2007

Green River

Regional Educational Cooperative

Grade 6

Mathematics

Multiple Choice

Measured Progress

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Note: Each item is aligned to a standard, but does not necessarily measure the entire standard.

Multiple Choice Item 1

Standard: MA-06-1.1.1: Number Sense — Students will provide examples of and identify fractions, decimals and percents.

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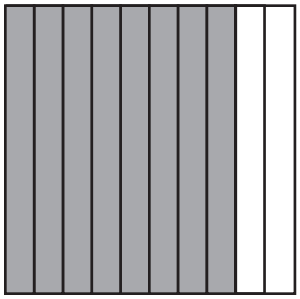
Answer Key: D

Portion of Standard Being Addressed
This item requires the student to provide examples of and identify fractions and decimals.

1. What is the word name, fraction, and decimal for the shaded part of the picture below?



A. eight hundredths, $\frac{8}{100}$, 0.08

B. nine tenths, $\frac{9}{10}$, 0.9

C. four tenths, $\frac{4}{10}$, 0.4

D. eight tenths, $\frac{8}{10}$, 0.8

Multiple Choice Item 2

Standard: MA-06-1.1.2: Number Sense — Students will describe and provide examples of representations of numbers (whole numbers, fractions in simplest form, mixed numbers, decimals, percents) 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.

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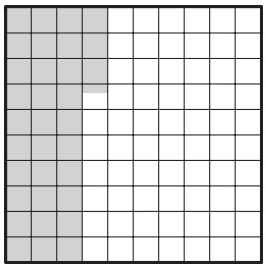
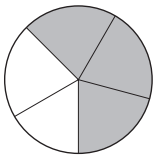
Answer Key: D

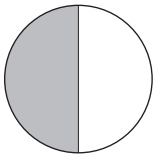
Portion of Standard Being Addressed
This item requires the student to provide examples of representations of numbers based on mathematical problems.

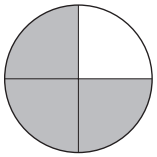
2. Use the picture below of a decimal square with a portion shaded to answer the question.

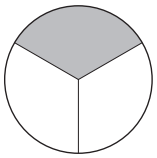


The shaded area shown above represents a fractional part of the whole decimal square. A class is representing decimal squares with circle graphs. Which of the circles below has a shaded portion that is equivalent?

A. 

B. 

C. 

D. 

Multiple Choice Item 3

Standard: MA-06-1.1.2: Number Sense — Students will describe and provide examples of representations of numbers (whole numbers, fractions in simplest form, mixed numbers, decimals, percents) 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.

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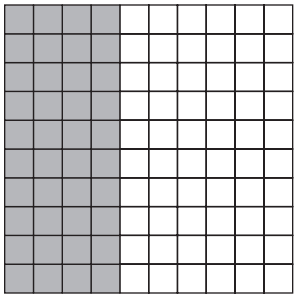
Answer Key: A

Portion of Standard Being Addressed
This item requires the student to provide examples of representations of numbers based on mathematical problems.

3. What percent of this figure is shaded?



A. 40%
B. 44%
C. 45%
D. 55%

Multiple Choice Item 4

Standard: MA-06-1.1.3: Number Sense — Students will convert between any two of the following numbers: fractions, decimals, and percents (less than or equal to 100%); and will compare and order these numbers.

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Answer Key: D

Portion of Standard Being Addressed
This item requires the student to convert a fraction to a percent.

4. Use the sign below to answer the question.

Which percent discount is equivalent to the discount in the sign?

A. $\frac{1}{3}$% off

B. 13 % off

C. 30 % off

D. $33\frac{1}{3}$% off

Multiple Choice Item 5

Standard: MA-06-1.1.3: Number Sense — Students will convert between any two of the following numbers: fractions, decimals, and percents (less than or equal to 100%); and will compare and order these numbers.

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Answer Key: A

Portion of Standard Being Addressed
This item requires the student to convert between fractions and decimals.

