multiple Choice Item 25

Standard: MA-08-4.4.2: Probability — Students will:

- determine theoretical probabilities of simple events;
- determine probabilities based on the results of an experiment and
- make inferences from probability data.

Bloom's Taxonomy
Knowledge
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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 determine the probability of an event.

25. A true or false quiz has five questions. If John answers each question by guessing, what is the probability that he will get all five of the questions correct?

- A. $\frac{1}{32}$
- B. $\frac{1}{2}$
- C. $\frac{5}{32}$
- D. $\frac{1}{5}$

Multiple Choice Item 26

Standard: MA-08-4.4.2: Probability — Students will:

- determine theoretical probabilities of simple events;
- determine probabilities based on the results of an experiment and
- make inferences from probability data.

Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

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

Portion of Standard Being Addressed
This item requires the student to determine probabilities based on the results of an experiment.

26. In the table below, Stan recorded the weights of 100 fish caught at random from the lake.

Weight of Fish Caught

Weight (in ounces)	Number of Fish
less than 8	5
8 – 15.9	25
16 – 23.9	35
24 – 31.9	15
32 – 39.9	12
40 +	8

Based on this distribution, what is the probability that the next fish caught will weigh **less than** 16 ounces?

- A. $\frac{2}{3}$
- B. $\frac{3}{10}$
- C. $\frac{1}{4}$
- D. $\frac{1}{5}$

Multiple Choice Item 27

Standard: MA-08-4.4.4: Probability — Students will determine theoretical probabilities and represent them using area models.

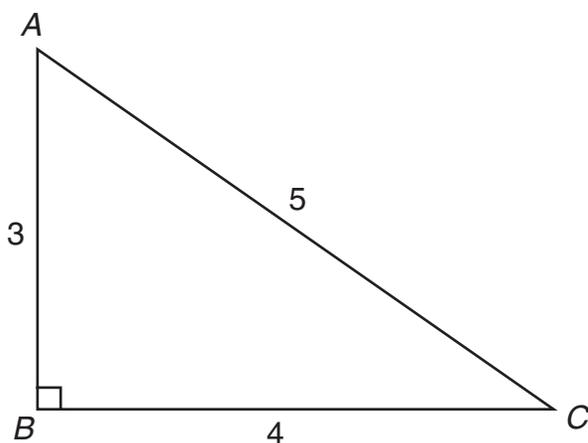
Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

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 determine theoretical probabilities and represent them using area models.

27. Triangle ABC is shown below.



If a point is chosen at random on triangle ABC , what is the probability that it will be on \overline{AB} ?

- A. $\frac{1}{4}$
- B. $\frac{1}{3}$
- C. $\frac{3}{7}$
- D. $\frac{4}{7}$

Multiple Choice Item 28

Standard: MA-08-5.1.1: Patterns, Relations and Functions — Students will use variables to describe numerical patterns based on arithmetic sequences in real-world and mathematical problems (e.g., $f(N) = 2N+3$).

Bloom's Taxonomy
Knowledge
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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 use variables to describe numerical patterns based on arithmetic sequences in real-world problems.

28. Kenisha performed a science experiment in which she hung objects with various masses from the end of a spring and measured the distance the spring stretched from its original length. Her data are given in the table below.

Mass (kg)	Distance Stretched (cm)
0.4	1.2
0.8	2.4
1.2	3.6

Which algebraic equation describes the relationship between the mass, m , and the distance stretched, d , in the above data?

- A. $d = \frac{1}{3}m$
- B. $d = \frac{1}{4}m$
- C. $d = 3m$
- D. $d = 4m$

Multiple Choice Item 29

Standard: MA-08-5.1.1: Patterns, Relations and Functions — Students will use variables to describe numerical patterns based on arithmetic sequences in real-world and mathematical problems (e.g., $f(N) = 2N+3$).

Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

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

Portion of Standard Being Addressed
This item requires the student to use variables to describe numerical patterns based on arithmetic sequences in mathematical problems.

29. Which equation relates the values of x to the values of y in the table below?

x	2	4	6	8	10
y	-5	-3	-1	1	3

- A. $y = -2x - 1$
- B. $y = 2x - 5$
- C. $y = x - 5$
- D. $y = x - 7$

Multiple Choice Item 30

Standard: MA-08-5.1.2: Patterns, Relations and Functions — Students will represent, analyze and generalize simple first and second degree relationships using tables, graphs, words and algebraic notations, and will apply the relationships to solve real-world and mathematical problems.

