Nevada Ready!

Nevada Instructional Materials

for the

Nevada Academic Content Standards for Mathematics

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Grade 8

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.

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Name: _____

Mathematics
Grade 8

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: • 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: • 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: • Is not correct • Includes no answer and/or an insufficient (or no) explanation

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Three-Point Extended-Response

Score	Description
3	Response: • 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: • 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: • 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: • Is not correct • Includes no answer and/or an insufficient (or no) explanation

Four-Point Extended-Response

Score	Description
4	Response: • 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: • 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: • 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: • 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: • Is not correct • Includes no answer and/or an insufficient (or no) explanation

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The Number System

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1 Which numbers are rational? Select **all** that apply.

- ☐ **A** $\sqrt{2}$
- ☐ **B** $\frac{3}{4}$
- ☐ **C** 3.14
- ☐ **D** $4.\overline{5}$
- ☐ **E** $\frac{\sqrt{5}}{8}$

2 A set of irrational numbers is shown below.

$$\mathbf{2\sqrt{3}} \qquad \frac{\sqrt{28}}{4} \qquad \sqrt{\frac{54}{3}} \qquad \frac{16\pi}{5}$$

Polly selects the two numbers with a value between 3 and 5 from the set. Which inequality correctly compares the two numbers Polly selects?

A $2\sqrt{3} < \frac{16\pi}{5}$

B $\frac{\sqrt{28}}{4} < \frac{16\pi}{5}$

C $2\sqrt{3} < \sqrt{\frac{54}{3}}$

D $\frac{\sqrt{28}}{4} < \sqrt{\frac{54}{3}}$

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3 Two expressions are shown below.

$$10\sqrt{15} \qquad 15\sqrt{10}$$

Write an inequality that compares the two expressions. Explain why the inequality is correct. As part of the explanation, determine approximately how much greater one expression is than the other.

Write your response on the grid below.

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Expressions and Equations

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4 Which expression is equivalent to $\left(\frac{3^7}{3^{-12}}\right)\left(3^{-4}\right)$?

A $\frac{1}{3^9}$

B $\frac{1}{3}$

C 3^{15}

D 3^{16}

5 A list of numbers is shown below.

2 3 4 5 6 7 8 9

Write a number from the list in the blank in each equation to make the equation true. Some numbers from the list may not be used.

A $\sqrt{49}$ = _____

B $\sqrt[3]{64}$ = _____

C $\sqrt{81}$ = _____

D $\sqrt[3]{8}$ = _____

E $\sqrt[3]{27}$ = _____

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6 A skin cell measures 3×10^{-5} meter in length. Which comparisons are true? Select **all** that apply.

- ☐ **A** The length of a type of bacteria measuring 5×10^{-7} meter is more than 100 times as great as the length of the skin cell.
- ☐ **B** The length of a red blood cell measuring 8×10^{-6} meter is $\frac{1}{10}$ as great as the length of the skin cell.
- ☐ **C** The width of a grain of rice measuring 2.4×10^{-3} meter is 80 times as great as the length of the skin cell.
- ☐ **D** The length of a coffee bean measuring 1.2×10^{-2} meter is 400 times as great as the length of the skin cell.
- ☐ **E** The thickness of a piece of paper measuring 1×10^{-4} meter is more than 30 times as great as the length of the skin cell.

7 Some information about particles of dust is listed below.

- The average mass of a particle of dust is 7.5×10^{-10} kg.
- There are approximately 35,000,000 particles of dust in 1 cubic foot of city air.
- There are 1,728 cubic inches in a cubic foot.

City air fills a cube with sides 3 inches long. What is the approximate mass of the particles of dust in the cube? Using scientific notation, write the answer in the blank below.

_____ kg

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8 Two distances in the solar system are described by the values in the statements below.

- The distance from Earth to the moon is approximately 2.4×10^5 miles.
- The distance from Earth to the sun is approximately 9.3×10^7 miles.

Greg performs an operation with these values and gets a correct result of 387.5 .

A Identify the operation (addition, subtraction, multiplication, or division) that Greg performed with these values to get a result of 387.5 . Show your work to demonstrate that Greg performed the operation correctly.

Greg then states that the distance from Earth to the sun is approximately 387.5 miles greater than the distance from Earth to the moon, but Greg's statement is incorrect.

B Greg's statement is incorrect because the distance from Earth to the sun is **not** approximately 387.5 miles greater than the distance from Earth to the moon. Based on the operation Greg performed, what does the result of 387.5 represent? Explain your thinking.

Write your response on the grid on the next page.