5. Which fraction is equivalent to 0.4?

   A. $\frac{2}{5}$

   B. $\frac{1}{25}$

   C. $\frac{3}{5}$

   D. $\frac{1}{4}$

Multiple Choice Item 6

Standard: MA-06-1.2.1: Estimation — Students will estimate to solve real-world and mathematical problems with whole numbers, fractions, decimals and percents, checking for reasonable and appropriate computational results.

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Answer Key: C

Portion of Standard Being Addressed
This item requires the student to estimate to solve real-world problems with decimals and percents.

6. Mrs. Rice wants to leave a tip of approximately 15% of her $49.68 restaurant bill. Which amount is closest to 15% of $49.68?

   A. $ 1.50
   B. $ 6.50
   C. $ 7.50
   D. $15.00

Multiple Choice Item 7

Standard: MA-06-1.3.1: Number Operations — Students will add, subtract, multiply and divide whole numbers, fractions and decimals to solve real-world problems and apply order of operations to simplify numerical expressions.

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Answer Key: B

Portion of Standard Being Addressed
This item requires the student to apply multiple operations to solve real-world problems.

7. The rates for parking at a garage are

   - $2.00 for the first hour or part of an hour, and
   - $0.50 for each additional hour or part of an hour.

   When Josh left the garage, he had to pay $4.50. Which of the following could be the length of time that his car was parked at the garage?

   A. 4 hours, 20 minutes
   B. 5 hours, 40 minutes
   C. 6 hours, 20 minutes
   D. 7 hours

Multiple Choice Item 8

Standard: MA-06-1.3.1: Number Operations — Students will add, subtract, multiply and divide whole numbers, fractions and decimals to solve real-world problems and apply order of operations to simplify numerical expressions.

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Answer Key: C

Portion of Standard Being Addressed
This item requires the student to multiply decimals to solve real-world problems.

8. Claire walked 1.45 miles on Monday. On Saturday, she walked three times as far. How many miles did Claire walk on Saturday?

   A. 4.25
   B. 4.28
   C. 4.35
   D. 4.45

Multiple Choice Item 9

Standard: MA-06-1.3.1: Number Operations — Students will add, subtract, multiply and divide whole numbers, fractions and decimals to solve real-world problems and apply order of operations to simplify numerical expressions.

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Answer Key: A

Portion of Standard Being Addressed
This item requires the student to add, multiply, and divide whole numbers to solve real-world problems.

9. After babysitting for one week, 3 friends earned one $100 bill, three $10 bills, and five $1 bills. Each person received the same amount of money. How much money did each person receive?

   A. $45
   B. $37
   C. $25
   D. $17

Multiple Choice Item 10

Standard: MA-06-1.3.2: Number Operations — Students will explain how operations (addition and subtraction; multiplication and division) are inversely related.

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Answer Key: B

Portion of Standard Being Addressed
This item requires the student to explain how operations are inversely related.

10. How could Haley check this division problem?

$$\begin{array}{r} 329 \text{ R2} \\ 8\overline{)2634} \end{array}$$

A. Multiply 2634 by 2; then add 8.
B. Multiply 8 by 329; then add 2.
C. Divide 8 by 329; then add 2.
D. Divide 329 by 2; then add 8.

Multiple Choice Item 11

Standard: MA-06-1.4.1: Ratios and Proportional Reasoning — Students will describe and apply ratios to solve real-world problems.

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Answer Key: A

Portion of Standard Being Addressed
This item requires the student to describe ratios to solve real-world problems.

11. Last year the Eagle team played 24 games and won 16 of them. Which statement is true?
    A. The team won 2 out of every 3 games they played.
    B. The team won 3 out of every 2 games they played.
    C. The team won 4 out of every 3 games they played.
    D. The team won 3 out of every 4 games they played.

Multiple Choice Item 12

Standard: MA-06-1.4.1: Ratios and Proportional Reasoning — Students will describe and apply ratios to solve real-world problems.

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Answer Key: D

Portion of Standard Being Addressed
This item requires the student to apply ratios to solve real-world problems.

12. Candace is making lemonade. The ratio of lemon juice to water is 1 to 5. How much water does Candace need to make 60 fluid ounces of lemonade?

