New Mexico NM-MSSA Grade 6 Math Practice

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Answer Key Materials
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NEW MEXICO MEASURES OF STUDENT SUCCESS AND ACHIEVEMENT

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Mathematics

Grade 6 · Practice Test

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N L P

PLACE STUDENT LABEL HERE

Mathematics Session 1

DIRECTIONS

Today you will take a test in mathematics. For this test, you will answer selected-response and constructed-response questions. Some of the questions may look different from test questions you have seen before, and some may ask about material that is new to you, but it is important to do your best. If you are not sure of the answer to a question, you should still try to answer it.
You may NOT use a calculator to answer the questions in this session.

1. The owner of a restaurant buys sets of tables and chairs. She buys 6 chairs for each table.

Which equation shows the relationship between t, the number of tables, and c, the number of chairs?

A $t = 6c$

B $c = 6t$

C $t = c + 6$

D $c = t + 6$

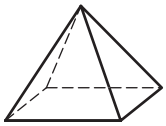
SESSION 1

2. Lucy traced each face of a three-dimensional shape. The faces she traced are shown.

Which three-dimensional shape did Lucy trace?

A

B



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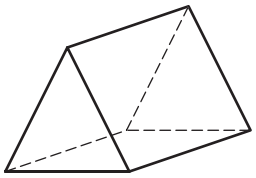

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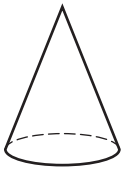


SESSION 1

3. Mr. Brown asked Susan to write a statistical question. This is the question Susan wrote.

> How many children does Mr. Brown have?

Did Susan write a statistical question?

A Yes, because the answer is a number.

B No, because the question is written for only one person to answer.

C Yes, because there will be variability in the data collected from this question.

D No, because there will be no variability in the data collected from this question.

4. Jerry is thinking of two rational numbers, r and s, such that r is located to the right of s on a number line. Jerry made these claims about r and s:

- Claim 1: $r > s$
- Claim 2: $|r| > |s|$

SESSION 1

Which statement **best** describes Jerry's claims?

A Only Claim 1 is true for all rational numbers.

B Only Claim 2 is true for all rational numbers.

C Both Claim 1 and Claim 2 are true for all rational numbers.

D Neither Claim 1 nor Claim 2 is true for all rational numbers.

5. Ben has d dollars. Sally has 3 dollars less than Ben.

Which expression represents the amount of money that Sally has?

A $d+3$

B $3-d$

C $d-3$

D $3d$

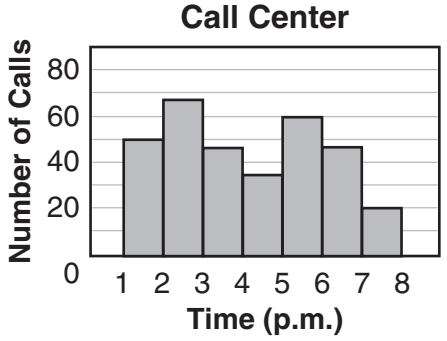
6. The number of customer calls received by a call center is shown in this table.

Call Center

Time (p.m.)	Number of Calls
1 to 2	50
2 to 3	68
3 to 4	48
4 to 5	35
5 to 6	60
6 to 7	48
7 to 8	20

Which graph **best** represents the data in the table?

A



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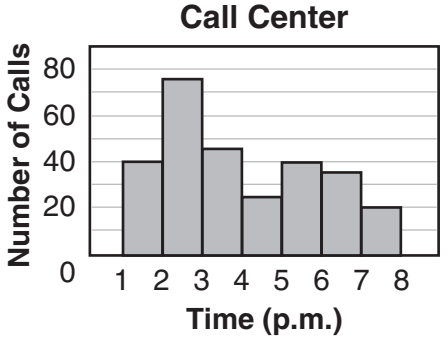

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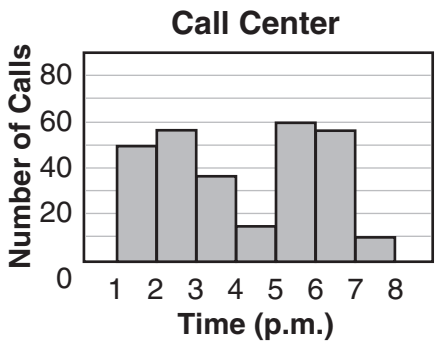