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A

B

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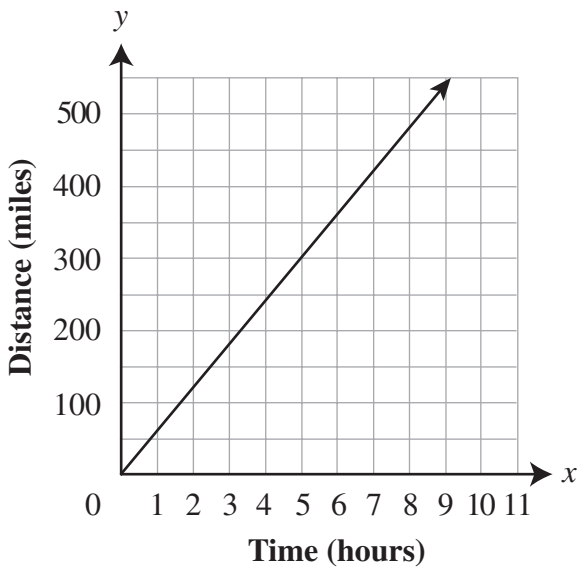
9 The speed of a moving object can be described by the equation below, in which time (x), in hours, is related to distance (y), in miles.

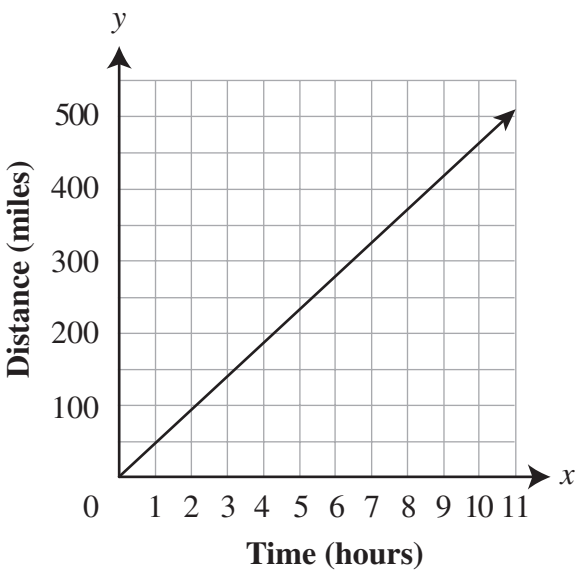
$$y = 60x$$

Which graph represents an object moving at a **greater** speed than that of the object described by the equation?

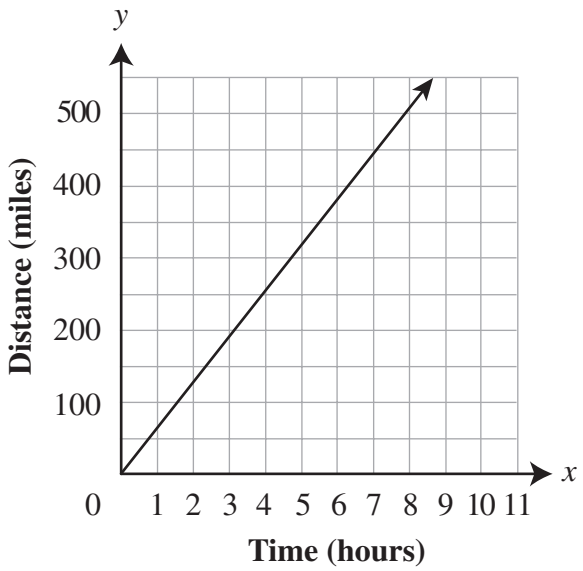
A



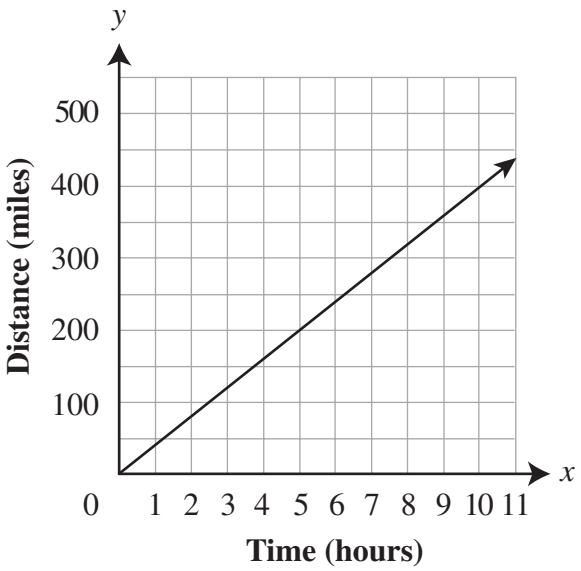
C



B



D



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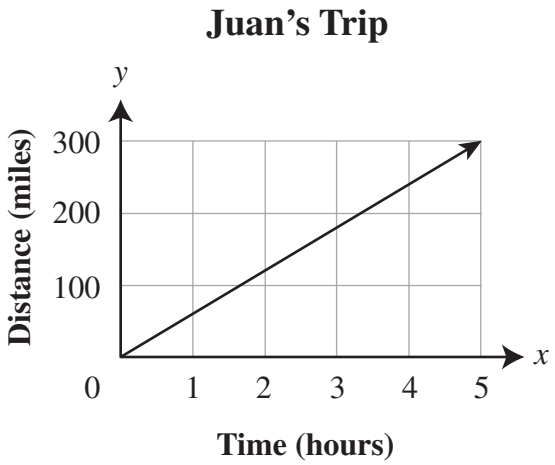
10 On a trip, Juan drove at a constant rate. The graph below shows the relationship between the time he drove and the distance he traveled.