    A. 10 fluid ounces
    B. 12 fluid ounces
    C. 48 fluid ounces
    D. 50 fluid ounces

Multiple Choice Item 13

Standard: MA-06-1.5.1: Properties of Numbers and Operations — Students will identify and apply prime numbers, composite numbers, prime factorization, factors, multiples and divisibility to solve real-world and mathematical problems (e.g., prime factorization to determine a least common multiple [LCM] or greatest common factor [GCF]).

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Answer Key: C

Portion of Standard Being Addressed
This item requires the student to apply least common multiple to solve real-world problems.

13. Jake and Ella both have the same amount of money. Jake has only dimes. Ella has only quarters. What is the least amount of money each person could have?

    A. $0.10
    B. $0.25
    C. $0.50
    D. $1.00

Multiple Choice Item 14

Standard: MA-06-1.5.2: 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 and the identity properties for addition and multiplication) to simplify numerical expressions.

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Answer Key: B

Portion of Standard Being Addressed
This item requires the student to identify the use of properties to simplify numerical expressions.

14. What number belongs in the box to make the number sentence true?

$$\mathbf{3 \times 3 = 9 \times \square}$$

A. 0
B. 1
C. 3
D. 9

Multiple Choice Item 15

Standard: MA-06-2.1.1: Measuring Physical Attributes — Students will measure lengths (to the nearest eighth of an inch or the nearest centimeter) and will determine and use in real-world and mathematical problems:

- area and perimeter of triangles;
- area and perimeter of quadrilaterals (rectangles, squares); (using the Pythagorean theorem will not be required as a strategy) and
- area and perimeter of compound figures composed of triangles and quadrilaterals.

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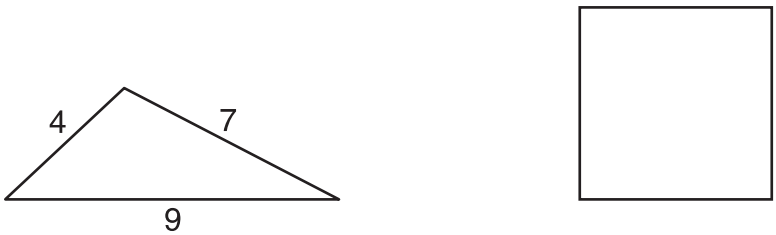
Answer Key: B

Portion of Standard Being Addressed
This item requires the student to determine the perimeter of a triangle and then determine the length of a side of a square that has the same perimeter as the triangle.

15. Use the pictures below to answer the question.



If both the square and the triangle above have the same perimeter, what is the length of each side of the square?

A. 4
B. 5
C. 6
D. 7

Multiple Choice Item 16

Standard: MA-06-2.1.1: Measuring Physical Attributes — Students will measure lengths (to the nearest eighth of an inch or the nearest centimeter) and will determine and use in real-world and mathematical problems:

- area and perimeter of triangles;
- area and perimeter of quadrilaterals (rectangles, squares); (using the Pythagorean theorem will not be required as a strategy) and
- area and perimeter of compound figures composed of triangles and quadrilaterals.

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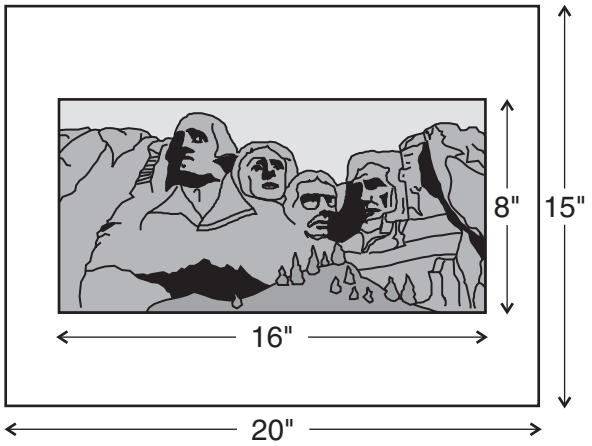
Answer Key: C

Portion of Standard Being Addressed
This item requires the student to determine and use in real-world problems area of quadrilaterals.