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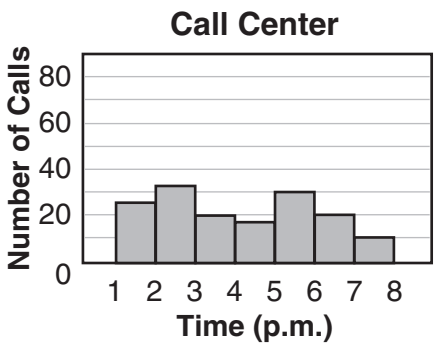


7. The table shows the relationship between the time in hours and the distance in miles that a train is traveling.

Time in Hours (*t*)	**Distance in Miles (*d*)**
2	150
4	300
6	450
8	600

Based on the table, which equation represents the relationship between the distance, *d*, and time, *t*?

A $d = 75 + t$

B $d = 75t$

C $d = 150 + t$

D $d = 150t$

SESSION 1

This question has four parts. Be sure to answer all parts of the question.

8. The table shows the prices of some camping gear Jan is buying.

Camping Gear Prices

Item	Price (in dollars)
Sleeping bag	$59.95
Tent	$89.75
Rope	$0.79 per foot
Hand warmers	$2.19 each

a. Jan buys a sleeping bag and some rope from a 100-foot roll. Write an expression, using a variable, to model his total cost. Explain what the variable represents.

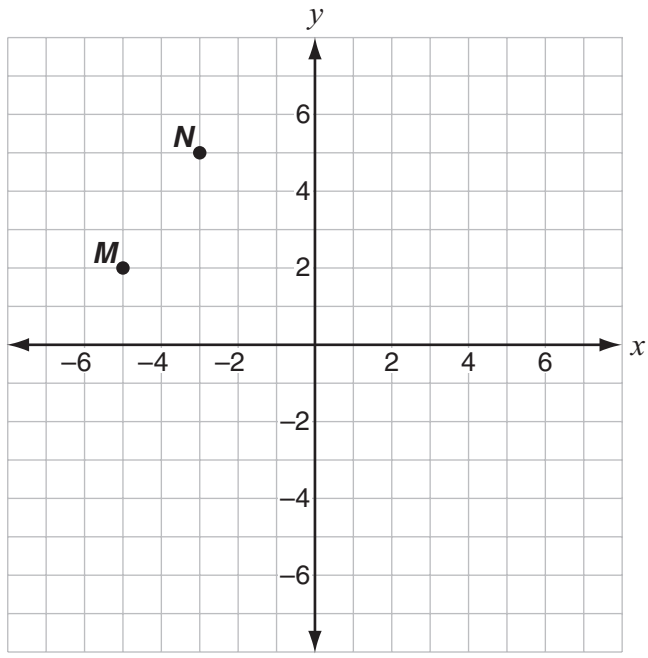
b. There are 100 hand warmers available at the store. Write an expression, using a different variable, to model the cost of buying some hand warmers. Explain what this variable represents.

SESSION 1

c. Describe the possible values for each of the variables you used.

d. Are there any possible values for one variable that are not possible for the other variable? Use words or numbers to explain your answer.

9. Vertex *P* of triangle *MNP* is located 2 units directly below vertex *N* on this coordinate plane.



SESSION 1

What are the coordinates of vertex *P*?

A $(-5, 3)$

B $(3, -5)$

C $(3, -3)$

D $(-3, 3)$

10. The perimeter of a rectangle is represented by this expression:

$2(3x+8+2x)$

Which expression also represents the perimeter of the rectangle?

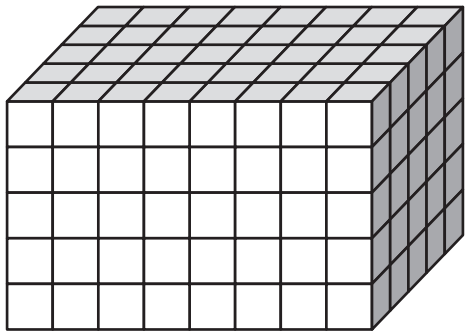
A $8x+8$

B $5x+10$

C $9x+16$

D $10x+16$

11. This right rectangular prism is packed with cubes.



Each cube has a side length of $\frac{1}{10}$ meter.

Which expression can be used to find the volume, in cubic meters, of the prism?

