



NEVADA INSTRUCTIONAL MATERIALS

FOR THE
NEVADA ACADEMIC CONTENT STANDARDS FOR MATHEMATICS

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Grade 6

STUDENT WORKBOOK

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Introduction

This document represents the Phase III release of Nevada Instructional Materials. These released materials were developed in collaboration with Nevada educators, the Nevada Department of Education, and WestEd (a nonprofit research development and service agency).

These materials are intended for use in various guided instructional activities to support deep understanding of the Nevada Academic Content Standards (NVACS) for English Language Arts and mathematics based on Common Core. The Nevada Instructional Materials provide educators opportunities to investigate and explore the standards and tasks that are aligned to the standards. The Nevada educators involved in the development of these materials also developed “Teacher Tips” to assist in using these materials as an instructional resource. The Nevada Instructional Materials also provide educators opportunities to investigate and explore the standards and tasks that are aligned to the standards.

While these materials can provide students with practice in responding to a variety of assessment items, it is more important that they are used to help students deepen their understanding of the expectations embedded in the standards. If these instructional materials are used solely as an assessment practice activity, we highly recommend that educators go over each item with their students and evaluate each answer choice so that students can better understand the knowledge required to successfully complete each task.

Through rich classroom discussion around each item and the various answer choices or potential responses, educators can actively engage students in critical thinking, reasoning, and application of knowledge and skills, helping to ensure all students are ready for success in the 21st century.



Name: _____

Mathematics

Grade 6

This booklet contains mathematics questions for you to answer. There are four types of questions in this booklet: multiple-choice, selected-response (some of which are simulated technology-enhanced), short-answer, and written-response questions.

- For the multiple-choice questions you will be given four answer choices—A, B, C, and D. You are to select the correct answer from the four choices. Each question has only one correct answer.
- For simulated technology-enhanced questions, you will be required to perform the required task (e.g., filling in the blank(s), matching, graphing, completing tables).
- For other selected-response questions, you will be given different numbers of answer choices. You are to select ALL the correct answers from the choices. Each question has multiple correct answers.
- The short-answer questions and the written-response questions require you to give a written response to a question as indicated in the booklet.

You may use the rubrics below to help you do a good job when you are answering the short-answer questions and the written-response questions.

Two-Point Short Answer

Score	Description
2	Response: <ul style="list-style-type: none">• Demonstrates an understanding of the standard• Answers the question clearly and correctly• Includes all work to show steps taken to solve the problem and/or a correct and complete explanation
1	Response: <ul style="list-style-type: none">• Demonstrates a limited understanding of the standard• Answers part of the question correctly• Includes some work to show steps taken to solve the problem and/or a partially correct explanation
0	Response: <ul style="list-style-type: none">• Is not correct• Includes no answer and/or an insufficient (or no) explanation

Three-Point Extended-Response

Score	Description
3	Response: <ul style="list-style-type: none">• Demonstrates a thorough understanding of the standard• Answers all parts of the question clearly and correctly• Includes all work to show steps taken to solve the problem and/or a correct and complete explanation
2	Response: <ul style="list-style-type: none">• Demonstrates a general understanding of the standard• Answers most parts of the question correctly• Includes some work to show steps taken to solve the problem and/or a partially correct explanation
1	Response: <ul style="list-style-type: none">• Demonstrates a minimal understanding of the standard• Answers some part of the question• Includes minimal (or no) work to show steps taken to solve the problem and/or a minimal (or no) explanation
0	Response: <ul style="list-style-type: none">• Is not correct• Includes no answer and/or an insufficient (or no) explanation

Four-Point Extended-Response

Score	Description
4	Response: <ul style="list-style-type: none">• Demonstrates a thorough understanding of the standard• Answers all parts of the question clearly and correctly• Includes all work to show steps taken to solve the problem and/or a correct and complete explanation
3	Response: <ul style="list-style-type: none">• Demonstrates a general understanding of the standard• Answers most parts of the question correctly• Includes some work to show steps taken to solve the problem and/or a partially correct explanation
2	Response: <ul style="list-style-type: none">• Demonstrates a limited understanding of the standard• Answers some parts of the question correctly• Includes minimal work to show steps taken to solve the problem and/or a minimal explanation
1	Response: <ul style="list-style-type: none">• Demonstrates a minimal understanding of the standard• Answers some part of the question• Includes insufficient (or no) work to show steps taken to solve the problem and/or an insufficient (or no) explanation
0	Response: <ul style="list-style-type: none">• Is not correct• Includes no answer and/or an insufficient (or no) explanation



Ratios and Proportional Relationships

Grade 6
Student Workbook

1

All the jelly beans in a jar are described in the list below.

- 25 red jelly beans
- 34 yellow jelly beans
- 30 green jelly beans
- 36 orange jelly beans

Select true or false for **each** statement about the jelly beans in the jar.

A For every 1 red jelly bean in the jar, there are 5 jelly beans of other colors.

True False

B For every 17 yellow jelly beans in the jar, there are 18 orange jelly beans.

True False

C The ratio of green jelly beans in the jar to orange jelly beans in the jar is $\frac{5}{6}$.

True False

D The ratio of orange jelly beans in the jar to the total number of jelly beans in the jar is $\frac{36}{89}$.

True False

2

To drive 256 miles, a car uses 8 gallons of gas. The car uses gas at an average rate of

- A** 24 miles per gallon.
- B** 32 miles per gallon.
- C** 37 miles per gallon.
- D** 40 miles per gallon.

- 3** The ratio of the number of potatoes used to the number of carrots used is the same in each number of pots of stew that Mrs. Lee makes. The table below shows this ratio when 4 pots of stew are made.