In which situations is the rate **greater** than the rate at which Juan traveled on his trip? Select **all** that apply.

- ☐ **A** Monica drove at a constant rate for 5 hours and traveled 200 miles.
- ☐ **B** $y = 65x$, where x = time in hours and y = distance in miles
- ☐ **C** $320 = 80s$, where s = speed in miles per hour
- ☐ **D** Cindy drove 35 miles in 30 minutes.

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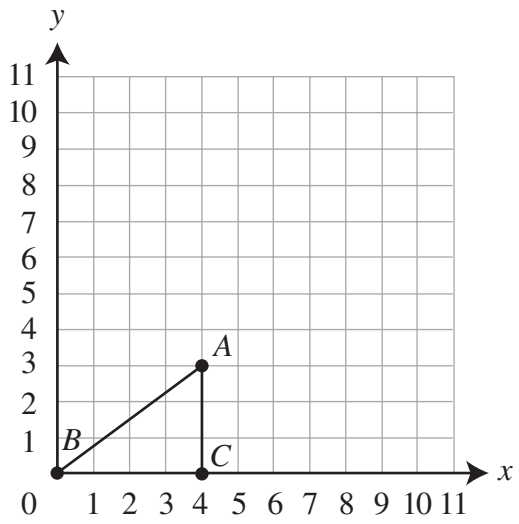
11 The coordinate grid below shows the location of triangle *ABC* .



What is the equation of the line that has the same slope as the hypotenuse of triangle *ABC* and has a *y*-intercept of 2 ? Explain your thinking.

Write your response on the grid below.

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12 Indicate whether **each** equation shown in the table below has exactly one solution, an infinite number of solutions, or no solution by placing a check mark in the correct column of the table.

Equation	Exactly One Solution	Infinite Number of Solutions	No Solution
$x + 3 = 3x + 3$			
$2x - 3 = 2x + 5 - 1$			
$3x - 2x + 4 = x + 3 + 1$			
$6 - 4x = 9 - 3x + 3 - 5x$			

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13 Solve for x:

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

Write the answer in the blank below.

x = _____

14 A system of linear equations is shown below.

$$\begin{cases} 2x+5y=7 \\ 5x+3y=-11 \end{cases}$$

Which of these shows an equivalent system of linear equations and the values of x and y that make both systems of equations true?

A $\begin{cases} 6x+15y=21 \\ 25x+15y=-55 \end{cases}$

$x=4$ and $y=-3$

B $\begin{cases} 6x+15y=7 \\ -25x-15y=-11 \end{cases}$

$x=4$ and $y=-3$

C $\begin{cases} 10x+25y=7 \\ -10x-6y=-11 \end{cases}$

$x=-4$ and $y=3$

D $\begin{cases} 10x+25y=35 \\ 10x+6y=-22 \end{cases}$

$x=-4$ and $y=3$

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15 Indicate whether each system of linear equations has no solution, exactly one solution, or infinitely many solutions.

A $\begin{cases} 2x + y = 7 \\ 2x + y = 6 \end{cases}$ ☐ no solution ☐ exactly one solution ☐ infinitely many solutions

B $\begin{cases} 2x - 4y = 8 \\ \frac{2}{3}x - \frac{4}{3}y = \frac{8}{3} \end{cases}$ ☐ no solution ☐ exactly one solution ☐ infinitely many solutions

C $\begin{cases} x + y = 3 \\ 2x + 6y = 10 \end{cases}$ ☐ no solution ☐ exactly one solution ☐ infinitely many solutions

D $\begin{cases} x = -5 \\ x + y = -5 \end{cases}$ ☐ no solution ☐ exactly one solution ☐ infinitely many solutions

16 The line described by the equation below is graphed on a coordinate plane.

$$x + y = 8$$

Additional lines are graphed on the same coordinate plane. Which of these lines intersect the line described by the equation? Select **all** that apply.

☐ **A** the line passing through the points (0, 8) and (-1, 2)

☐ **B** the line passing through the points (-8, 3) and (-3, -2)

☐ **C** the line passing through the points (0, 4) and (6, 0)

☐ **D** the line passing through the points (-9, 8) and (-6, 14)

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17 A system of equations is shown below.

$$\begin{cases} 2x - 3y = 6 \\ ax + 9y = -6 \end{cases}$$

For what value of a does the system of equations have no solution? Explain your answer.

Write your response on the grid below.

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Functions

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18 Which description of input and output values does **not** represent a function?