A $8 \times 5 \times 5$

B $\frac{1}{10} \times \frac{1}{10} \times \frac{1}{10}$

C $\frac{8}{10} \times \frac{5}{10} \times \frac{5}{10}$

D $8 \times \frac{5}{10} \times \frac{5}{10}$

SESSION 1

12. This list shows data values increasing in order.

33, 40, 40, 40, 40, 51, ? , 62 , 71, ?

Two data values are missing.

Which measures can be determined from the data without the missing numbers?

A the mean and the range

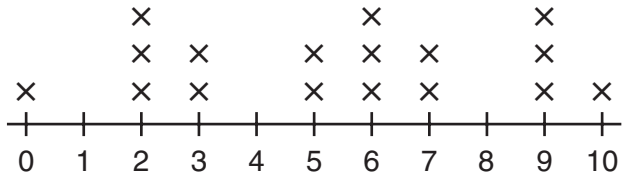
B the mode and the range

C the median and the mean

D the median and the mode

13. Rashaun surveyed 17 students to determine how often they ate cafeteria food for lunch during the last two weeks. He made this line plot to show the results.

Rashaun's Lunch Data



Which would be the **best** label for Rashaun to use on the number line?

A Number of Cafeteria Lunches

B Number of Students

C Number of Weeks

D Number of Minutes in Lunch Line

SESSION 1

This question has four parts. Be sure to answer all parts of the question.

14. An elevator travels above the ground to different floors in a building. It also travels below the ground to different floors of a parking garage. The bottom of the elevator starts at ground level.

A vertical number line will be used to show the locations, in feet above and feet below ground level, to which the elevator travels. The number line ranges from 150 to -60.

a. What does the number 0 represent on the number line?

b. What do the numbers 60 and -60 represent on the number line? Explain how you know.

Reese parked her car in the parking garage 30 feet below ground level. She takes the elevator up to a location 30 feet above ground level. Reese thinks that her car is farther from ground level than she is since her car is below the ground.

c. Is Reese's thinking correct? Explain how you know.

The bottom of the elevator is now 45 feet from ground level. Gary thinks one number can be plotted on the number line to show this distance. Stephanie thinks two numbers can be plotted.

SESSION 1

d. Who is correct, Gary or Stephanie? Explain how you know. In your explanation, include the number or numbers that show this distance.

15. Jasmine is painting her bedroom walls. The total area that needs to be painted is 480 square feet. Jasmine was able to paint 320 square feet in 4 hours.

How much longer will it take Jasmine to finish painting if she continues to paint at that same rate?

A 1 hour

B 2 hours

C 4 hours

D 6 hours

16. Vivian's basketball team scored these numbers of points in the first five games of the season.

27, 31, 27, 22, 40

Her team scored 27 points in the sixth game and 35 points in the seventh game.

Which measure is affected by including these two scores with the scores of the first five games?

A mean

B median

C mode

D range

17. Which expression shows $48+34$ as the product of one factor **and** the sum of two whole numbers with no common factors other than 1?

A $2(24+17)$

B $3(16+11)$

C $4(12+8)$

D $6(8+4)$

SESSION 1

18. Isabella has $\frac{7}{8}$ cup of barbecue sauce. She separates it into $\frac{1}{4}$-cup portions.

How many portions of sauce does Isabella have?

A $\frac{7}{2}$

B $\frac{1}{6}$

C $\frac{7}{32}$

D $\frac{32}{7}$

19. Which expressions have a sum of 6.12? Select the **two** expressions.

A $3.6 + 3.6$

B $6.1 + 0.2$

C $2.42 + 3.7$

D $2.11 + 4.1$

E $5.02 + 1.1$

20. Which problem could be solved by dividing $\frac{2}{3}$ by $\frac{1}{6}$?

A Lillie cuts $\frac{2}{3}$ of a pie into pieces. Each piece is $\frac{1}{6}$ of the total pie. How many pieces of pie does Lillie have?

SESSION 1

B Tucker cuts $\frac{2}{3}$ of a pizza into 6 slices. All the slices are the same size. What fraction of the whole pizza is each slice?

C Ethan has $\frac{2}{3}$ of a granola bar. He gives $\frac{1}{6}$ of the bar to his brother. How much of the granola bar does Ethan still have?

D Kaylinn has $\frac{2}{3}$ quart of milk. She pours $\frac{1}{6}$ of the milk into her cat's dish. What fraction of the milk does Kaylinn still have?

STOP

Mathematics Session 2

DIRECTIONS

Today you will take a test in mathematics. For this test, you will answer selected-response and constructed-response questions. Some of the questions may look different from test questions you have seen before, and some may ask about material that is new to you, but it is important to do your best. If you are not sure of the answer to a question, you should still try to answer it.
You MAY use a calculator to answer the questions in this session.