16. Use the painting shown below to answer the question.



What is the area of the **white region** around the painting?

A. 22 square inches
B. 59 square inches
C. 172 square inches
D. 300 square inches

Multiple Choice Item 17

Standard: MA-06-2.1.1: Measuring Physical Attributes — Students will measure lengths (to the nearest eighth of an inch or the nearest centimeter) and will determine and use in real-world and mathematical problems:

- area and perimeter of triangles;
- area and perimeter of quadrilaterals (rectangles, squares); (using the Pythagorean theorem will not be required as a strategy) and
- area and perimeter of compound figures composed of triangles and quadrilaterals.

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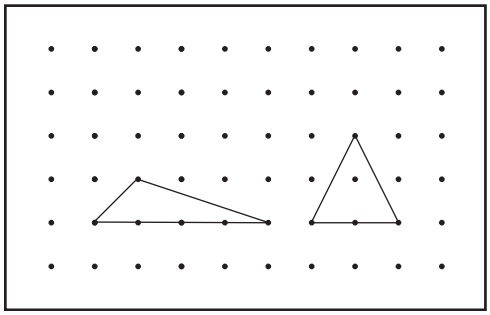
Answer Key: A

Portion of Standard Being Addressed
This item requires the student to determine and compare the areas and perimeters of two triangles.

17. Use the figure below to answer the question.



Which statement is true about the two triangles?

A. They have equal areas but different perimeters.
B. They have equal areas and equal perimeters.
C. They have equal perimeters but different areas.
D. They have different areas and different perimeters.

Multiple Choice Item 18

Standard: MA-06-2.1.2: Measuring Physical Attributes — Students will estimate measurements in standard units including fractions and decimals.

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Answer Key: B

Portion of Standard Being Addressed
This item requires the student to estimate measurements in standard units.

18. Which is the closest estimate of the weight of a full 2-liter bottle of soda?
    A. 1 lb.
    B. 4 lbs.
    C. 10 lbs.
    D. 15 lbs.

Multiple Choice Item 19

Standard: MA-06-2.1.2: Measuring Physical Attributes — Students will estimate measurements in standard units including fractions and decimals.

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Answer Key: B

Portion of Standard Being Addressed
This item requires the student to estimate the length of an object.

19. Which is the **best** estimate of the length of a sixth-grade girl's foot?
    A. 10 centimeters
    B. 20 centimeters
    C. 30 centimeters
    D. 40 centimeters

Multiple Choice Item 20

Standard: MA-06-2.1.3: Measuring Physical Attributes — Students will explain how measurements and measurement formulas are related or different (perimeter and area of rectangles).

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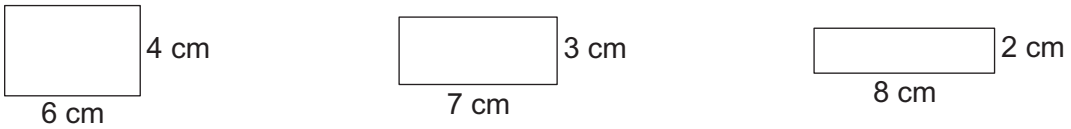
Answer Key: B

Portion of Standard Being Addressed
This item requires the student to explain how measurements and measurement formulas are related or different.

20. Three rectangles are shown below.



What do these rectangles have in common?

A. They have the same area only.
B. They have the same perimeter only.
C. Area and perimeter are the same.
D. Area and perimeter are not the same.

Multiple Choice Item 21

Standard: MA-06-2.2.1: Systems of Measurement — Students will convert units within the same measurement system and use these units to solve real-world problems.

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Answer Key: B

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.

21. How many pieces of pipe, each 20 meters long, would be required to construct a pipeline 1 kilometer in length?

    A. 5
    B. 50
    C. 500
    D. 5,000

Multiple Choice Item 22

Standard: MA-06-2.2.1: Systems of Measurement — Students will convert units within the same measurement system and use these units to solve real-world problems.

