



**Mathematics
Released Test
Questions
2010**

GRADE

6

NEW MEXICO 2010 RELEASED ITEMS
GRADE 6 MATH

5-8.A.2.6.04 Algebra: Benchmark A.2: Represent and analyze mathematical situations and structures using algebraic symbols. Performance Standard 4: Demonstrate that a variable can represent a single quantity that changes.

1. Xavier has 4 times as many trading cards as Robert. This is modeled by the equation below, where x represents the number of trading cards Xavier has and r represents the number of trading cards Robert has.

$$x = 4r$$

If Xavier has 72 trading cards, how many trading cards does Robert have?

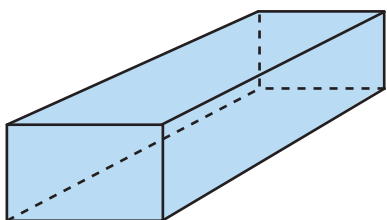
- A** 288
- B** 76
- C** 68
- D** 18

- A** *Student computes 72×4 .*
- B** *Student computes $72 + 4$.*
- C** *Student computes $72 - 4$.*
- D** *Correct answer*

NEW MEXICO 2010 RELEASED ITEMS
GRADE 6 MATH

5-8.G.4.6.01 Geometry: Benchmark G.4: Use visualization, spatial reasoning, and geometric modeling to solve problems. Performance Standard 1: Use appropriate technology, manipulatives, constructions, or drawings to recognize or compare geometric figures.

2. Michael has a box that is a rectangular prism, as shown below.



Which of the following statements exactly describes a rectangular prism?

- A** It has 8 faces, 8 edges, and 6 vertices.
 - B** It has 8 faces, 10 edges, and 8 vertices.
 - C** It has 6 faces, 10 edges, and 6 vertices.
 - D** It has 6 faces, 12 edges, and 8 vertices.
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- A** *Balance distractor*
 - B** *Balance distractor*
 - C** *Student misses 2 edges and 2 vertices.*
 - D** *Correct answer*

NEW MEXICO 2010 RELEASED ITEMS
GRADE 6 MATH

5-8.N.3

Numbers and Operations: Benchmark N.3: Compute fluently and make reasonable estimates.

3. The school choir is having 48 vests made for an upcoming event. Each vest requires $1\frac{5}{8}$ yards of material.

What is the total number of yards of material required to make 48 vests?

- A 78 yd
- B 84 yd
- C 90 yd
- D 240 yd

A *Correct answer*

B *Student confuses $\frac{3}{4}$ and $\frac{5}{8}$.*

C *Student confuses $\frac{7}{8}$ and $\frac{5}{8}$.*

D *Student computes 48×5 .*

NEW MEXICO 2010 RELEASED ITEMS
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5-8.G.1.6.03

Geometry: Benchmark G.1: Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematics arguments about geometric relationships. Performance Standard 3: Describe the properties of geometric figures that include regular polygons, circles, ellipses, cylinders, cones, spheres, and cubes.

4. Which of the geometric figures named below has exactly 1 vertex?

- A** Cone
- B** Cube
- C** Cylinder
- D** Sphere

- A** *Correct answer*
- B** *Balance distractor*
- C** *Balance distractor*
- D** *Balance distractor*

NEW MEXICO 2010 RELEASED ITEMS
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5-8.D.4.6.06

Data Analysis and Probability: Benchmark D.4: Understand and apply basic concepts of probability. Performance Standard 6: Represent probabilities as ratios, proportions, decimals between 0 and 1, and percentages between 0 and 100 and verify that the probabilities computed are reasonable; know that if P is the probability of an event, 1 - P is the probability of the event not occurring.

5. Mr. Frasier placed 20 cards of the same size into an empty box. Each card has the name of a different student in his class. Each day he randomly selects 1 name card from the box to determine who will be the daily leader.
- There are 10 girls and 10 boys in the class.
 - The name cards of 9 girls and 3 boys have already been selected and were not put back into the box.

What is the probability that the next name card Mr. Frasier selects is a boy's?

A $\frac{1}{2}$

B $\frac{1}{8}$

C $\frac{7}{8}$

D $\frac{7}{20}$

- A *Student gives the probability of selecting a boy's name when all names are in the box.*
B *Student gives the probability that the next name selected will be a girl's name.*
C *Correct answer*
D *Student compares boys left in the box to the original number of students.*

**NEW MEXICO 2010 RELEASED ITEMS
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5-8.D.2.6.07 Data Analysis and Probability: Benchmark D.2: Select and use appropriate statistical methods to analyze data. Performance Standard 7: Identify data that represent sampling errors and explain why the sample and the display might be biased.