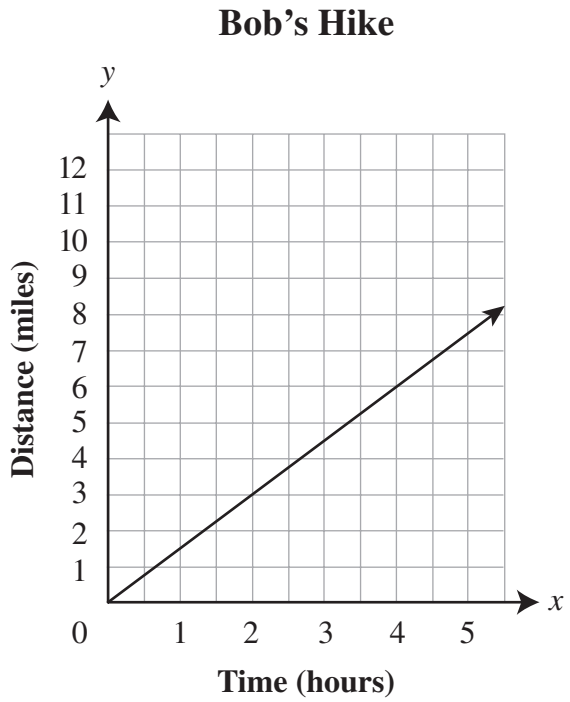
A input: a state in the United States
output: the number of states that border the state

B input: an integer
output: the integer multiplied by 3

C input: a fraction between 0 and -1
output: the fraction divided by $-\frac{1}{2}$

D input: the age of a person in a room
output: the name of the person

19 Bob and Cathy follow the same path along a trail. The graph below represents the relationship between the amount of time Bob has been hiking along the trail and the distance he has hiked.



One hour after Bob begins hiking the trail, Cathy begins jogging along the trail at an average rate of $3\frac{1}{3}$ miles per hour. After Bob has been hiking for 4 hours, what is the distance along the trail between Bob and Cathy?

A 4 miles
B 6 miles
C 10 miles
D 16 miles

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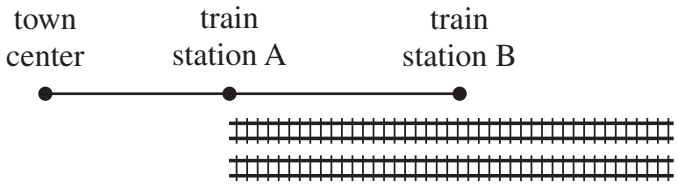
20 The diagram below shows the locations of train station A and train station B in relation to a town's center.



One train departs from each station at the same time and travels the same direction along the side-by-side rails. The distance (d), in miles, that each train has traveled away from the town center is a function of time (t), in hours, that each train has been traveling. Information about each train is listed below.

- The rate at which the train departing station A travels can be described by the equation $d = 50t + 20$.
- The rate at which the train departing station B travels can be represented by the ordered pairs (1, 85), (2, 125), and (3, 165) .

A Explain how the functions could be used to determine the distance, in miles, between station A and station B . As part of your explanation, determine the distance between station A and station B .

B How many hours after departing the stations will the trains be side by side, **and** how many miles away from the town's center will each train have traveled? Show your work or explain your thinking.

Write your response on the grid on the next page.

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A

B

Go On

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21 Determine whether each equation defines y as a linear function of x or a nonlinear function of x by selecting the correct box next to each equation.

A	$(4x)(7y) = 28$	☐ Linear	☐ Nonlinear
B	$x(y+1) + y(x+1) = x - 7$	☐ Linear	☐ Nonlinear
C	$x + 5 = y + 5x$	☐ Linear	☐ Nonlinear
D	$3(y-4) = 2x(x-6)$	☐ Linear	☐ Nonlinear
E	$\frac{2}{7}x - \frac{3}{14}y + \frac{3}{7} = \frac{5}{14}x + \frac{4}{7}y$	☐ Linear	☐ Nonlinear

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22 Which equation defines y as a nonlinear function of x ?

A $y = 3x + 2$
B $y = x(x+2)$
C $3x + 4y = 14$
D $4x + 5y = 4x + 15$

Explain why the function you selected is nonlinear.

Write your response on the grid below.

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23 During a heavy rainstorm, 0.05 inch of rain fell in 5 minutes. The storm continued, and after 40 minutes, a total of 0.4 inch of rain had fallen. Select the **two** descriptions of functions that model the relationship between the amount of time it rained and the total amount of rain that fell during this storm.

- ☐ **A** The function $y = 0.01x$, with x representing the number of inches of rain that fell and y representing the number of minutes it rained, models the relationship.
- ☐ **B** The function $y = 0.6x$, with x representing the number of hours it rained and y representing the number of inches of rain that fell, models the relationship.
- ☐ **C** The function $y = 0.05x$, with x representing the number of minutes it rained and y representing the number of inches of rain that fell, models the relationship.
- ☐ **D** The function $y = 0.01x$, with x representing the number of minutes it rained and y representing the number of inches of rain that fell, models the relationship.
- ☐ **E** The function $y = 0.4x$, with x representing the number of inches of rain that fell and y representing the number of minutes it rained, models the relationship.
- ☐ **F** The function $y = 0.6x$, with x representing the number of inches of rain that fell and y representing the number of hours it rained, models the relationship.