21. The highest point in New Mexico is Wheeler Peak at an altitude of 13,161 feet. Which statement can be used to describe a, the altitude, in feet, of any other location in New Mexico?

A $a > 13{,}161$

B $a \geq 13{,}161$

C $a \leq 13{,}161$

D $a < 13{,}161$

22. A school orders 720 calendars for a fundraiser. The total weight of the calendars is 390 pounds.

SESSION 2

What is the approximate unit weight in ounces per calendar?

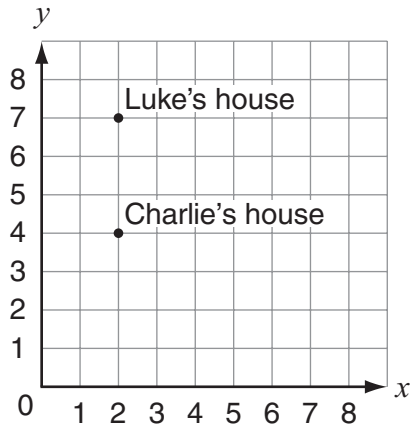
A 0.54 ounce per calendar

B 1.85 ounces per calendar

C 8.67 ounces per calendar

D 29.54 ounces per calendar

23. The locations of Charlie's and Luke's houses are plotted on the grid below.



Which expression can be used to find the distance, in units, between Charlie's house and Luke's house?

A $|4-7|$

B $|2-7|$

C $|2+7|$

D $|4+7|$

SESSION 2

24. A piece of wood with a length of $6\frac{1}{2}$ feet is cut into two smaller pieces. One of the smaller pieces has a length of $2\frac{1}{4}$ feet.

Which equation can be used to find x, the length, in feet, of the second smaller piece of wood?

A $2\frac{1}{4}x = 6\frac{1}{2}$

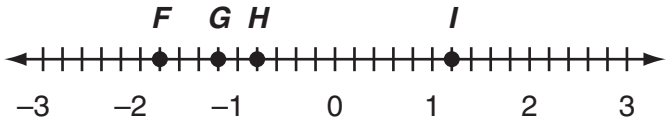
B $6\frac{1}{2}x = 2\frac{1}{4}$

C $x + 2\frac{1}{4} = 6\frac{1}{2}$

D $x - 6\frac{1}{2} = 2\frac{1}{4}$

SESSION 2

25. Points *F*, *G*, *H*, and *I* are plotted on this number line.



Which point represents -1.2 on the number line?

A point *F*

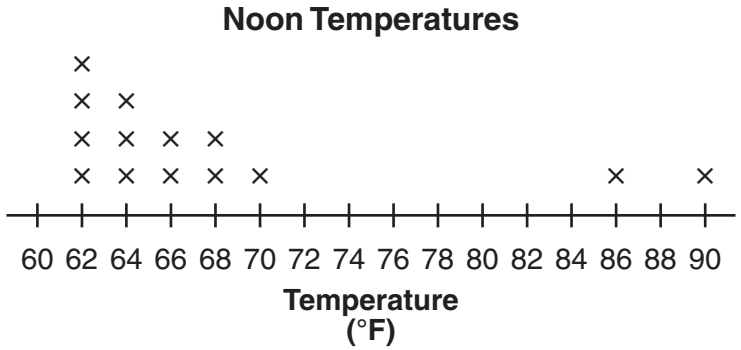
B point *G*

C point *H*

D point *I*

This question has two parts. Be sure to answer all parts of the question.

26. Miranda makes this line plot to show the noon temperatures, in degrees Fahrenheit, during the past two weeks.

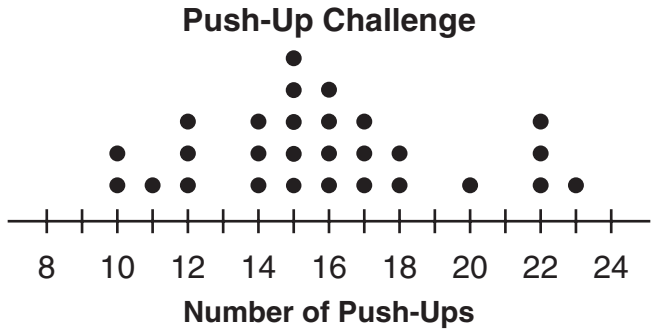


a. What is the median of the data? Show your work or explain how you know.

b. Which measure of center, the mean or the median, best represents the data in the line plot? Use the shape of the data distribution to explain how you know.