Mrs. Lee's Stew

Number of Pots of Stew	Number of Potatoes	Number of Carrots
1		
2		
3		
4	12	16
5		
6		

Based on the ratio shown in the table, complete the table to include the number of potatoes and the number of carrots in each number of pots of stew that Mrs. Lee makes.

- 4** A minor league baseball team won 75% of the games the team played during a season. The team won 108 games. What is the total number of games the team played during the season? Write the answer in the blank below.

_____ games

- 5** Jerry is cutting pieces of ribbon for an art project.
- Each piece of ribbon must be exactly 7 inches long.
 - He has 2 spools of ribbon.
 - Each spool holds 20 yards of ribbon.

What is the **greatest** number of 7-inch pieces Jerry can cut from the 2 spools of ribbon?

- A 68 pieces
- B 102 pieces
- C 204 pieces
- D 206 pieces

7

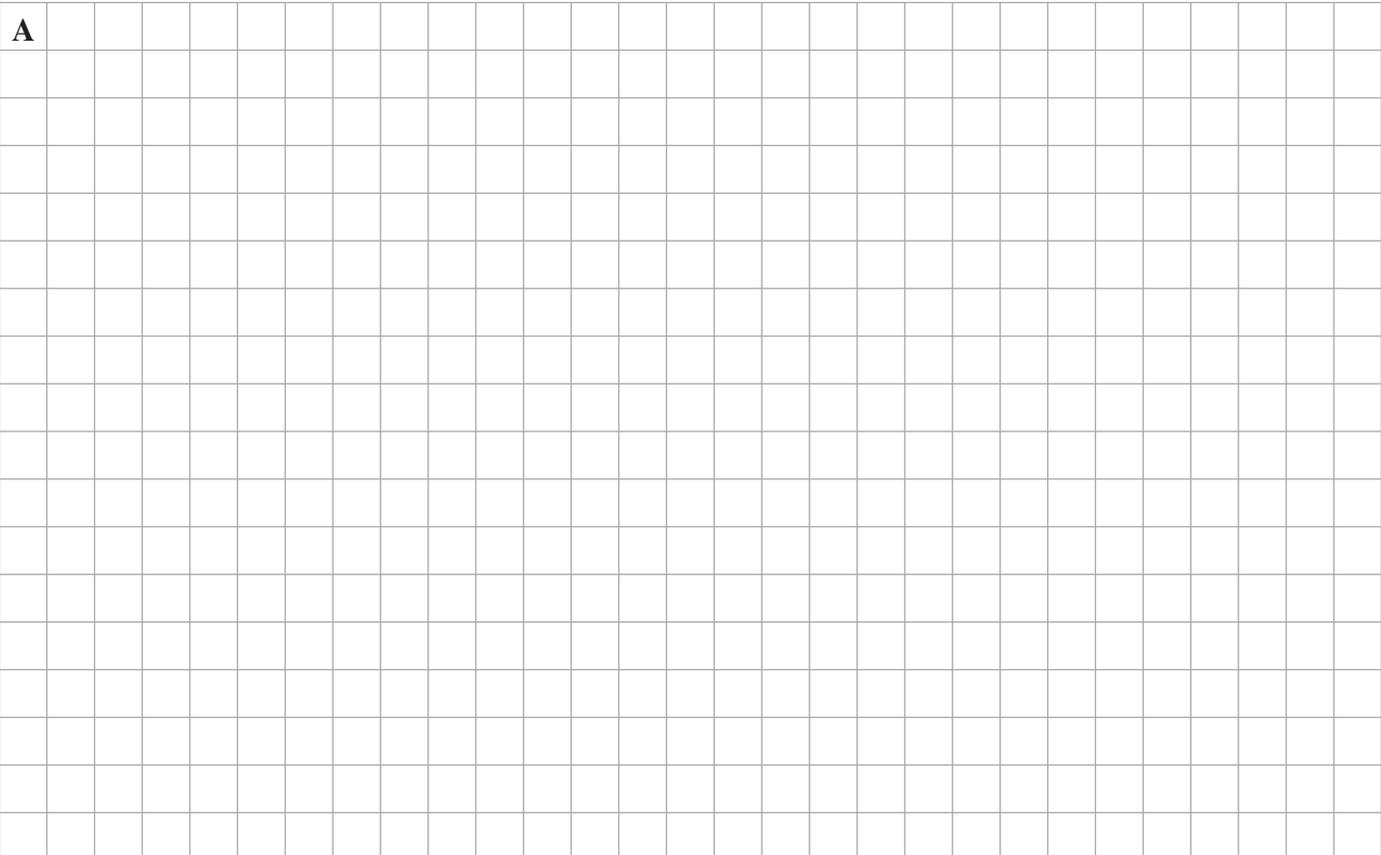
Darlene is running a race for charity. During the entire race, she maintains an average running rate of 3.2 kilometers per 20 minutes.

- A** Darlene finishes the race in 3,750 seconds. What is the total number of meters Darlene runs during the race? Show your work or explain your thinking.
- B** The list below shows the amounts of money Darlene could earn for the charity, based on the amount of time it takes her to finish the race.
- \$400.00 for finishing in less than 1 hour
 - \$300.00 for finishing from 1 hour to 1.5 hours
 - \$200.00 for finishing in more than 1.5 hours