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Answer Key: A

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.

22. The length of a picture frame is 24 **centimeters**. What is the length of the picture frame in **meters**?
    A. 0.24 meters
    B. 2.4 meters
    C. 240 meters
    D. 2400 meters

Multiple Choice Item 23

Standard: MA-06-3.1.4: Shapes and Relationships — Students will identify and describe congruent figures, and will apply congruent figures to solve real-world and mathematical problems.

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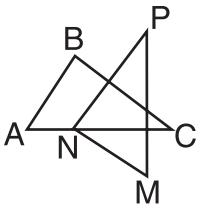
Answer Key: D

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

23. Given: $\Delta ABC \cong \Delta MNP$



Which statement must be true?

A. $\overline{AB} \cong \overline{NP}$

B. $\overline{BC} \cong \overline{MN}$

C. $\angle B \cong \angle P$

D. $\angle A \cong \angle M$

Multiple Choice Item 24

Standard: MA-06-3.1.4: Shapes and Relationships — Students will identify and describe congruent figures, and will apply congruent figures to solve real-world and mathematical problems.

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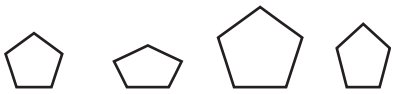
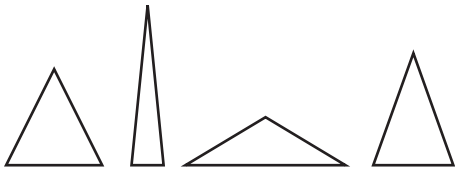
Answer Key: D

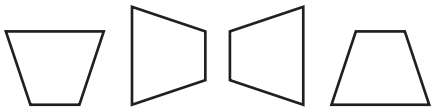
Portion of Standard Being Addressed
This item requires the student to identify congruent figures.

24. Jeanne is making a design. She needs four congruent shapes for the next part of the design. Which set has four congruent shapes?

A.

B. 

C. 

D. 

Multiple Choice Item 25

Standard: MA-06-3.1.5: Shapes and Relationships — Students will identify similar figures and apply similar figures to solve real-world and mathematical problems.

Bloom's Taxonomy
Knowledge
Comprehension
Application
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Synthesis
Evaluation

Depth of Knowledge
Level 1
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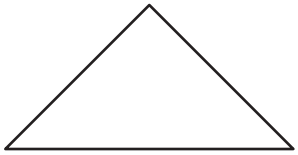
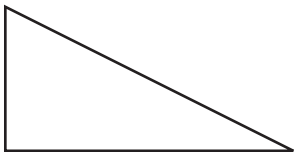
Answer Key: B

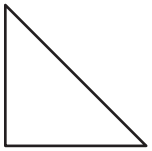
Portion of Standard Being Addressed
This item requires the student to identify similar triangles.

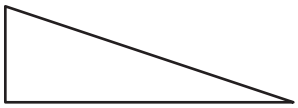
25. Look at the triangle below.

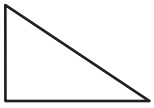


Which figure is similar to this triangle?

A. 

B. 

C. 

D. 

Multiple Choice Item 26

Standard: MA-06-3.3.1: Coordinate Geometry — Students will identify and graph ordered pairs on a positive coordinate system (Quadrant I), 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
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Depth of Knowledge
Level 1
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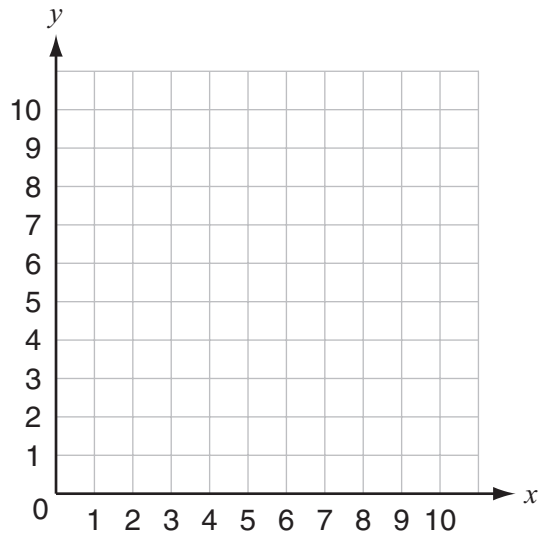
Level 3
Level 4

Answer Key: B

Portion of Standard Being Addressed
This item requires the student to apply graphing in the coordinate system to solve mathematical problems.