27. The dot plot shows the number of push-ups some students did during the push-up challenge at a school.

SESSION 2



Based on the dot plot, which statement is true?

A Seven students did more than 18 push-ups.

B Half the students did more than 15 push-ups.

C Thirty students participated in the push-up challenge.

D Half the students did between 14 and 16 push-ups.

28. A manager at a store sells bags of red apples and bags of green apples. These tables show the numbers of each type of apple in different numbers of bags.

Number of Bags	Number of Red Apples
3	24
6	48
9	72

Number of Bags	Number of Green Apples
2	18
4	36
8	72

Which statement **best** describes the ratio of red apples per bag to the ratio of green apples per bag?

A The ratios are the same because the greatest number of each type of apple is 72.

B The ratios cannot be compared because the numbers of bags and the numbers of apples are different.

C The ratio of red apples per bag is less than the ratio of green apples per bag because $\frac{24}{3}$ is less than $\frac{18}{2}$.

D The ratio of red apples per bag is greater than the ratio of green apples per bag because 24 is greater than 18.

SESSION 2

Use the information below to answer questions 29 and 30.

Diego rode his bicycle 12.6 miles in 1.5 hours.

29. Which equation shows the unit rate, r, in miles per hour, that Diego rode his bicycle?

A $1.5 \times 12.6 = r$

B $1.5 \div 12.6 = r$

C $12.6 + 1.5 = r$

D $12.6 \div 1.5 = r$

30. If Diego rides at the same average rate, how many miles will he ride in 2.5 hours?

A 15.1

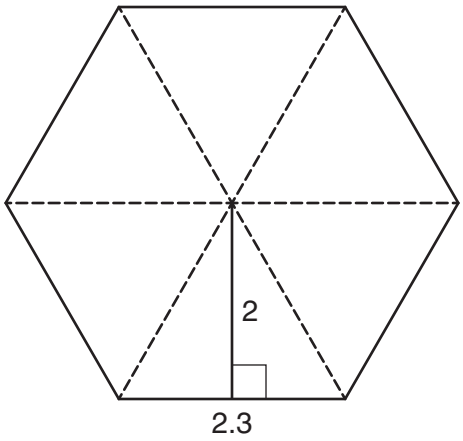
B 16.8

C 21.0

D 25.2

SESSION 2

31. This hexagon has six sides that are each approximately 2.3 units in length.



Which calculation shows the approximate area, in square units, of this hexagon?

A $6 \times \frac{1}{2}(2.3) \times \frac{1}{2}(2) = 6.9$

B $6 \times \frac{1}{2}(2.3 \times 2) = 13.8$

C $6 \times (2.3 + 2) = 25.8$

D $6 \times (2.3 \times 2) = 27.6$

SESSION 2

32. A 15-ounce mixture of water and juice contains 3 ounces of water.

What is the ratio of water to juice?

A 1:6

B 1:5

C 1:4

D 1:3

Use the information below to answer questions 33 and 34.

Mr. Nelson is shopping for fertilizer for his lawn. There are four brands of fertilizer that he is considering buying. Each brand of fertilizer is made up of different percentages by weight of nitrogen, phosphate, potash, and inert ingredients. The percentages for each brand of fertilizer are listed in this table, along with the size of the bag the fertilizer comes in, the area of lawn a bag of fertilizer will cover, and the price per bag.

Fertilizer Brand	Nitrogen (%)	Phosphate (%)	Potash (%)	Inert Ingredients (%)	Size of Bag (lb.)	Coverage Area (square feet)	Price ($)
A	30	0	4	66	40	15,000	45.00
B	28	0	4	68	39	15,000	39.97
C	28	0	3	69	43	15,000	48.57
D	29	0	5	66	34	15,000	32.97

33. Mr. Nelson wants to compare costs of the different brands of fertilizer. In one of his comparisons, he determines this ratio for each brand.

SESSION 2

$$\frac{\text{price}}{(\text{size of bag})(\text{percent nitrogen})}$$

What will Mr. Nelson's ratio determine?

A percent nitrogen per square foot

B dollars per pounds of nitrogen

C percent nitrogen per dollar

D dollars per square foot

34. Mr. Nelson wants to buy the brand of fertilizer that will provide the greatest amount of nitrogen per square foot of coverage area. Considering that one bag of each brand covers the same area, he chooses Brand A because it has the highest percentage of nitrogen. Did Mr. Nelson choose the brand that will provide the greatest amount of nitrogen per square foot?