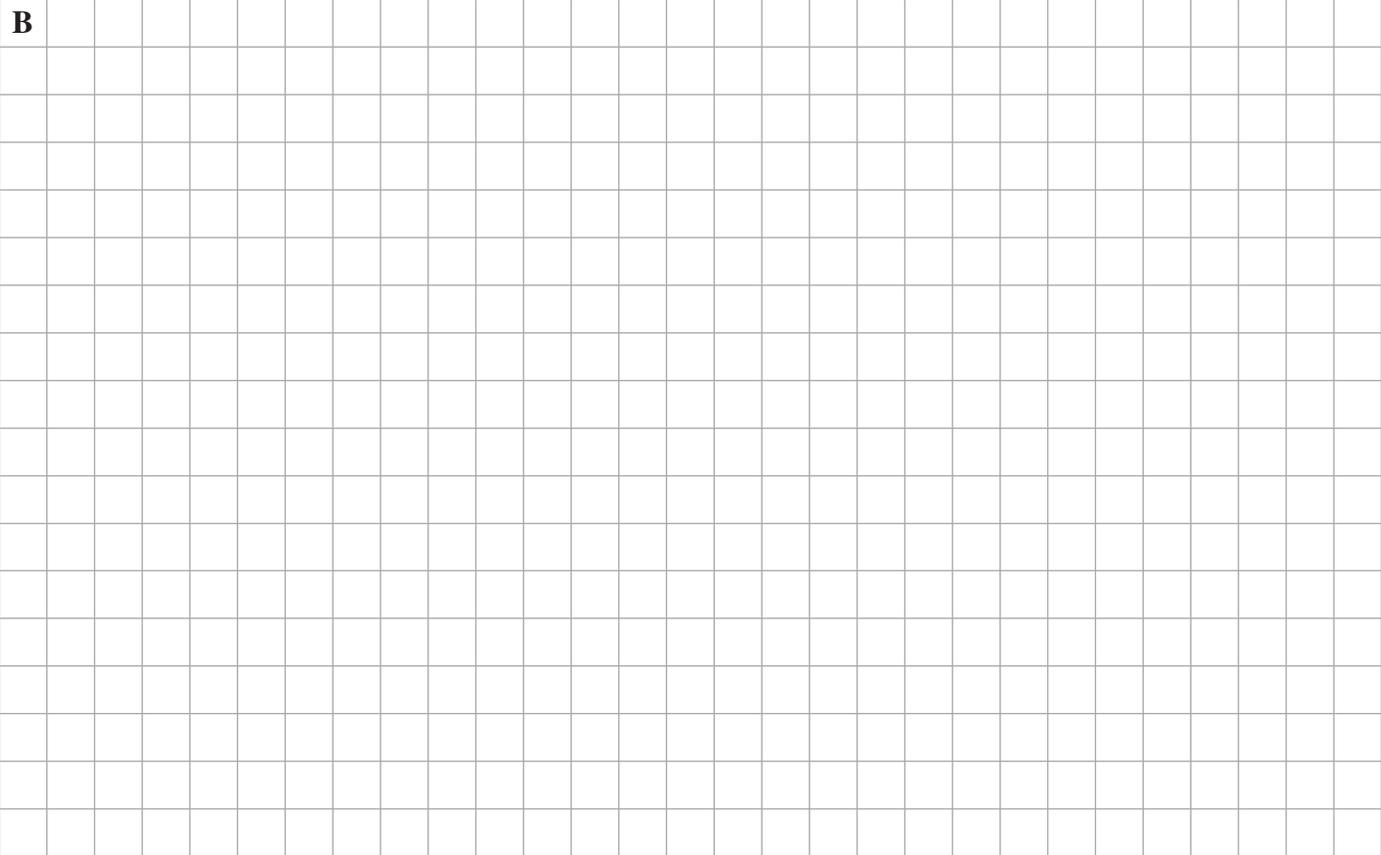
Explain why Darlene earns an average of \$4.80 for the charity each minute she runs during the race. Show your work.

Write your response on the grid on the next page.

A



B



STOP



The Number System

Grade 6
Student Workbook

- 8** Laura has $7\frac{2}{3}$ yards of wire to use for making necklaces. Each necklace uses $\frac{2}{3}$ yard of wire. What is the **greatest** number of necklaces Laura can make? Write the answer in the blank below.