26. You may use the grid below to answer the question.



A triangle has vertices at the following locations: A (3,7); B (3,4); C (8,4). What is the length of side $\overline{AB}$?

A. 1 unit
B. 3 units
C. 4 units
D. 11 units

Multiple Choice Item 27

Standard: MA-06-4.1.4: Representations of Data Sets — Students will determine and construct appropriate data displays (bar graphs, line plots, Venn diagrams, tables, line graphs), and will explain why the type of display is appropriate for the data.

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

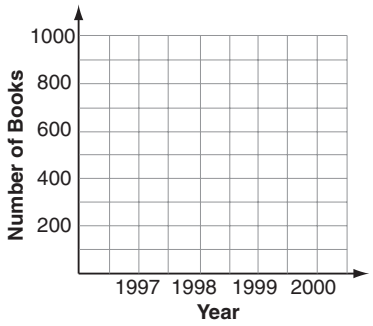
Answer Key: C

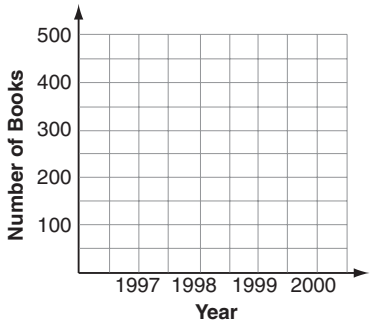
Portion of Standard Being Addressed
This item requires the student to determine and construct appropriate data displays.

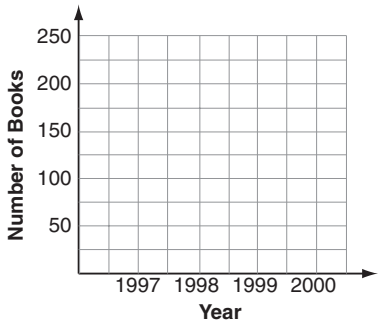
27. The table below shows the number of books that were donated to the town library each year between 1997 and 2000.

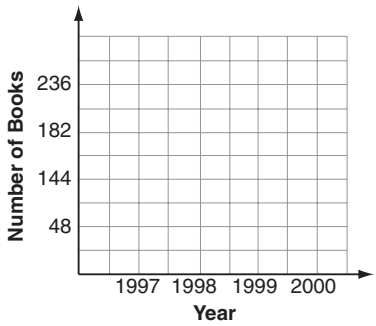
Year	Number of Books Donated
1997	48
1998	144
1999	182
2000	236

Which of the following is the **best** way to draw and label the axes of the graph of these data?

A.


B.


C.


D.


Multiple Choice Item 28

Standard: MA-06-4.2.1: Characteristics of Data Sets — Students will determine and apply the mean, median, mode and range of a set 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: B

Portion of Standard Being Addressed
This item requires the student to determine the median of a set of data.

28. The Corporate Average Fuel Economy (CAFE) for a company's automobiles is the median gas mileage for all of its car models. One company offers eight models with mileage ratings of 14, 34, 21, 27, 38, 16, 22, and 27. What is this company's median gas mileage?

    A. 24.0
    B. 24.5
    C. 27.0
    D. 32.5

Multiple Choice Item 29

Standard: MA-06-4.2.1: Characteristics of Data Sets — Students will determine and apply the mean, median, mode and range of a set of data.

Bloom's Taxonomy
Knowledge
Comprehension
Application
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Synthesis
Evaluation

Depth of Knowledge
Level 1
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Level 3
Level 4

Answer Key: B

Portion of Standard Being Addressed
This item requires the student to determine the mode of a set of data.