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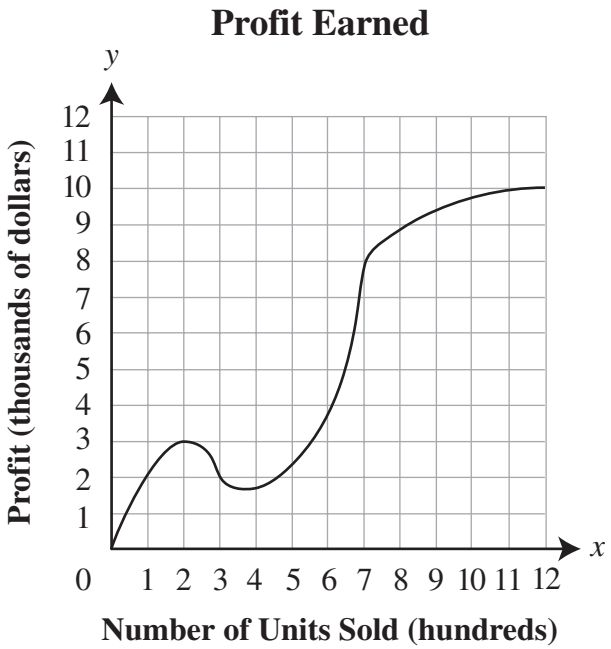
24 The graph below shows the relationship between the number of units of a product that are manufactured and sold and the profit earned from the manufacture and sale of the product.



Over which intervals of the numbers of units sold is the profit increasing? Select **all** that apply.

- ☐ **A** between 0 and 200
- ☐ **B** between 200 and 300
- ☐ **C** between 300 and 400
- ☐ **D** between 400 and 700
- ☐ **E** between 700 and 1,200

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Geometry

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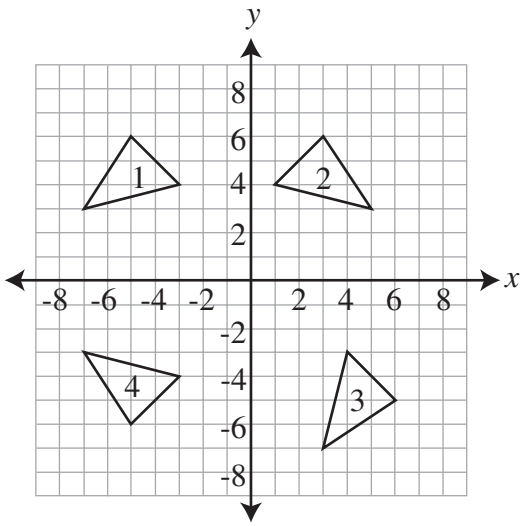
25 Triangles 1, 2, 3, and 4 are congruent to each other. The triangles are graphed on the coordinate plane shown below.



Draw lines from column A to column B to match **each** pair of triangles to the transformation that describes how the second triangle in the pair can be obtained from the first triangle in the pair, thereby showing that the triangles are congruent. Some transformations in column B might not be used, and some might be used more than once.

Column A	**Column B**
triangle 1 to triangle 2	reflection across the x-axis
triangle 1 to triangle 3	rotation 90° clockwise about the origin
triangle 3 to triangle 4	reflection across the line $x = -1$
triangle 4 to triangle 1	rotation 90° counterclockwise about the origin
	reflection across the line $y = -x$
	reflection across the line $y = x$

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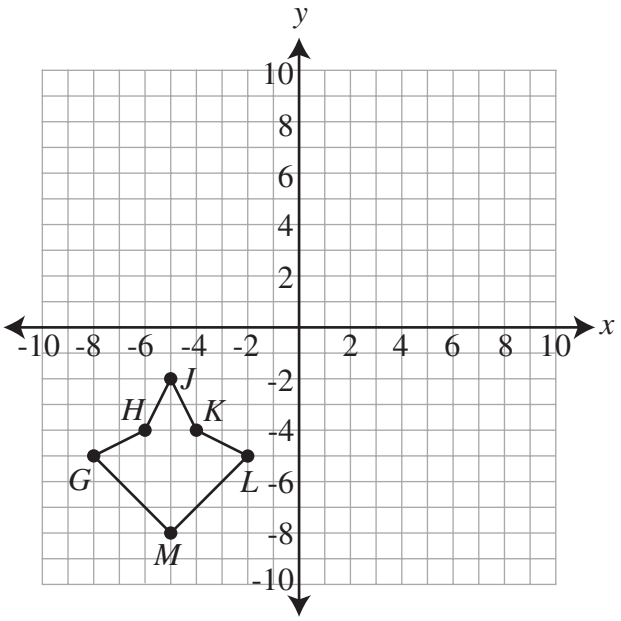
26 Polygon *GHJKLM* is graphed on the coordinate plane shown below.