6. Nick wants to determine the amount of time sixth-grade students spend studying for their math exam.

Which sampling method would be most unbiased?

- A** Survey the 15 girls in his class
- B** Survey 60 sixth-grade students
- C** Survey his 3 best friends
- D** Survey the 13 boys in his class

- A** *Balance distractor*
- B** *Correct answer*
- C** *Balance distractor*
- D** *Balance distractor*

NEW MEXICO 2010 RELEASED ITEMS
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5-8.A.3.6.01

Algebra: Benchmark A.3: Use mathematical models to represent and understand quantitative relationships. Performance Standard 1: Develop and use mathematical models to represent and justify mathematical relationships found in a variety of situations.

7. A certain flower arrangement costs \$20 plus \$4 for each rose added to the arrangement.

Which equation can be used to calculate the total cost, c , for an arrangement that has n roses?

- A $n = 4 + 20c$
- B $c = 4 + 20n$
- C $n = 20 + 4c$
- D $c = 20 + 4n$

- A *Balance distractor*
- B *Student confuses the fixed cost and the cost per rose.*
- C *Student confuses the total cost and the number of roses added.*
- D *Correct answer*

NEW MEXICO 2010 RELEASED ITEMS
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5-8.D.2.6.01	Data Analysis and Probability: Benchmark D.2: Select and use appropriate statistical methods to analyze data. Performance Standard 1: Choose an appropriate graphical format to organize and represent data.
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8. Aaron wants to compare the heights of the players on the school's basketball team.

Which graph would be the most appropriate for comparing the heights of these players?

- A** Bar graph
- B** Circle graph
- C** Line graph
- D** Picture graph

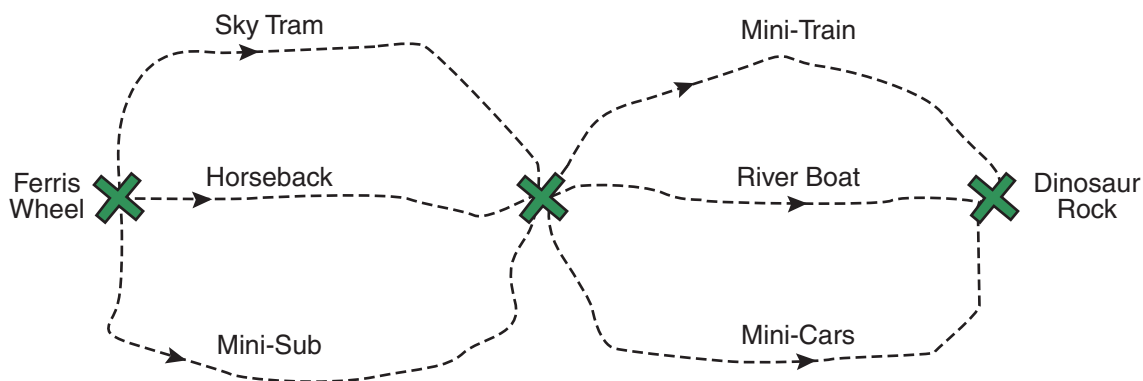
- A** *Correct answer*
- B** *Student knows that circle graphs can compare data.*
- C** *Student chooses a common type of graph.*
- D** *Balance distractor*

NEW MEXICO 2010 RELEASED ITEMS
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5-8.D.3.6.03

Data Analysis and Probability: Benchmark D.3: Develop and evaluate inferences and predictions that are based on data. Performance Standard 3: Find all possible combinations in a given set (e.g., the number of ways a set of books can be arranged on a shelf).

9. The following diagram shows the different transportation methods Edward can use to get from the Ferris Wheel to Dinosaur Rock. One route he could take is the Mini-Sub and River Boat.



What is the total number of possible routes Edward can take from the Ferris Wheel to Dinosaur Rock using only two transportation methods?

- A 6
- B 9
- C 12
- D 15

- A Student sees 6 labeled routes.
- B Correct answer
- C Student doubles the 6 labeled routes.
- D Balance distractor

NEW MEXICO 2010 RELEASED ITEMS
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5-8.N.1.6.02

Numbers and Operations: Benchmark N.1: Understand numbers, ways of representing numbers, relationships among numbers, and number systems. Performance Standard 2: Use equivalent representations for rational numbers (e.g., integers, decimals, fractions, percents, ratios, numbers with whole-number exponents).

10. Rochelle earned \$500 during the summer. She put 35% of this amount into savings.

Which of the following fractions is equivalent to 35%?

