



**Mathematics  
Released Test  
Questions  
2010**

**GRADE**

**7**

NEW MEXICO 2010 RELEASED ITEMS  
GRADE 7 MATH

**5-8.N.1.7.01** Numbers and Operations: Benchmark N.1: Understand numbers, ways of representing numbers, relationships among numbers, and number systems. Performance Standard 1: Determine the absolute value of rational numbers.

1. On a day in February, the temperature in Santa Fe at 6:00 A.M. was  $-12^{\circ}\text{F}$ . By 3:00 P.M., the temperature was  $37^{\circ}\text{F}$ .

What was the change in temperature, in degrees Fahrenheit, from 6:00 A.M. to 3:00 P.M.?

- A** A decrease of  $49^{\circ}\text{F}$   
**B** A decrease of  $25^{\circ}\text{F}$   
**C** An increase of  $25^{\circ}\text{F}$   
**D** An increase of  $49^{\circ}\text{F}$
- A** *Student thinks the temperature decreases.*  
**B** *Student determines the difference between 37 and 12 and thinks the temperature decreases.*  
**C** *Student determines the difference between 37 and 12.*  
**D** *Correct answer*

**NEW MEXICO 2010 RELEASED ITEMS  
GRADE 7 MATH**

**5-8.D.2.7.02** Data Analysis and Probability: Benchmark D.2: Select and use appropriate statistical methods to analyze data. Performance Standard 2: Know various ways to display data sets (e.g., stem and leaf plot, box and whisker plot, scatter plots) and use these forms to display a single set of data or to compare two sets of data.

2. Sally wants to display the percent of sales for each of the 7 types of snack foods sold at her concession stand.

Which type of display would be the most appropriate for showing the percent of sales?

- A** Line graph
- B** Scatter plot
- C** Circle graph
- D** Box-and-whisker plot

*The correct answer is "C." A, B, and D are possible options.*

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5-8.N.1

Numbers and Operations: Benchmark N.1: Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

3. What is the value of the expression below?

$$50 \div 5^2 \cdot 13$$

- A 26
- B 65
- C 260
- D 1300

- A *Correct answer*
- B *Student thinks  $5^2 = 10$ .*
- C *Student ignores the exponent.*
- D *Student thinks  $(50 \div 5^2) = 100$ .*

NEW MEXICO 2010 RELEASED ITEMS  
GRADE 7 MATH

5-8.A.2.7.02

Algebra: Benchmark A.2: Represent and analyze mathematical situations and structures using algebraic symbols. Performance Standard 2: Use variables and appropriate operations to write an expression, an equation, or an inequality that represents a verbal description.

4. The student council collected a total of \$700 from students and parents who attended a school function.
- \$200 was collected from students.
  - \$4 was collected from each parent.

The following equation models the amount that was collected.

$$200 + 4x = 700$$

What does  $x$  represent in the equation above?

- A** The amount each student paid to attend the function
- B** The amount each parent paid to attend the function
- C** The number of students who attended the function
- D** The number of parents who attended the function

*The correct answer is "D." A, B, and C are possible options.*

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GRADE 7 MATH**

**5-8.D.4.7.07** Data Analysis and Probability: Benchmark D.4: Understand and apply basic concepts of probability. Performance Standard 7: Determine the probability of a simple event or a compound event composed of a simple, independent events.

5. José designed a fair number cube. He wrote a different number on each face of the cube. The numbers are shown below.

1, 5, 15, 25, 50, 100

If José tosses his number cube 48 times, how many times should he expect to get an odd number?

- A** 4
- B** 16
- C** 24
- D** 32

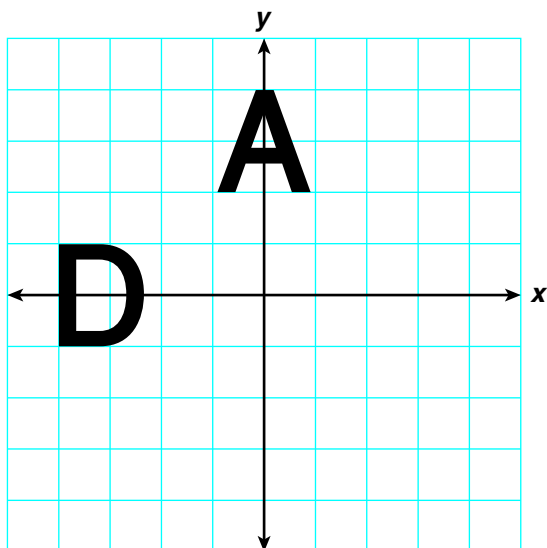
- A** *Student counts the number of odd numbers.*
- B** *Student determines answer for even rather than odd.*
- C** *Student determines that there are 3 odd numbers instead of 4.*
- D** *Correct answer*