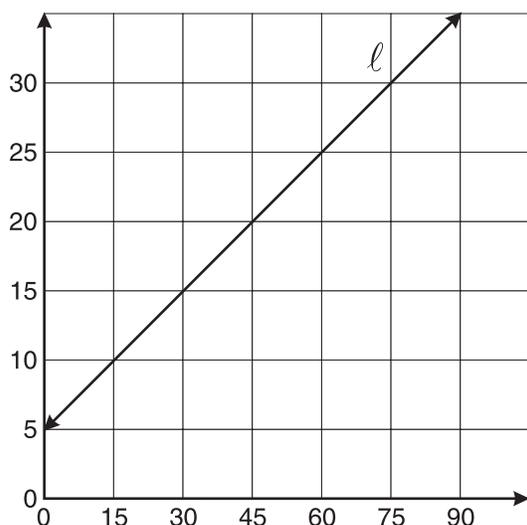
Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Depth of Knowledge
Level 1
Level 2
Level 3
Level 4

Answer Key: C

Portion of Standard Being Addressed
This item requires students to identify the slope of a line.

30. Use the graph below to answer the question.



What is the slope of line l in the graph?

- A. 5
- B. 1
- C. $\frac{1}{3}$
- D. $\frac{1}{5}$

Multiple Choice Item 31

Standard: MA-08-5.1.2: Patterns, Relations and Functions — Students will represent, analyze and generalize simple first and second degree relationships using tables, graphs, words and algebraic notations, and will apply the relationships to solve real-world and mathematical problems.

Bloom's Taxonomy
Knowledge
Comprehension
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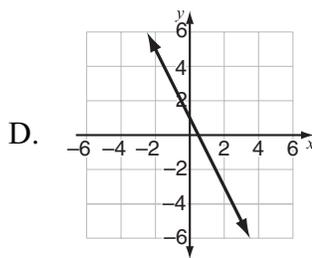
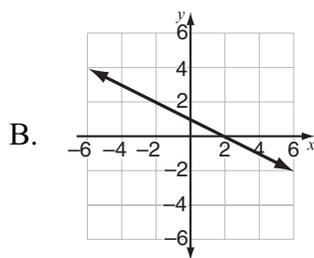
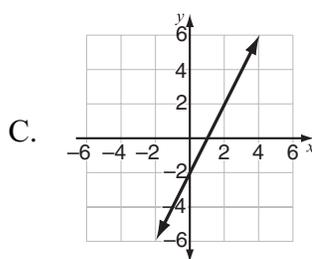
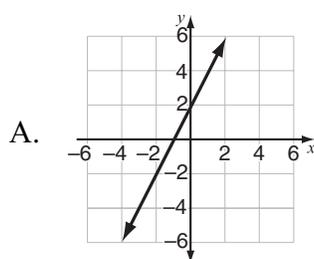
Depth of Knowledge
Level 1
Level 2
Level 3
Level 4
Answer Key: D

Portion of Standard Being Addressed
This item requires the student to represent simple first degree relationships using graphs.

31. The relationship between x and y is shown in the table of values below.

x	y
-2	5
-1	3
0	1
1	-1
2	-3

Which graph represents this relationship?



Multiple Choice Item 32

Standard: MA-08-5.1.2: Patterns, Relations and Functions — Students will represent, analyze and generalize simple first and second degree relationships using tables, graphs, words and algebraic notations, and will apply the relationships to solve real-world and mathematical problems.

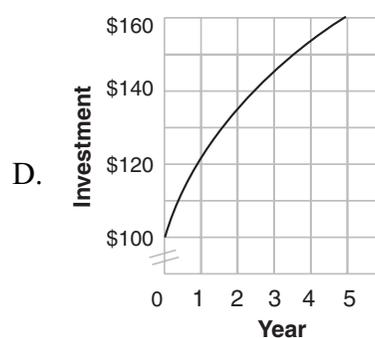
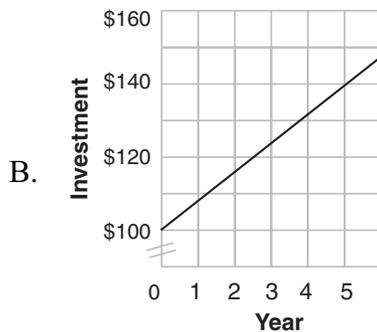
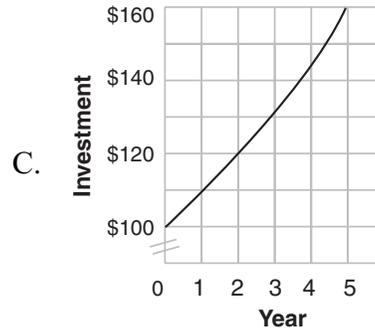
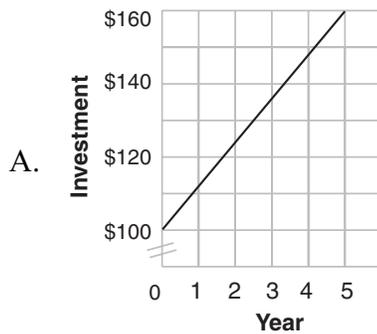
Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

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 identify a graphical representation of a real-world problem.