A $\frac{1}{4}$

B $\frac{7}{20}$

C $\frac{1}{35}$

D $\frac{7}{100}$

- A *Student confuses 25% and 35%.*
B *Correct answer*
C *Student sees the number 35.*
D *Student knows that percent means out of 100.*

**NEW MEXICO 2010 RELEASED ITEMS
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5-8.G.4.6.01	Geometry: Benchmark G.4: Use visualization, spatial reasoning, and geometric modeling to solve problems. Performance Standard 1: Use appropriate technology, manipulatives, constructions, or drawings to recognize or compare geometric figures.
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11. Margaret claims that all rectangles are squares. Bradley claims that all squares are rectangles.

Use words, numbers, or pictures to explain whether Margaret's or Bradley's claim is correct.

**NEW MEXICO 2010 RELEASED ITEMS
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5-8.N.3.6.01 Numbers and Operations: Benchmark N.3: Compute fluently and make reasonable estimates. Performance Standard 1: Estimate quantities involving rational numbers using various estimations.

12. Chan made a batch of trail mix. The table below shows the amount of each ingredient.

Trail Mix

Ingredient	Amount (cups)
Raisins	$1\frac{2}{5}$
Almonds	$2\frac{5}{8}$
Pretzels	$2\frac{2}{3}$
Cheese crackers	$3\frac{1}{4}$

- A. Which ingredient, almonds or pretzels, has a greater amount in the trail mix? Use words, numbers, or pictures to explain your answer.
- B. If each amount is rounded to the nearest whole number, what is the estimate for the total number of cups of ingredients used? Use words, numbers, or pictures to explain your answer.

**NEW MEXICO 2010 RELEASED ITEMS
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5-8.D.4.6.03

Data Analysis and Probability: Benchmark D.4: Understand and apply basic concepts of probability. Performance Standard 3: Determine theoretical and experimental probabilities and use them to make predictions about events.

13. A fair coin was tossed 10 times, and the outcomes of heads (H) or tails (T) were recorded in the table below.

Coin Toss Results

Toss	1	2	3	4	5	6	7	8	9	10
Outcome	H	H	T	H	T	T	H	H	H	T

- A. Based on the information in the table, what was the experimental probability that the coin landed “heads up”? Use words, numbers, or pictures to explain your answer.
- B. What is the theoretical probability that the coin will land “heads up” on each toss? Use words, numbers, or pictures to explain your answer.

NEW MEXICO 2010 RELEASED ITEMS
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5-8.M.1.6.03 Measurement: Benchmark M.1: Understand measurable attributes of objects and the units, systems, and processes of measurement. Performance Standard 3: Select and use units of appropriate size and type to measure angles (e.g., degrees, radians), perimeter, area, and capacity in both U.S. customary and metric systems.

14. Jonah wants to have hardwood flooring installed in his closet. The floor of his closet is shaped like a rectangle, as shown below.



It will cost Jonah \$2.75 per square foot to have the flooring installed. At that rate, what will be the total cost to install the flooring? Use words, numbers, or pictures to explain your answer.

**NEW MEXICO 2010 RELEASED ITEMS
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5-8.A.1.6.04	Algebra: Benchmark A.1: Understand patterns, relations, and functions. Performance Standard 4: Explain and use the relationships among ratios, proportions, and percents.
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15. The girls' and boys' basketball teams at Nigel's school each play a total of 24 regular season games.
- The girls have won 4 out of the first 6 games.
 - The boys have won 5 out of the first 8 games.
- A. What percent of their games have the boys won? Use words, numbers, or pictures to explain your answer.
- B. If the girls continue to win at the same rate, how many games would they win in the 24-game season? Use words, numbers, or pictures to explain your answer.
- C. Nigel, who is a member of the boys' basketball team, claims the boys will win more games than the girls if both teams continue to win at the same rate. Use words, numbers, or pictures to explain whether you agree or disagree with Nigel's claim.

Grade 6 Mathematics Released Item Information

Released Item Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Strand ¹	A	G	N	G	D	D	A	D	D	N	G	N	D	M	A
Benchmark	A2	G4	N3	G1	D4	D2	A3	D2	D3	N1	G4	N3	D4	M1	A1
Performance Standard	4	1	7	3	6	7	1	1	3	2	1	1	3	3	4
Depth of Knowledge	2	1	2	1	2	2	2	2	2	1	3	2	2	2	3
Item Type ²	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	SA	SA	SA	SA	OE
Answer Key	D	D	A	A	C	B	D	A	B	B					
Total Possible Points	1	1	1	1	1	1	1	1	1	1	2	2	2	2	4

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

²Item Type: MC = Multiple Choice, SA = Short Answer, OE = Open Ended