29. The stem-and-leaf plot below shows the number of points a basketball team scored in its games this season.

3	0 4 4 4 8
4	1 1 3 6 8 9
5	4 7
6	2 6 6
7	1

What is the mode of these data?

A. 30
B. 34
C. 36
D. 41

Multiple Choice Item 30

Standard: MA-06-4.2.1: Characteristics of Data Sets — Students will determine and apply the mean, median, mode and range of a set of data.

Bloom's Taxonomy
Knowledge
Comprehension
Application
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Synthesis
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Depth of Knowledge
Level 1
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Level 3
Level 4

Answer Key: C

Portion of Standard Being Addressed
This item requires the student to determine the mean of a set of data.

30. Brian is comparing prices of dress shirts in 5 stores. The prices are shown below.

    $13.99 $17.49 $14.69 $18.29 $14.29

    What is the mean price of a shirt?

    A. $13.99
    B. $14.69
    C. $15.75
    D. $16.14

Multiple Choice Item 31

Standard: MA-06-4.4.2: Characteristics of Data Sets — Students will determine single event probabilities based on the results of an experiment and will make inferences based on the 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: A

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

31. Omar spins the arrow of a spinner 50 times. The results are shown in the table below.

Omar's Results

Color	Number of Spins
Red	5
Yellow	12
Green	8
Blue	25

Based on Omar's results, what is the experimental probability of the arrow landing on green?

A. 0.16
B. 0.19
C. 0.25
D. 0.5

Multiple Choice Item 32

Standard: MA-06-4.4.3: Probability — Students will explore the theoretical probability of simple events.

Bloom's Taxonomy
Knowledge
Comprehension
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Synthesis
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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 associate probabilities of a simple event with a fraction between 0 and 1.

32. In a bag of marbles, $\frac{1}{2}$ are red, $\frac{1}{4}$ are blue, $\frac{1}{6}$ are green, and $\frac{1}{12}$ are yellow. If a marble is taken from the bag without looking, it is most likely to be

A. red.
B. blue.
C. green.
D. yellow.

Multiple Choice Item 33

Standard: MA-06-5.1.1: Patterns, Relations and Functions — Students will extend, describe rules for patterns and find a missing term in a pattern from real-world and mathematical problems.

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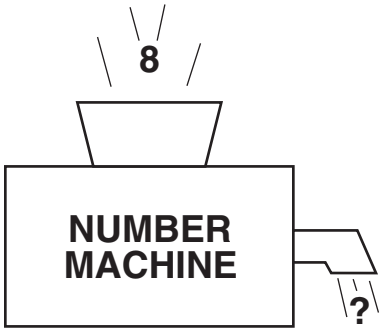
Depth of Knowledge
Level 1
Level 2
Level 3
Level 4

Answer Key: C

Portion of Standard Being Addressed
This item requires the student to extend a pattern described by a function machine.

33. Use the diagram below to answer the question.



When numbers are put into the machine above, other numbers come out.

If a 2 goes in, a 6 comes out.

If a 4 goes in, a 12 comes out.

If a 5 goes in, a 15 comes out.

If an 8 goes in, what number comes out?

A. 12
B. 16
C. 24
D. 32

Multiple Choice Item 34

Standard: MA-06-5.1.1: Patterns, Relations and Functions — Students will extend, describe rules for patterns and find a missing term in a pattern from 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: C

Portion of Standard Being Addressed
This item requires the student to extend patterns from real-world problems.

34. The ingredients used to make biscuits with Barker Biscuit Mix are shown in the chart below.

BISCUITS	MIX	WATER
10–12	$1\frac{1}{2}$ cups	$\frac{1}{3}$ cup
20–24	3 cups	$\frac{2}{3}$ cup

If you want to make between 30 and 36 biscuits, how many cups of mix will you need?

A. 1 cup

B. 3 cups

C. $4\frac{1}{2}$ cups

D. 6 cups

Multiple Choice Item 35

Standard: MA-06-5.1.2: Patterns, Relations and Functions — Students will create tables for functions and will apply the tables to solve real-world problems.