32. Which graph represents a \$100 investment that increases at a rate of 10% each year?



Multiple Choice Item 33

Standard: MA-08-5.1.2: Patterns, Relations and Functions — Students will represent, analyze and generalize simple first and second degree relationships using tables, graphs, words and algebraic notations, and will apply the relationships to solve real-world and mathematical problems.

Bloom's Taxonomy	Depth of Knowledge	Portion of Standard Being Addressed This item requires the student to represent and generalize simple first degree relationships using algebraic notations.
Knowledge	Level 1	
Comprehension	Level 2	
Application	Level 3	
Analysis	Level 4	
Synthesis		
Evaluation	Answer Key: C	

33. The classrooms at Moffat High School were painted. The table below shows the number of painters that worked and the number of classrooms that were painted.

Painting Project

p	Number of Painters	2	3	6	10
$f(p)$	Number of Classrooms	6	9	18	30

Which equation represents this function?

- A. $f(p) = p + 4$
- B. $f(p) = 2p + 10$
- C. $f(p) = 3p$
- D. $f(p) = 4p - 2$

Multiple Choice Item 34

Standard: MA-08-5.1.5: Patterns, Relations and Functions — Students will explain how the change in one variable affects the change in another variable (e.g., if rate remains constant, an increase in time results in an increase in distance).

Bloom's Taxonomy	Depth of Knowledge	Portion of Standard Being Addressed
Knowledge	Level 1	
Comprehension	Level 2	
Application	Level 3	
Analysis	Level 4	
Synthesis		
Evaluation	Answer Key: B	This item requires the student to explain how the change in one variable affects the change in another variable.

34. Paul is finding number pairs that make the number sentence below true.

$$\triangle + \square = 8$$

Paul decides to use only numbers greater than 3 for \triangle . What will be true about **all** the numbers he could use for \square ?

- A. All the numbers will be greater than 5.
- B. All the numbers will be less than 5.
- C. All the numbers will be greater than 3.
- D. All the numbers will be less than 3.

Multiple Choice Item 35

Standard: MA-08-5.2.1: Variables, Expressions and Operations — Students will evaluate and simplify algebraic expressions applying the order of operations.

Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

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

Portion of Standard Being Addressed
This item requires the student to evaluate and simplify algebraic expressions applying the order of operations.

35. Which expression is equivalent to $5x + 3y + x - 2y$?

- A. $6x + 5y$
- B. $6x + y$
- C. $5x - 5y$
- D. $5x - y$

Multiple Choice Item 36

Standard: MA-08-5.2.2: Variables, Expressions and Operations — Students will describe, define and provide examples of variables and expressions with a missing value based on real-world and mathematical 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 describe and define examples of variables based on real-world problems.

36. The cost of a wedding reception is \$500 to rent the banquet hall and \$12.50 per person for the food. The cost of the wedding can be calculated by using the expression $500 + 12.50p$. What does the variable p represent?
- A. the number of platters used to serve the food
 - B. the number of party rooms needed
 - C. the number of people who will eat
 - D. the number of pictures taken

Multiple Choice Item 37

Standard: MA-08-5.2.2: Variables, Expressions and Operations — Students will describe, define and provide examples of variables and expressions with a missing value based on real-world and mathematical problems.

Bloom's Taxonomy
Knowledge
Comprehension
Application
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Synthesis
Evaluation

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

Portion of Standard Being Addressed
This item requires the student to provide examples of expressions with a missing value based on real-world problems.

37. A driver for a delivery service earns \$9 per hour and is expected to deliver at least 12 packages a day. The driver earns an additional \$2 for each package delivered beyond the required 12. Which equation can be solved to determine the number of packages, x , the driver must deliver to earn \$100 in an 8-hour workday?
- A. $72 + 8(x - 12) = 100$
 - B. $72 + 2(12 - x) = 100$
 - C. $72 + 8(12 - x) = 100$
 - D. $72 + 2(x - 12) = 100$

Multiple Choice Item 38

Standard: MA-08-5.3.1: Equations and Inequalities — Students will model and solve single variable, first-degree real-world and mathematical problems (e.g., $5x+2 = x+22$, $x-4 < -60$).

Bloom's Taxonomy
Knowledge
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Depth of Knowledge
Level 1
Level 2
Level 3
Level 4
Answer Key: B

Portion of Standard Being Addressed
This item requires the student to model and solve single variable, first-degree mathematical problems.

38. Look at the equation below.

$$3m - 5 = 10 - 2m$$

What value of m makes the equation true?

- A. $m = 1$
- B. $m = 3$
- C. $m = 5$
- D. $m = 15$

Multiple Choice Item 39

Standard: MA-08-5.3.1: Equations and Inequalities — Students will model and solve single variable, first-degree real-world and mathematical problems (e.g., $5x+2 = x+22$, $x-4 < -60$).

Bloom's Taxonomy
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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 model and solve single variable, first-degree mathematical problems.

39. Look at the inequality below.

$$x + 3 > -1$$

Which graph represents the solution set of the inequality?