A Yes, he was correct to choose the brand with the highest percentage of nitrogen.

B No, he should have chosen Brand B because it has the lesser weight of the two brands with the lowest percentage of nitrogen.

C No, he should have chosen Brand C because it has the greatest value of (size of bag)(percent nitrogen).

D No, he should have chosen Brand D because it has the greatest value of $\frac{\text{size of bag}}{\text{percent nitrogen}}$.

35. Cindy noticed that $\frac{8}{9}$ of the students in her math class were wearing jeans. A total of 24 students were wearing jeans.

SESSION 2

Which equation can be used to find *s*, the total number of students in Cindy's math class?

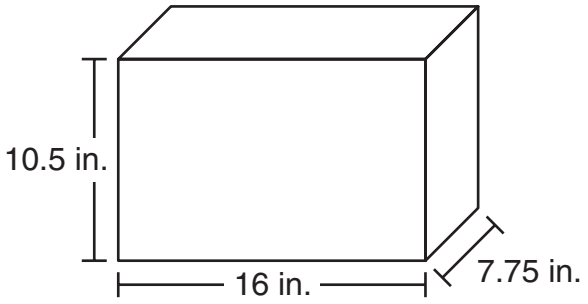
A $\frac{s}{24} = \frac{8}{9}$

B $\frac{8}{9}s = 24$

C $24s = \frac{8}{9}$

D $s = \frac{8}{9} \times 24$

36. Tyler's fish tank is shaped like a rectangular prism. The dimensions of the fish tank are shown.



Tyler adds water to the tank until the surface of the water is 2 inches below the top of the tank.

What is the volume, in cubic inches, of the water in the tank?

A 966

B 1,054

C 1,302

D 2,604

SESSION 2

This question has two parts. Be sure to answer all parts of the question.

37. On Jasper's farm, the ratio of cows to sheep is 4 : 1.

There are 120 cows on the farm.

a. How many sheep are on the farm?

b. What percent of the animals on the farm are sheep? Show your work or explain how you know.

38. Akeem describes the net of a triangular prism in this way:

"The net of a triangular prism has two square bases that are the same size and shape, and it has three triangular faces that connect the bases."

Is Akeem's description of the net of a triangular prism correct?

A yes, because triangular prisms have two bases and three faces

B yes, because triangular prisms have square bases and triangular faces

C no, because the net should have one triangular base and three triangular faces that meet at a single point at the top

D no, because the net should have two triangular bases that are the same size and shape and three rectangular faces that connect the bases

39. The shortest side of a triangle is x units long. The remaining two sides of the triangle are both 3 units longer than the shortest side.

Which expressions can be used to show the perimeter, in units, of the triangle? Select the **two** correct expressions.

A $3x+6$

B $3x+9$

C $3(x+3)$

D $x+x+x+3$

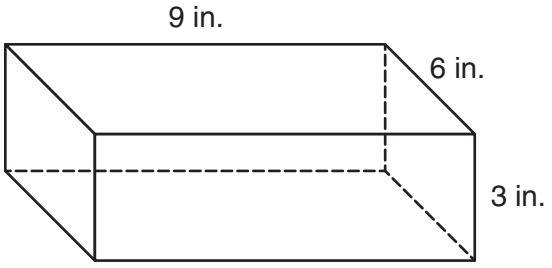
E $x+x+3+x+3$

SESSION 2

40. Rectangular Prism *W* has dimensions of $6\frac{2}{5}$ inches, 6 inches, and $2\frac{1}{2}$ inches.

Which rectangular prism has a volume equal to the volume of the Rectangular Prism *W*?