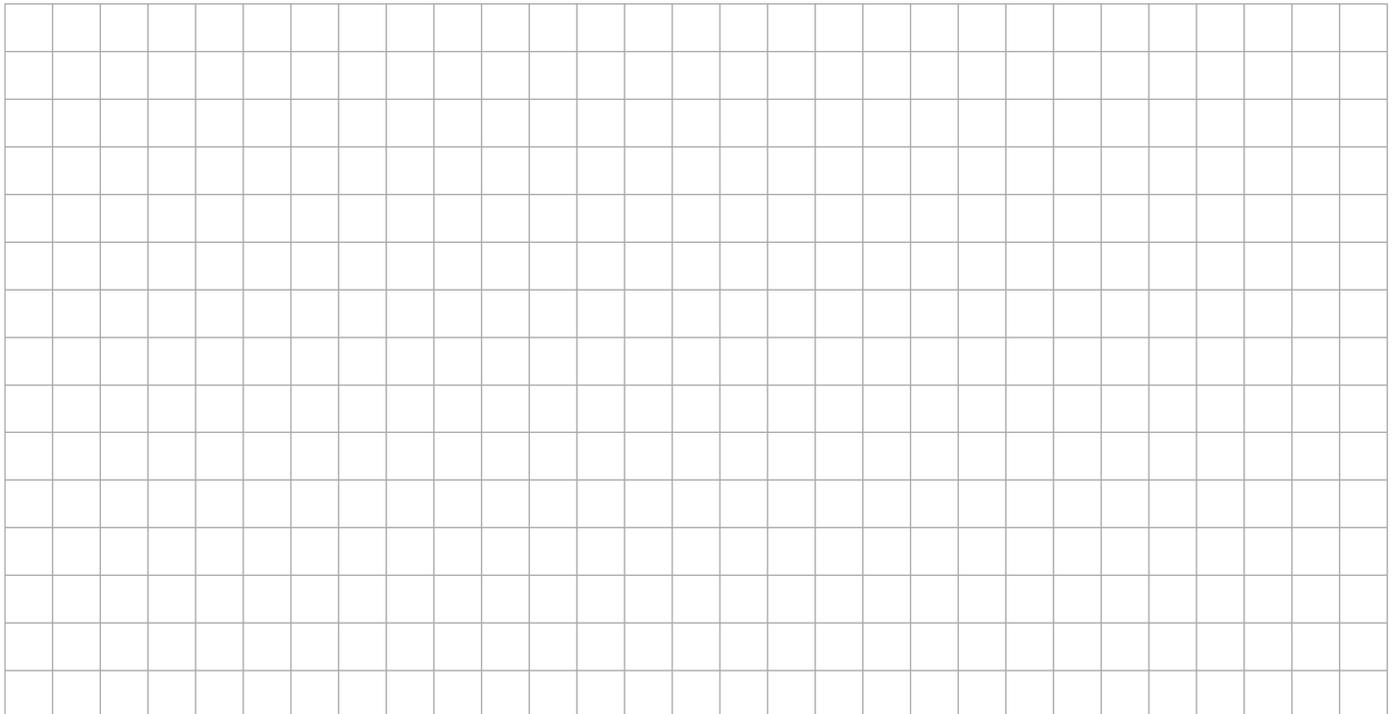
_____ necklaces

- 9** José is helping some children paint shelves. He has $\frac{3}{4}$ gallon of paint. He will give each child $\frac{1}{8}$ gallon of paint to use on the shelves. What is the greatest number of children that José can give paint to?

Use the rectangle shown below to make a visual model to explain your answer. More lines can be drawn on the rectangle, and the rectangle can be shaded.



Write your response on the grid below.



10

Andy, LaTasha, and Shannon go to a farm to pick cherries. Together, they pick $8\frac{1}{2}$ pounds of cherries. They will fill bags with all the cherries they pick until each bag weighs $\frac{3}{4}$ pound.

- A** Each of the 3 friends eats an equal amount of the number of **pounds** of cherries remaining after filling the greatest possible number of bags. How many pounds of cherries does each friend eat? Show your work or explain your thinking.
- B** The weight of each cherry is about $\frac{1}{64}$ pound. Explain why the 3 friends **most** likely ate different numbers of cherries. As part of your explanation, list a number of cherries that each friend could have eaten.

Write your response on the grid on the next page.

11What is $44,250 \div 17$?

quotient: _____

remainder: _____

12Indicate whether **each** equation below is true or false.

- A $10.2 + 5.62 = 15.82$ True False
- B $17.62 - 12.89 = 5.27$ True False
- C $44.44 \div 0.22 = 2.2$ True False
- D $6.21 \times 70.5 = 437.805$ True False

- 13** There are 20 tokens and 12 cards in a game box. Each person who plays the game receives an equal number of tokens and an equal number of cards. What is the **greatest** number of people who can play the game at the same time, using all the tokens and cards in the box?

A 4 people
 B 5 people
 C 6 people
 D 8 people

- 14** Which pairs of numbers have 9 as their greatest common factor (GCF)? Select **all** that apply.

A 18 and 45
 B 27 and 54
 C 36 and 90
 D 45 and 72
 E 54 and 81

- 15** The top of a diving board is 5 feet above the surface of the water in a pool. The depth of the water in the entire pool is 15 feet. The number 5 can be used to describe the location of the diving board relative to the surface of the water.

A statement and two tables are shown below. Circle a number from each table to complete the statement and make it true.

The surface of the water in the pool can

be described by the number , and the

Option 1

bottom of the pool can be described by the

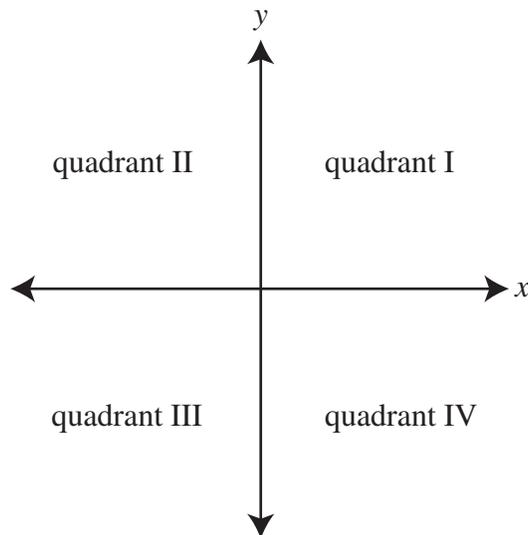
number .

Option 2

Option 1	Option 2
-5	-20
0	-15
10	0
15	15

16

The quadrants of a coordinate plane are shown in the diagram below.

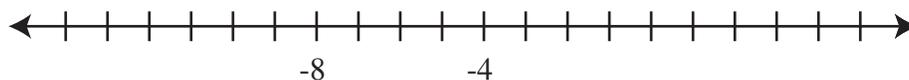


In which quadrant is the point $(-6, 8)$ located?

- A quadrant I
- B quadrant II
- C quadrant III
- D quadrant IV

17

A number line is shown below.



Graph the points listed below on the number line and label each point with the correct letter.

- Point *A* is located at 3 .
- Point *B* is located at -5 .
- Point *C* is located at -1 .
- Point *D* is located at -12 .