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5-8.G.2.7.01

Geometry: Benchmark G.2: Specify locations and describe spatial relationships using coordinate geometry and other representational systems. Performance Standard 1: Construct and use coordinate graphs to plot simple figures, determine lengths and areas related to them, and determine the image under translations and reflections.

6. The coordinate grid below shows the letter A centered on the  $y$ -axis and the letter D centered on the  $x$ -axis so that a mirror image is formed on both sides of its axis.



Which letter would not form a mirror image if centered on either axis?

- A **W**
- B **T**
- C **X**
- D **S**

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- A** *Letter has vertical line of symmetry.*
- B** *Letter has vertical line of symmetry.*
- C** *Letter has vertical and horizontal line of symmetry.*
- D** *Correct answer*

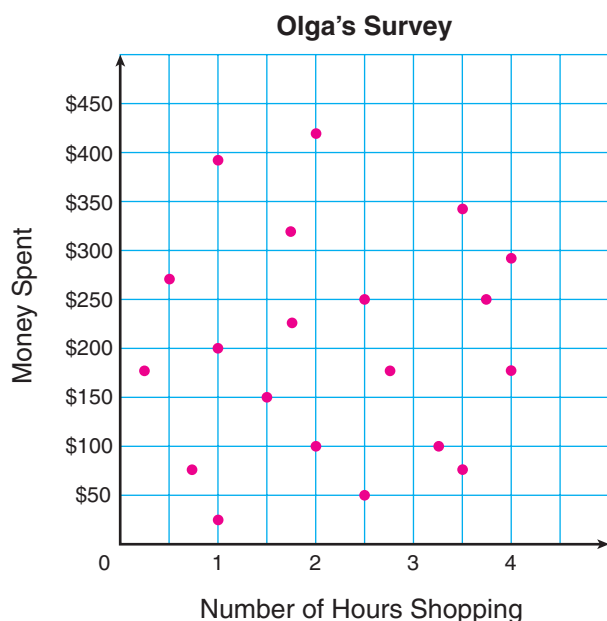


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5-8.D.2.7.04

Data Analysis and Probability: Benchmark D.2: Select and use appropriate statistical methods to analyze data. Performance Standard 4: Use appropriate technology to gather and display data sets and identify the relationships that exist among variables within the data set.

7. Olga conducted a survey about consumer spending. The scatter plot shows the number of hours spent shopping versus the money spent by shoppers that Olga surveyed.



Based on the data in the graph, which of the following statements is true?

- A** There appears to be no trend between number of hours spent shopping and money spent.
- B** There appears to be a weak positive trend between number of hours spent shopping and money spent.
- C** There appears to be a negative trend between number of hours spent shopping and money spent.
- D** There appears to be a strong positive trend between number of hours spent shopping and money spent.

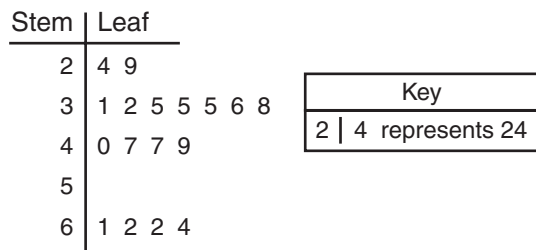
*The correct answer is "A." B, C, and D are possible options.*

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5-8.D.2

Data Analysis and Probability: Benchmark D.2: Select and use appropriate statistical methods to analyze data.

8. A stem-and-leaf plot is shown below.



Which statement about the data in the plot is false?

- A There are no values present for the interval from 50 to 59.
- B The stem-and-leaf plot represents 22 numbers of data.
- C The number that has the least value in the data is 24.
- D The number that has the greatest value in the data is 64.