Two transformations are performed on polygon *GHJKLM* .

- First, the polygon is reflected across the line $y = 1$.
- Then, the resulting polygon is translated right 3 units.

The result of both transformations is polygon $G'H'J'K'L'M'$. What ordered pair describes the location of vertex L' ?

A (-2, 7)
B (1, 5)
C (1, 7)
D (7, -5)

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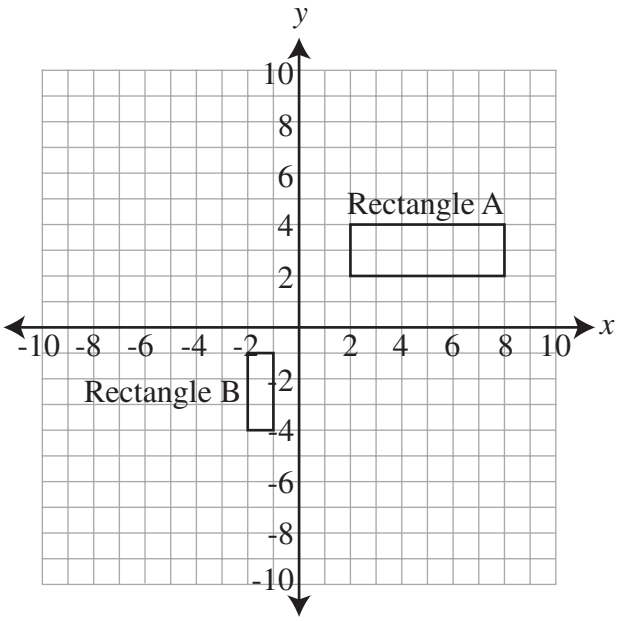
27 On the coordinate plane below, rectangle A has been transformed to create similar rectangle B .



A list of transformations is shown below.

A a dilation with a scale factor of 0.5 and center of dilation at the origin
B a dilation with a scale factor of 2 and center of dilation at (1, 2)
C a rotation of 90° clockwise about the origin
D a rotation of 180° about the origin
E a reflection across the *y*-axis
F a reflection across the *x*-axis
G a translation 2 units left
H a translation 2 units left and 3 units down

Determine a series of 3 transformations that could describe how rectangle A was transformed to create similar rectangle B . Write the answers in the blanks below.

transformation 1: _____

transformation 2: _____

transformation 3: _____

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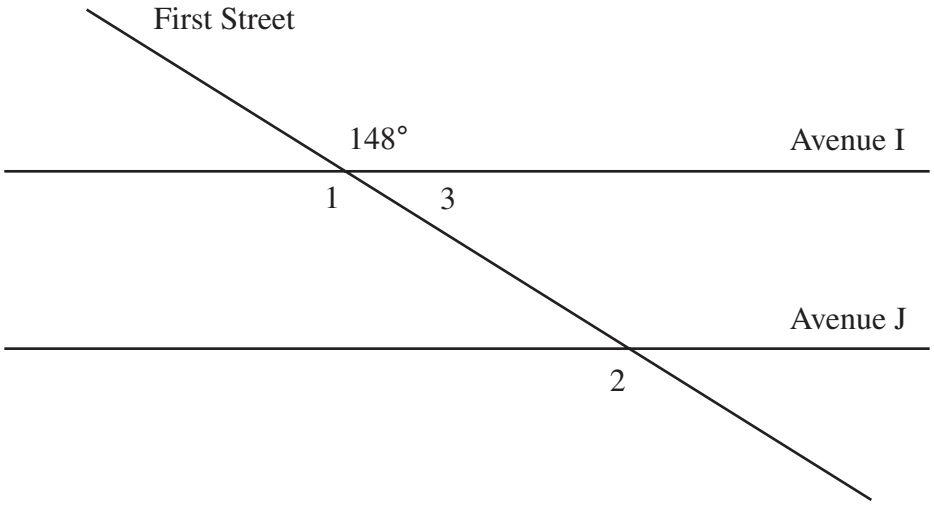
28 The map below shows three streets in a city.



Avenue I and Avenue J are parallel. First Street intersects Avenue I at an angle of 148° .

Based on the map, which equations are true? Select **all** that apply.

- ☐ **A** $m\angle 1 = 148°$
- ☐ **B** $m\angle 2 + m\angle 3 = 180°$
- ☐ **C** $m\angle 2 = m\angle 3$
- ☐ **D** $m\angle 3 = 148°$
- ☐ **E** $m\angle 1 + m\angle 2 = 180°$
- ☐ **F** $m\angle 1 + m\angle 3 = 180°$

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29 Jillian has three fruit trees in her backyard: a peach tree, an orange tree, and an apple tree. The locations of the trees form a right triangle.

- The peach tree is 30 feet from the orange tree.
- The peach tree is 40 feet from the apple tree.

Jillian believes that the triangle formed by the three trees is a right triangle with a hypotenuse of 50 feet because both 50–40 and 40–30 equal 10, but she has made an error in her reasoning.