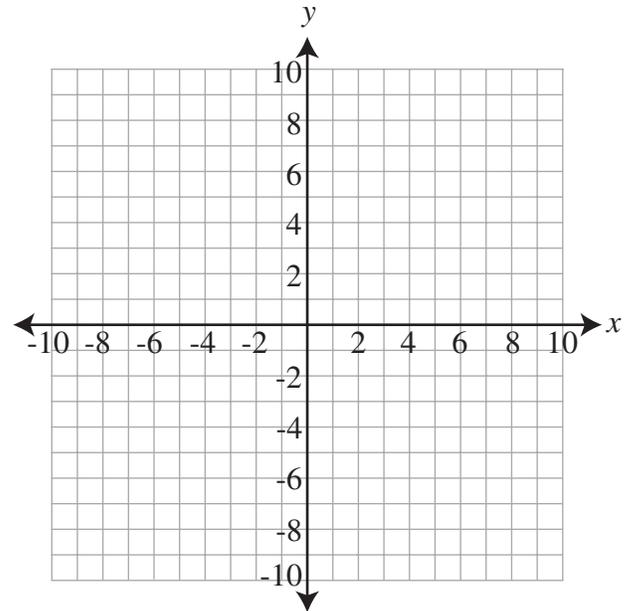
- 18** A bank account balance can be represented by a positive number or a negative number. Which comparison of two bank account balances is true?

- A $-\$150 > \155
 B $-\$150 > -\155
 C $-\$150 > \145
 D $-\$150 > -\145

- 19** George has a debt greater than \$40 . Which of these could be George's debt? Select **all** that apply.

- A \$55
 B \$49
 C \$28
 D -\$15
 E -\$41
 F -\$63

- 20** Andre uses the coordinate plane below to plan his vegetable garden.



Andre will put a tomato plant at $(-2, 6)$. He will put a bean plant at least 2 units away from the tomato plant, along a grid line.

On the coordinate plane, graph all the ordered pairs that represent the **closest** locations at which Andre could put the bean plant.

21

Point P , point Q , and point R are graphed on a coordinate plane. Some information about the points is listed below.

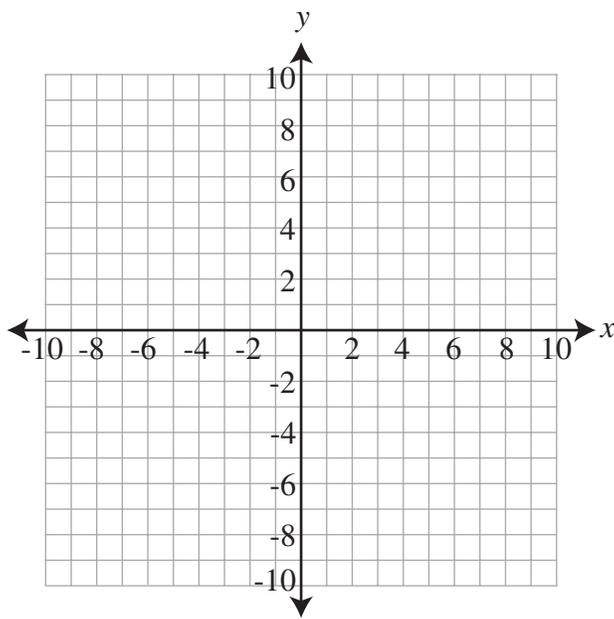
- Point P is located at $(4, 3)$.
- Point Q is located at $(-5, -2)$.
- Point R has the same x -coordinate as point P .
- The absolute value expression $|-5| + |4|$ describes the distance along a grid line, in units, from point Q to point R .

What is the location of point R ? Explain your thinking.

Write your response on the grid below.



Graph point P , point Q , and point R on the coordinate plane below and label each point.

**STOP**



Expressions and Equations

Grade 6
Student Workbook

22 Which expressions have a value that is **less** than 30 ? Select **all** that apply.

A $2^3 + [5(4-3)]^2$

B $[(2^3 + 5) + (4-3)^2]$

C $2^3 + 5(4-3)^2$

D $[2^3 + 5(4-3)]^2$

E $2^3 + (5 \cdot 4) - 3^2$

23 Which expression describes subtracting $\frac{1}{4}$ from the product of $\frac{3}{8}$ and a number (x)?

A $\frac{1}{8}x$

B $\frac{1}{4} - \frac{3}{8}x$

C $\frac{1}{4}x - \frac{3}{8}$

D $\frac{3}{8}x - \frac{1}{4}$

- 25** Match each expression in Column A to its equivalent expression in Column B by drawing a line from the expression in Column A to the expression in Column B that is equivalent.

Column A

$(5x + 2y) + 6$

$(x + y) + (x + y) + (x + 1) + (x + 1) + (x + 1)$

$6 + 5(2y + x)$

$5x + 2(2y + 3)$

Column B

$5(x + 2y) + 6$

$(5x + 4y) + 6$

$5x + 2(y + 3)$

$(5x + 2y) + 3$

- 26** A set of numbers is shown below.

$\{0, 2, 3, 3.2, 4, 6.4, 10\}$

Which numbers in the set make the inequality $5x + 1 > 17$ true? Select **all** that apply.

- A** 0
- B** 2
- C** 3
- D** 3.2
- E** 4
- F** 6.4
- G** 10

- 27** Eric has n pencils. Lana has 6 fewer than twice as many pencils as Eric has. Which

expression describes the number of pencils

Lana has remaining after she gives away

$\frac{1}{4}$ of the pencils she has?

- A** $\frac{1}{4}(6 - 2n)$
- B** $\frac{1}{4}(2n - 6)$
- C** $\frac{3}{4}(6 - 2n)$
- D** $\frac{3}{4}(2n - 6)$

28

Marcus earns \$50.00 washing cars. From his earnings, Marcus gives his parents \$9.45 that he borrowed to buy supplies. His profit is the amount remaining. Marcus writes an equation to determine his profit (p), in dollars. He correctly solves his equation. Which of these show both the equation Marcus could have used and his solution? Select **all** that apply.