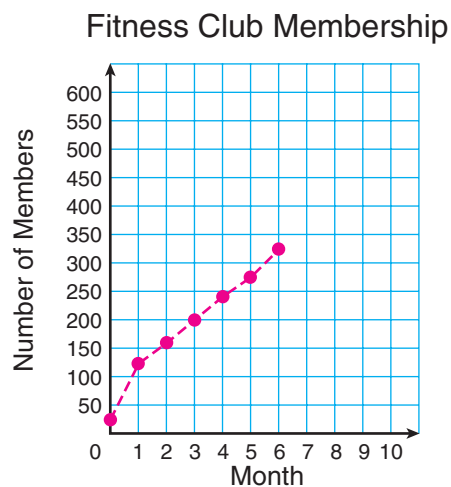
- A *True statement*
- B *Correct answer*
- C *True statement*
- D *True statement*

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5-8.D.3.7.02

Data Analysis and Probability: Benchmark D.3: Develop and evaluate inferences and predictions that are based on data. Performance Standard 2: Analyze data to make accurate inferences, predictions, and to develop convincing arguments from data displayed in a variety of forms.

9. The graph below shows the number of members at a new fitness club.



Based on this rate, which is the best prediction for the number of members the club will have at 9 months?

- A 350
- B 450
- C 550
- D 650

*The correct answer is "B." A, C, and D are possible options.*

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5-8.A.4.7.01

Algebra: Benchmark A.4: Analyze changes in various contexts. Performance Standard 1: Use variables and appropriate operations to write an expression, an equation, and/or an inequality that represents a verbal description involving change.

10. Rolando is filling his CD case with CDs.

- The weight of the empty CD case is 7 ounces.
- The weight of each CD is about 0.6 ounce.

Which expression can be used to determine the weight of the CD case, in ounces, when filled with  $n$  CDs?

- A**  $0.6n + 7$
- B**  $0.6(n + 7)$
- C**  $7n + 0.6$
- D**  $7(n + 0.6)$

**A** *Correct answer*

**B** *Student multiplies number of CDs ( $n$ ) and weight of CD case (7 ounces) by weight of each CD (0.6 ounce).*

**C** *Student confuses weight of CD case with weight of CD.*

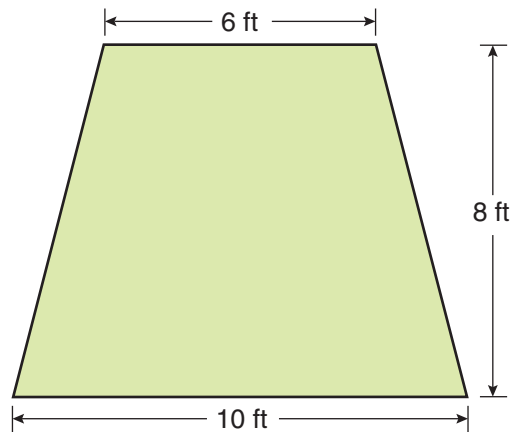
**D** *Student multiplies number of CDs ( $n$ ) and weight of CD (0.6 ounce) by weight of CD case (7 ounces).*

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5-8.M.2.7.02

Measurement: Benchmark M.2: Apply appropriate techniques, tools, and formulas to determine measurements. Performance Standard 2: Select and use formulas to determine the circumference of circles and the area of triangles, parallelograms, trapezoids, and circles.

11. Emma is planting flower seeds in her garden. The garden is in the shape of a trapezoid and has the dimensions shown below.



Each package of seeds covers an area of approximately 6 square feet.

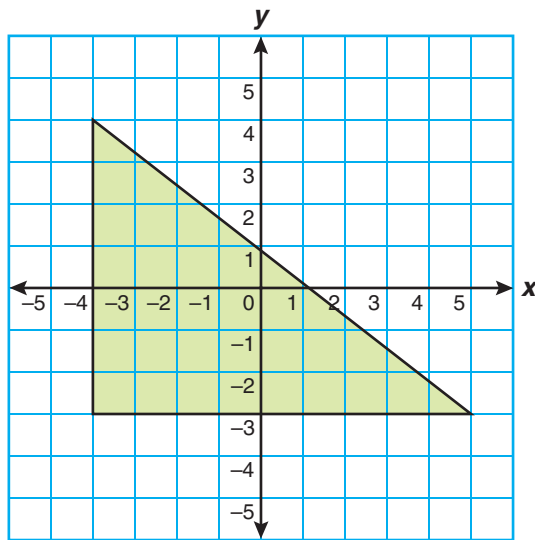
What is the least number of packages of seeds needed to cover Emma's garden? Use words, numbers, or diagrams to justify your answer.