A Explain the error that Jillian has made in her reasoning.

B Explain why the distance from the orange tree to the apple tree could be 50 feet or could be **less** than 50 feet.

Write your response on the grid on the next page.

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A

B

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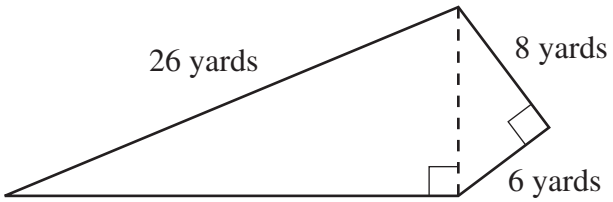
30 A dog park is in the shape of a quadrilateral. The shape of the dog park and some of its dimensions are shown in the diagram below.



What is the perimeter, in yards, of the dog park? Show your work or explain your thinking.

Write your response on the grid below.

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31 Two runners begin running from the same spot. One runner runs north and the other runs west, so that their directions are perpendicular to each other. One runner runs at an average rate of 3 miles per hour (mph). The other runner runs at an average rate of 5 mph.

Which statements about the shortest distances between the two runners are true? Select **all** that apply.

- ☐ **A** After 1 hour, the shortest distance between the runners is $\sqrt{8}$ miles.
- ☐ **B** After 1 hour, the shortest distance between the runners is $\sqrt{34}$ miles.
- ☐ **C** After 2 hours, the shortest distance between the runners is 2 times the shortest distance between the runners after 1 hour.
- ☐ **D** After 2 hours, the shortest distance between the runners is 4 times the shortest distance between the runners after 1 hour.

32 The locations of two points on a coordinate plane are described by the ordered pairs shown below.

$$(\mathbf{4, -1}) \quad (\mathbf{-4, 3})$$

What is the shortest distance between the two points?

A 2 units

B $\sqrt{10}$ units

C $\sqrt{74}$ units

D $\sqrt{80}$ units

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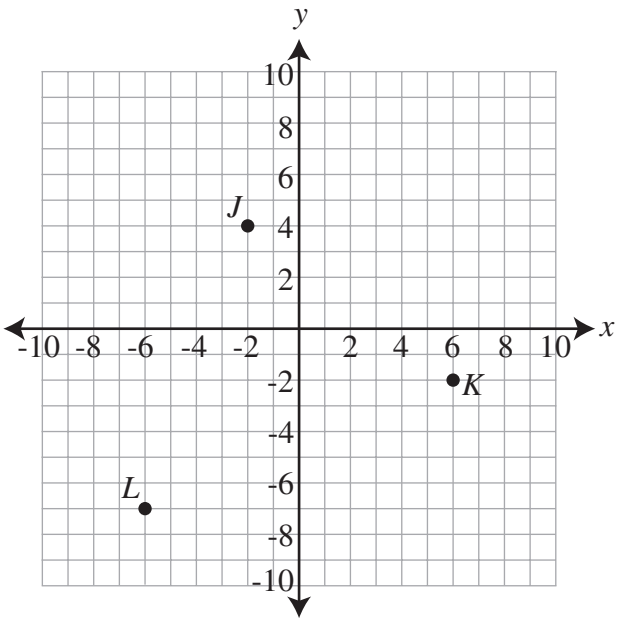
33 Points *J*, *K*, and *L* are graphed on the coordinate plane shown below.



How many units greater is the distance between points *K* and *L* than the distance between points *J* and *K* ? Write the answer in the blank below.

_____ units

34 The height of a cone is 3 times the diameter of its circular base. A cylinder has the same height and the same diameter as the cone. The cone is placed inside the cylinder. The volume of the cylinder that is not occupied by the cone is 256π cubic inches. What are the diameter of the cylinder and the height of the cone? Write the answers in the blanks below.

diameter of the cylinder:

_____ inches

height of the cone:

_____ inches

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35 Two cylinders have the same volume.

- The radius of cylinder A is $\frac{1}{3}$ the radius of cylinder B .
- The height of cylinder B is 18 centimeters (cm).

What is the height, in centimeters, of cylinder A ? Show your work or explain your thinking.

Write your response on the grid below.

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36 A part for a machine is being custom-made for a customer. The part is originally a sphere-shaped object.

- The top half of the sphere is divided into 4 equal-sized sections.
- One of the sections is removed.
- The volume of the removed section is 4.5π cubic inches.

A What is the diameter, in inches, of the original sphere? Show or explain all your work.

The sphere with the section removed will be shipped to the customer in a cylinder-shaped container. There needs to be 1 inch of room all around the sphere. The smallest possible cylinder-shaped container that the sphere fits in, including the extra space, will be used.

B What is the **greatest** volume, in cubic inches, of packing material that can be placed in the cylinder containing the sphere with the section removed? Show or explain all your work. Write your answer in terms of π .

Write your response on the grid on the next page.