A $50.00 = 9.45 + p$ and $p = 59.45$

B $9.45 = 50.00 - p$ and $p = 40.55$

C $p = 50.00 - 9.45$ and $p = 40.55$

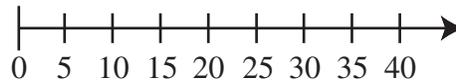
D $p - 9.45 = 50.00$ and $p = 40.55$

E $50.00 + p = 9.45$ and $p = 41.55$

29

Bobbi and Pat will combine their money and buy a gift for their friend. Bobbi wants to contribute less than \$20 toward the gift.

- A Using the number line on the next page, create a graph that shows all the possible amounts of money, in dollars, that Bobbi could contribute toward the gift.



Pat wants to contribute more than \$12 toward the gift.

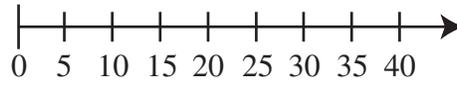
Write an inequality that shows all the possible amounts of money (x), in dollars, that Pat could contribute toward the gift.

Bobbi and Pat might not contribute the same amount toward the gift, but they will each contribute some amount.

- B Explain why it is possible to determine the **least** total amount they could contribute toward the gift but not possible to determine the **greatest** total amount they could contribute toward the gift.

Write your response on the grid on the next page.

A



B

30

A store sells peaches by the pound. Lynette buys 2 pounds of peaches at the store for \$2.60 .

- A** Write an equation that describes the relationship between the number of pounds of peaches bought at the store and the total cost, in dollars, of the peaches. Use n to represent the independent variable and d to represent the dependent variable in the equation.
- B** During a sale at the store, a customer can buy 3 pounds of peaches at the regular price. Any additional number of pounds of peaches bought costs half the regular price. Explain how the **average** price per pound of peaches changes as the number of pounds bought during the sale increases. Show your work to support your explanation.

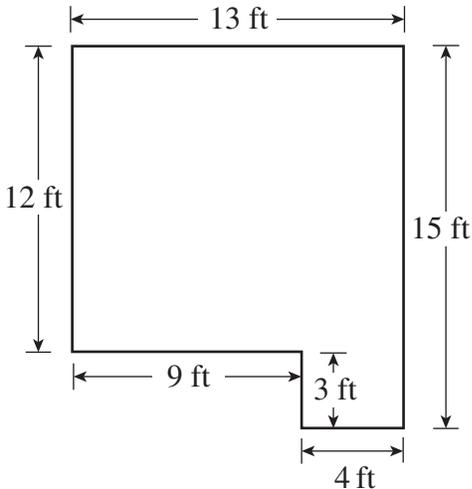
Write your response on the grid on the next page.



Geometry

Grade 6 Student Workbook

- 31** The dimensions of the floor in a room in Sheila's house are shown in the diagram below.



Which expressions could Sheila use to determine the total area, in square feet, of the floor in the room? Select **all** that apply.

- A $(12 \cdot 13) + (3 \cdot 4)$
- B $(12 \cdot 9) + (15 \cdot 4)$
- C $(12 \cdot 9) + (12 \cdot 4)$
- D $(15 \cdot 13) - (3 \cdot 4)$
- E $(15 \cdot 13) - (3 \cdot 9)$

- 32** Ernie is using two boxes shaped like rectangular prisms. The boxes are described below.

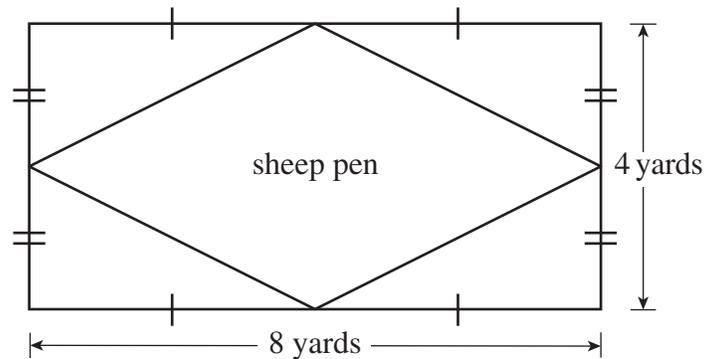
- The dimensions of box A are $10\frac{1}{2}$ in by $10\frac{1}{2}$ in by $15\frac{1}{2}$ in.
- The area of the base of box B is $98\frac{1}{4}$ in². The height of the box is $10\frac{1}{2}$ in.

What is the difference in the volumes of the two boxes? Write the answer in the blank below.

_____ in³

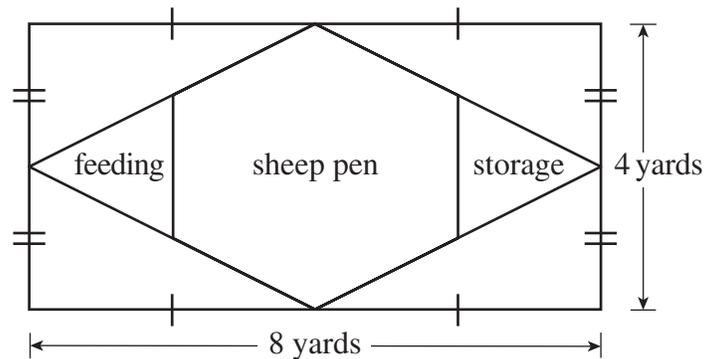
33

Mr. Danton is a farmer who owns sheep. In a rectangular area of his farm he has a sheep pen that is shaped like a rhombus, as pictured below.



A What is the area, in square yards, of the sheep pen? Show your work or explain your thinking.

Mr. Danton decides that he will use two triangular sections at either end of the sheep pen for feeding and storage, as pictured below. Each section will have a base length of 2 yards and a height of 2 yards.