A



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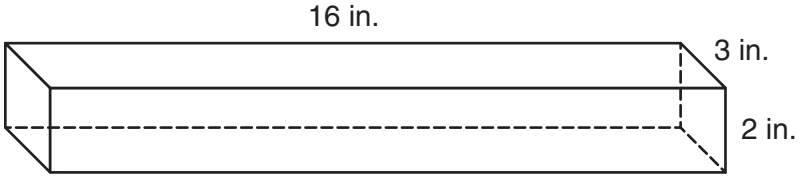

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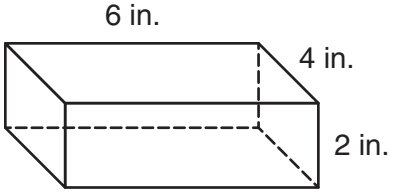

SESSION 2

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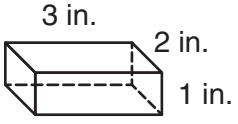

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PRACTICE TEST ANSWER KEY

Grade 6

Item Number	Key	Standards
1	B	6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.
2	B	6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.
3	D	6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*
4	A	6.NS.C.7 Understand ordering and absolute value of rational numbers.
5	C	6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers. 6.EE.A.2.A Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 - y.*
6	A	6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
7	B	6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.

Practice Test Answer Key • Grade 6 Math

Item Number	Key	Standards
8		6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
9	D	6.NS.C.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. 6.NS.C.6.C Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
10	D	6.EE.A.3 Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.*
11	C	6.G.A.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l\ w\ h$ and $V = b\ h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
12	D	6.SP.A.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
13	A	6.SP.B.5 Summarize numerical data sets in relation to their context, such as by: 6.SP.B.5.B Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
14		6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
15	B	6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. 6.RP.A.3.B Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*

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Item Number	Key	Standards
16	A	6.SP.B.5 Summarize numerical data sets in relation to their context, such as by: 6.SP.B.5.C Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
17	A	6.NS.B.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2).*
18	A	6.NS.A.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?.*
19	C,E	6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
20	A	6.NS.A.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?.*
21	D	6.EE.B.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
22	C	6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. 6.RP.A.3.D Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

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Item Number	Key	Standards
23	A	6.NS.C.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
24	C	6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.
25	B	6.NS.C.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. 6.NS.C.6.A Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(-3) = 3, and that 0 is its own opposite.
26		6.SP.B.5 Summarize numerical data sets in relation to their context, such as by: 6.SP.B.5.D Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.
27	B	6.SP.B.5 Summarize numerical data sets in relation to their context, such as by: 6.SP.B.5.A Reporting the number of observations.
28	C	6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. 6.RP.A.3.A Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
29	D	6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*[1] [1] Expectations for unit rates in this grade are limited to non-complex fractions.

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Item Number	Key	Standards
30	C	6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. 6.RP.A.3.B Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*
31	B	6.G.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
32	C	6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*
33	B	6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
34	C	6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
35	B	6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.
36	B	6.G.A.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l\ w\ h$ and $V = b\ h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
37		6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. 6.RP.A.3.C Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
38	D	6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

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Item Number	Key	Standards
39	A,E	6.EE.A.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.*.
40	B	6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Practice Test Answer Key • Grade 6 Math

#8

Response Processing:

Rubric Block: Author, Scorer, Test-constructor, Tutor
Concepts and Procedures Scoring Rubric

Score	Description
4	Student earns 4 points.
3	Student earns 3 points.
2	Student earns 2 points.
1	Student earns 1 point.
0	Student earns 0 points.
Blank	No response

Concepts and Procedures Training Notes:

Part a 1 point for correct answer, $59.95 + 0.79f$

Part b 1 point for correct answer, $2.19h$

Part c 1 point for correct answer, ***f* can be any number from 0 to 100 and h can be any whole number from 0 to 100**

Part d 1 point for correct answer, **the length of rope can be any number between 0 and 100 where the number of hand warmers must be a whole number**

Rubric Block: Author, Scorer, Test-constructor, Tutor
Mathematical Practices Scoring Rubric:

Score	Description
2	Student earns 2 points.
1	Student earns 1 point.
0	Student earns 0 points.
Blank	No response

Mathematical Practices Training Notes:

1 point for identifying important quantities in a practical situation (explains what the different variables represent)

1 point for interpreting the mathematical results in the context of the situation (understands that some variables can represent any number while others are limited to certain values, such as whole numbers)

Rubric Block: Author, Scorer, Test-constructor, Tutor
Exemplary Response:

a. $59.95 + 0.79f$; The variable f represents the number of feet of rope.

b. $2.19h$; The variable h represents the number of hand warmers bought.

c. Possible values of f can be any number from 0 to 100 and h can be any whole number from 0 to 100; possible values of h are any whole number from 0 to 100.

d. Yes, the length of rope can be any number between 0 and 100 where the number of hand warmers must be a whole number.