Bloom's Taxonomy
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Depth of Knowledge
Level 1
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Level 3
Level 4

Answer Key: B

Portion of Standard Being Addressed
This item requires the student to construct tables to analyze functions based on real-world problems.

35. The librarian needed helpers for a 5-day book fair.
    - On the first day she had 1 helper.
    - On the second day she had 2 more helpers.
    - Every day after that she had 2 more helpers than on the day before.

    Which chart shows how many helpers the librarian had on each day?

A.

Day	Helpers
1	2
2	4
3	6
4	8
5	10

B.

Day	Helpers
1	1
2	3
3	5
4	7
5	9

C.

Day	Helpers
1	1
2	2
3	3
4	4
5	5

D.

Day	Helpers
1	1
2	2
3	2
4	2
5	2

Multiple Choice Item 36

Standard: MA-06-5.1.2: Patterns, Relations and Functions — Students will create tables for functions and will apply the tables to solve real-world 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 create tables for functions.

36. Raoul started an exercise program. He did 20 sit-ups on the first day. He increased the number of sit-ups by the same amount each day. Which chart could show how many sit-ups Raoul did over the first five days?

A.

Day	1	2	3	4	5
Number of Sit-ups	4	24	44	64	84

B.

Day	1	2	3	4	5
Number of Sit-ups	4	8	12	16	20

C.

Day	1	2	3	4	5
Number of Sit-ups	20	24	30	38	40

D.

Day	1	2	3	4	5
Number of Sit-ups	20	24	28	32	36

Multiple Choice Item 37

Standard: MA-06-5.1.3: Patterns, Relations and Functions — Students will describe, define, provide examples of, and apply to real-world and mathematical problems functions using tables, graphs and verbal rules.

Bloom's Taxonomy
Knowledge
Comprehension
Application
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Synthesis
Evaluation

Depth of Knowledge
Level 1
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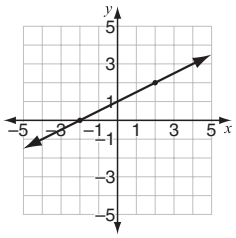
Level 3
Level 4

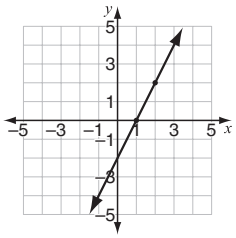
Answer Key: A

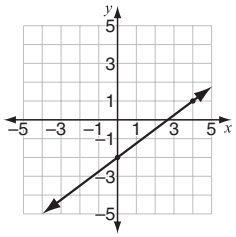
Portion of Standard Being Addressed
This item requires the student to apply mathematical problem functions using tables and graphs.

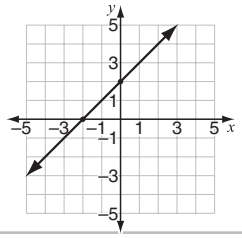
37. Which graph best represents the function shown in the table below?

Input (x)	⁻2	0	2	4
Output (y)	0	1	2	3

A. 

B. 

C. 

D. 

Multiple Choice Item 38

Standard: MA-06-5.2.1: Variables, Expressions and Operations — Students will substitute values for variables (up to two different variables) and evaluate algebraic expressions.

Bloom's Taxonomy
Knowledge
Comprehension
Application
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Synthesis
Evaluation

Depth of Knowledge
Level 1
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Level 3
Level 4

Answer Key: C

Portion of Standard Being Addressed
This item requires the student to substitute values for variables and evaluate algebraic expressions.

38. What is the value of $7-3x+1$ when $x=2$?

A. 12
B. 9
C. 2
D. 0

Multiple Choice Item 39

Standard: MA-06-5.3.1: Equations and Inequalities — Students will model and solve real-world and mathematical problems with simple equations and inequalities (e.g., $8x = 4$, $x+2 > 5$).

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 solve mathematical problems with simple equations.

39. Solve for x:

$$\mathbf{2x = 28}$$

A. 14
B. 26
C. 30
D. 56