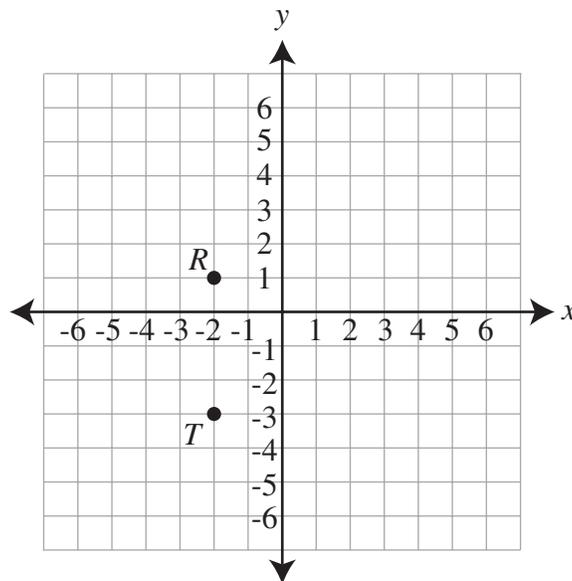


B Explain why the area of the pen remaining for the sheep must be 3 times as great as the total area Mr. Danton will use for feeding and storage.

Write your response on the grid on the next page.

35

Point R and point T are shown on the coordinate plane below.

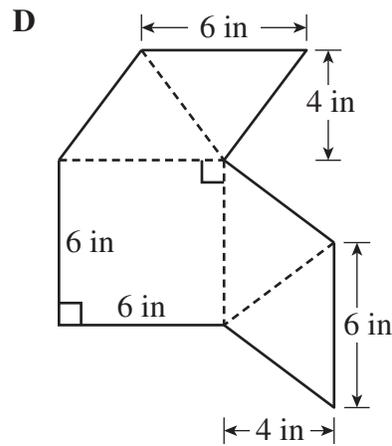
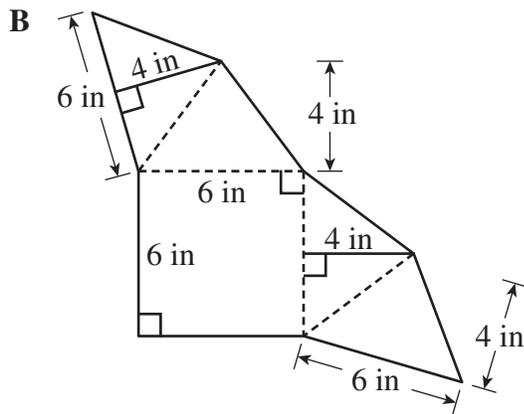
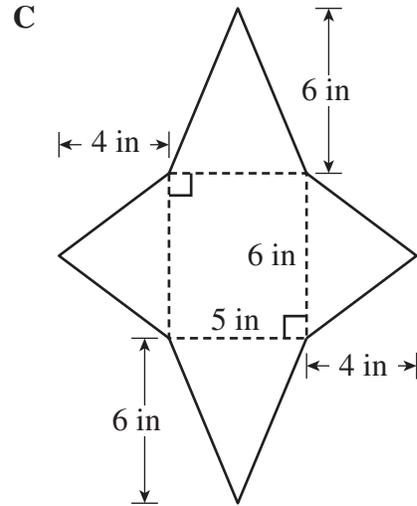
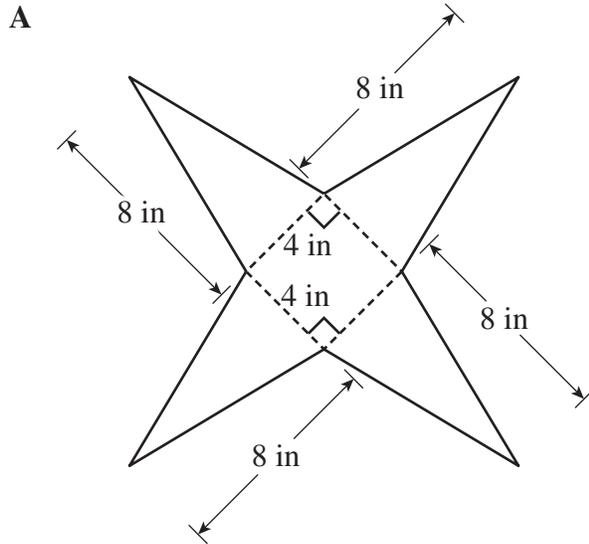


When point S is graphed on the coordinate plane, right triangle RST is formed. The area of triangle RST is 16 square units.

Graph one possible location of point S on the coordinate plane, and connect all 3 points with line segments to form right triangle RST .

36

Which net could be folded along the dashed line segments to create a square pyramid with a surface area of 84 square inches?





Statistics and Probability

Grade 6
Student Workbook

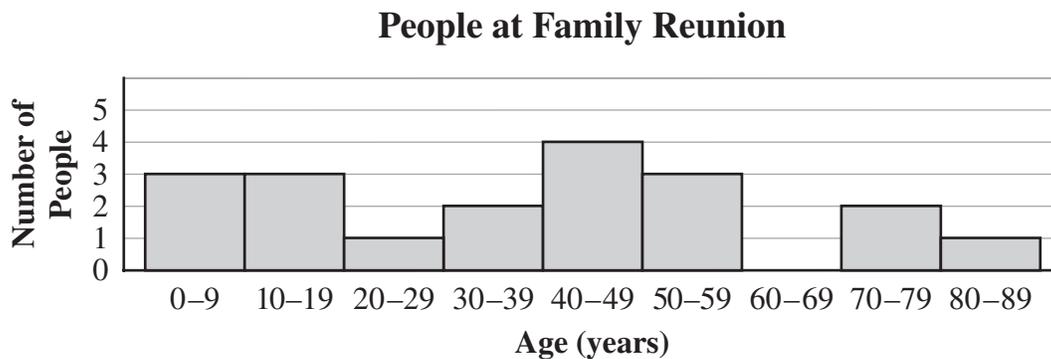
38

Which of these are **best** considered to be statistical questions? Select **all** that apply.