Practice Test Answer Key • Grade 6 Math

#14

Response Processing:

Rubric Block: ID: 1 Author, Scorer, Test-constructor, Tutor

Concepts and Procedures Scoring Rubric:

Score	Description
4	The student earns 4 points.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point.
0	The student earns 0 points.
Blank	No response

Concepts and Procedures Training Notes:

Part a	1 point	for correct answer, **0 represents ground level**, or equivalent
Part b	2 points	for correct answer, **60 feet above ground level and 60 feet below ground level**, with sufficient explanation to indicate understanding that positive and negative numbers are used together to describe quantities having opposite directions or values
	OR	
	1 point	for the correct answer with insufficient or no explanation shown
		or
		for correct strategy with incorrect or no answer
Part d	1 point	for correct answer, **45 and –45**

Rubric Block: Author, Scorer, Test-constructor, Tutor

Mathematical Practices Scoring Rubric:

Score	Description
2	The student earns 2 points.
1	The student earns 1 point.
0	The student earns 0 points.
Blank	No response

Mathematical Practices Training Notes:

1 point	for distinguishing correct logic from that which is flawed (knows that Reese's thinking is incorrect since 30 feet above ground level is the same distance as 30 feet below ground level)

1 point for making plausible arguments that take into account the context (knows that Stephanie is correct since a distance can be a positive number above ground level and also a negative number below ground level)

Rubric Block: Author, Scorer, Test-constructor, Tutor
Exemplary Response:

a. 0 represents ground level.

b. I know that the positive numbers represents feet above ground level and negative numbers represent feet below ground level. Therefore, 60 represents 60 feet above ground level and –60 represents 60 feet below ground level.

c. Reese's thinking is not correct since 30 feet above ground level is the same distance as 30 feet below ground level. The numbers 30 and –30 represent these distances, and both numbers are the same distance from 0, just in opposite directions.

d. Stephanie is correct, two numbers can be plotted. One number is 45 and the other number is –45. Both numbers represent the same distance from ground level; 45 represents 45 feet above ground level and –45 represents 45 feet below ground level.

Practice Test Answer Key • Grade 6 Math

#26

Response Processing:

Rubric Block: Author, Proctor, Scorer, Test-constructor, Tutor
Concepts and Procedures Scoring Rubric

Score	Description
2	The student earns 2 points.
1	The student earns 1 point.
0	The student earns 0 points.
Blank	No response

Concepts and Procedures Training Notes:

Part a — 2 points — for correct answer, **65**, with sufficient explanation or work to show understanding of how to find the measure of center given the shape of the data

OR

1 point — for correct answer with insufficient or no work or explanation

or

for appropriate strategy to show understanding of how to find the measure of center given the shape of the data with incorrect or no answer

Rubric Block: Author, Proctor, Scorer, Test-constructor, Tutor
Mathematical Practices Scoring Rubric

Score	Description
1	The student earns 1 point.
0	The student earns 0 points.
Blank	No response

Mathematical Practices Training Notes:

1 point — for abstracting general principles from repeated phenomena (student relates the shape of the data distribution in the line plot to explain why the median is a better measure of center for the data in part b)

Rubric Block: Author, Scorer, Test-constructor, Tutor
Exemplary Response:

a. There are 14 data values. The median is the average of the two middle values 64 and 66. So, the median is 65.

b. The data appears skewed. Most data values are at the lower temperatures on the line plot, and two data values are far from the majority of the data. As a result, the mean will likely give a value that is significantly larger than the typical data. Therefore, the median is the best measure of center.

Practice Test Answer Key • Grade 6 Math

#37

Response Processing:

Rubric Block: Author, Scorer, Test-constructor, Tutor
Concepts and Procedures Scoring Rubric

Score	Description
2	The student earns 2 points.
1	The student earns 1 point.
0	The student earns 0 points.
Blank	No response

Training Notes:

Part a 1 point for correct answer, **30**

Part b 1 point for correct answer, **20(%)**

Rubric Block: Author, Scorer, Test-constructor, Tutor
Mathematical Practices Scoring Rubric:

Score	Description
1	The student earns 1 point.
0	The student earns 0 points.
Blank	No response

Training Notes:

1 point for knowing and using different properties of operations and objects and showing understanding of the meaning of the quantities (knows 4:1 means 4 out of 5 and 1 out of 5 and uses that knowledge to find the percent of 1 out of 5).

Rubric Block: Author, Scorer, Test-constructor, Tutor
Exemplary Response:

a. 30

b. 20%. 1 out of every 5 animals is a sheep. $\frac{1}{5} = \frac{20}{100} = 20\%$