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5-8.G.2.7.01

Geometry: Benchmark G.2: Specify locations and describe spatial relationships using coordinate geometry and other representational systems. Performance Standard 1: Construct and use coordinate graphs to plot simple figures, determine lengths and areas related to them, and determine the image under translations and reflections.

12. The right triangle on the coordinate grid below represents property that Olivia has been contracted to sell.



Each unit on the coordinate grid represents 1 mile.

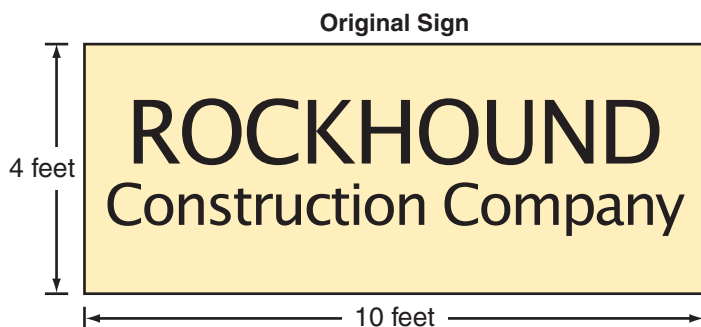
What is the area, in square miles, of the triangular-shaped property? Use words, numbers, or diagrams to justify your answer.

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5-8.G.3.7.01

Geometry: Benchmark G.3: Apply transformations and use symmetry to analyze mathematical situations. Performance Standard 1: Determine how perimeter and area are affected by changes of scale.

13. The manager of a construction company wants a new, larger sign with dimensions that are three times the length and three times the width of the original sign shown below.



- A. How many times greater will the area of the new sign be compared to the area of the original sign? Use words, numbers, or diagrams to justify your answer.
- B. The manager wants to put decorative trim around the new sign. How many times greater will the perimeter of the new sign be compared to the perimeter of the original sign? Use words, numbers, or diagrams to justify your answer.

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**5-8.N.2.7.03**      Numbers and Operations: Benchmark N.2: Understand the meaning of operations and how they relate to one another. Performance Standard 3: Calculate given percentages of quantities and use them to solve problems (e.g., discounts of sales, interest earned, tips, markups, commission, profit, simple interest).

14. Marilyn purchased a book that had a regular price of \$19.
- She used a coupon that reduced the regular price by 15%.
  - Sales tax for the purchase was 6.5% of the reduced price.
  - Marilyn paid for the purchase with a \$20 bill.

How much change should Marilyn receive for her purchase?  
Use words, numbers, or diagrams to justify your answer.



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<b>5-8.A.1.7.03</b>	Algebra: Benchmark A.1: Understand patterns, relations, and functions. Performance Standard 3: Simplify numerical expressions by applying properties of rational numbers, and justify the process used.
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15. Use the expression below to answer Parts A and B.

$$40 - 20 \div 4 \cdot 5$$

- A. Which operation should be performed first when simplifying the expression? Use words, numbers, or diagrams to justify your answer.
- B. What is the value of the expression? Use words, numbers, or diagrams to justify your answer.
- C. Create an expression that includes the following:
- Uses all 4 basic operations (+, -, •, ÷) only once and in any order
  - Contains only one exponent
  - Contains only single-digit numbers without having a number repeated

Be sure to give the value of your expression.

## Grade 3 Mathematics Released Item Information

Released Item Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Strand <sup>1</sup>	N	D	N	A	D	G	D	D	D	A	M	G	G	N	A
Benchmark	N1	D2	N1	A2	D4	G2	D2	D2	D3	A4	M2	G2	G3	N2	A1
Performance Standard	1	2		2	7	1	4		2	1	2	1	1	3	3
Depth of Knowledge	2	1	2	2	2	1	2	2	2	2	2	2	2		2
Item Type <sup>2</sup>	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	SA	SA	SA	SA	OE
Answer Key	D	C	A	D	D	D	A	B	B	A					
Total Possible Points	1	1	1	1	1	1	1	1	1	1	2	2	2	2	4

<sup>1</sup>Strand: N = Numbers and Operations, D = Data Analysis and Probability, G = Geometry, M = Measurement, A = Algebra

<sup>2</sup>Item Type: MC = Multiple Choice, SA = Short Answer, OE = Open Ended