- A How many legs does a dog have?
- B How many minutes of exercise does a dog need each day?
- C How many students in a school own dogs?
- D Which types of dogs are owned by the students in a school?
- E What is the age of each dog owned by a student in a school?

39

The histogram below represents the distribution of the ages, in years, of all the people at a family reunion.



Which statement **best** describes the overall shape of the distribution?

- A There is a central gap in the data, and the data are symmetrical about that gap.
- B There is a central peak in the data, and the data are symmetrical about that peak.
- C There is a central gap in the data, but the data are not symmetrical about that gap.
- D There is a central peak in the data, but the data are not symmetrical about that peak.

40

Naomi travels to school by walking or riding a bike. The number of minutes it took Naomi to travel to school each day last week is shown below.

5 14 15 11 15

A statement and three tables are shown below. Circle one option from each table to complete the statement.

Naomi uses the of the data to describe how the values vary with a single number. This number is , and it represents a measure of for the data.

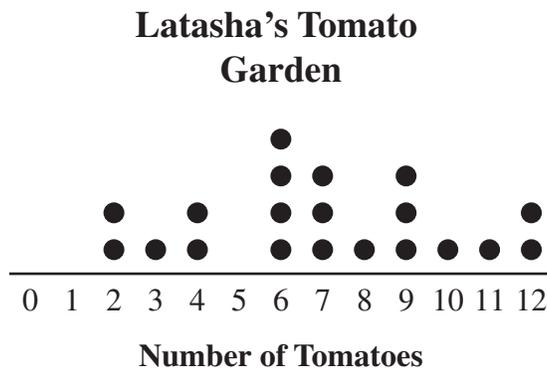
Option 1
mean
median
interquartile range
mean absolute deviation

Option 2
3.2
4
12
14

Option 3
center
variability

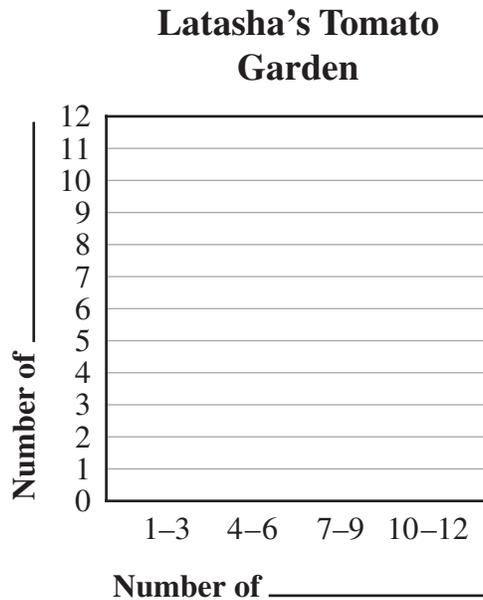
41

The dot plot below shows the number of tomatoes growing on each plant in Latasha’s tomato garden.



Key
● = 1 plant

Use the information shown in the dot plot to complete the histogram below. Be sure to complete the labels on the axes of the histogram.

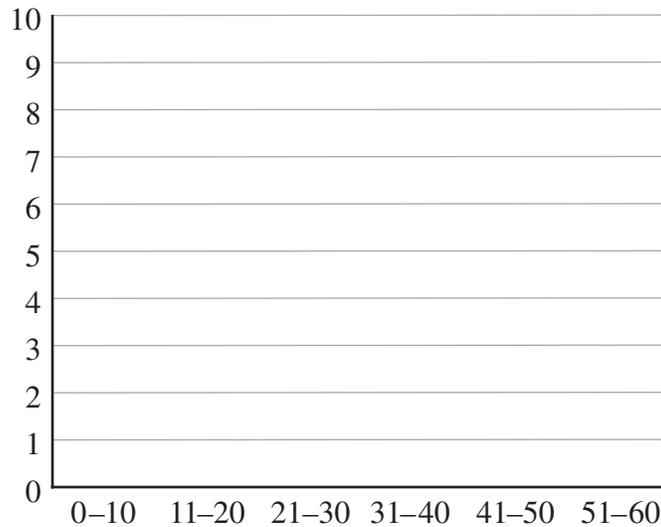


42

Cara surveyed each teacher in her school about his or her average commute time, in minutes, from home to school. The data she recorded are listed below.

7 18 9 10 24 49 8 10 15 57 17
15 9 54 20 26 5 28 13 30 52 8

- A** Using the axes and scales on the next page, create a histogram that represents the teachers' average commute times. Be sure to include a title and completely label both axes.



- B** Without doing any calculations, explain why the **mean** of the data and the **median** of the data are likely to be located within different ranges on the horizontal scale.

Write your response on the grid on the next page.

43

The table below shows information about the number of pets owned by 9 of 10 students.

Pets Owned

Student	Number of Pets Owned	Deviation from Mean
Abby	1	-1
Bill	0	-2
Carlos	2	0
Donna	2	0
Erin	2	0
Frank	3	1
Gary	1	-1
Hannah	2	0
Irene	2	0
Jacob		

Use the information in the table to determine the number of pets owned by Jacob and the deviation of that number from the **mean** number of pets owned by all 10 students. Write the answers in the table.

What is the **mean absolute deviation** of the number of pets owned by all 10 students? Write the answer in the blank below.



Dale A.R. Erquiaga

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Office of Assessment, Program Accountability, and Curriculum

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