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A

B

STOP

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Statistics and Probability

Grade 8
Student Workbook

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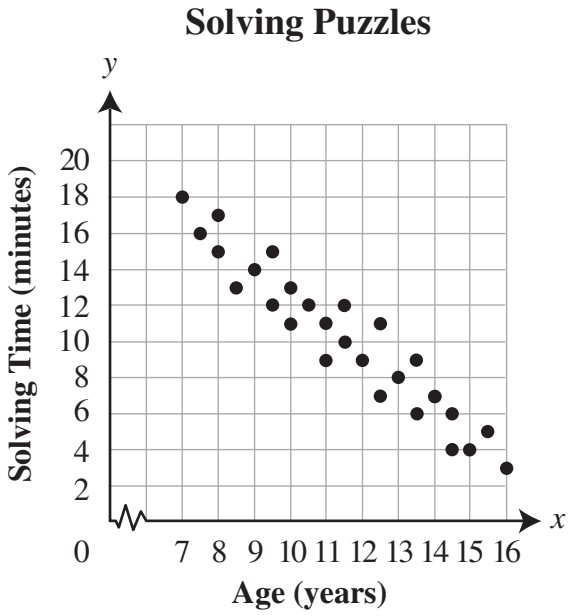
37 A researcher timed a group of students as they solved a puzzle. The scatter plot below shows the age of each student and the number of minutes it took that student to solve the puzzle.



The researcher decides to remove about $\frac{1}{3}$ of the data points from the scatter plot because the background information on those students is incomplete. A new scatter plot is created with the remaining data points. Which statement about the new scatter plot **must** be true?

A The new scatter plot will have an outlier.
B The new scatter plot will have at least one cluster.
C The new scatter plot will have a positive linear association.
D The new scatter plot will have a negative linear association.

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38 Three sets of data are listed in the tables below. Each set of data is described by one of the types of association listed below.

A

x	1	3	7	4	8	5	2	9
y	60	55	35	40	20	35	50	15

positive association

B

x	1	3	7	4	8	5	2	9
y	50	55	45	70	40	65	35	60

negative association

C

x	1	3	7	4	8	5	2	9
y	15	25	70	40	75	45	20	80

no association

Match each set of data to the type of association that describes it by drawing a line from each table to the correct type of association.

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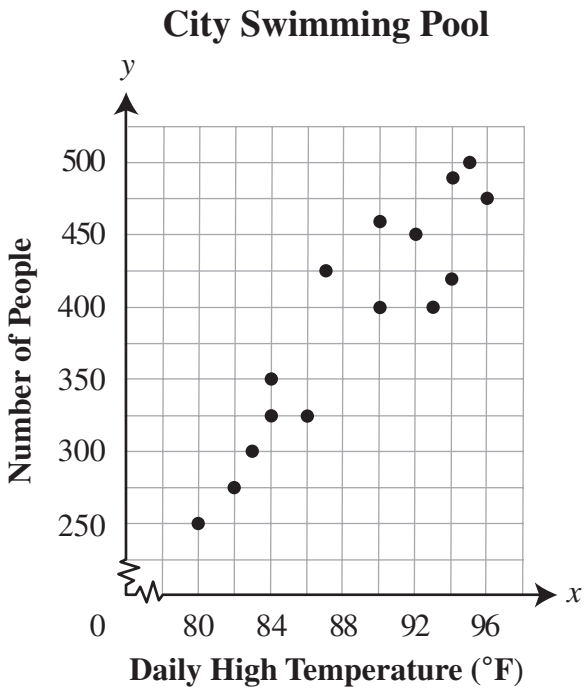
39 The scatter plot below shows the daily high temperatures and the number of people who visited a city swimming pool for each of 15 days.



On the scatter plot, draw a line of best fit for the data.

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40 Laura needs to rent a bike for x days. The store she rents the bike from charges a fee for cleaning the bike when it is returned. The total amount (y), in dollars, that Laura will pay for renting the bike can be modeled using the linear equation shown below.

$$y = 3.50x + 1.25$$

Which statement **best** describes what the slope and the y-intercept of the linear equation represent in this situation?

A The slope represents an increase of \$1.25 each day Laura rents the bike, and the y-intercept represents a one-time cleaning fee of \$3.50 .

B The slope represents an increase of \$3.50 each day Laura rents the bike, and the y-intercept represents a cleaning fee of \$1.25 each day Laura rents the bike.

C The slope represents an increase of \$7.00 every 2 days Laura rents the bike, and the y-intercept represents a one-time cleaning fee of \$1.25 .

D The slope represents an increase of $2x$ dollars every 2 days Laura rents the bike, and the y-intercept represents a one-time cleaning fee of \$1.25 .

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41 Jeff has a job mowing lawns. The linear equation shown below can be used to model the relationship between the number of hours (x) Jeff spends mowing a lawn and the total amount (y), in dollars, he charges a customer.

$$y = 20x + 5$$

Jeff mowed lawns for 3 customers last week.

- He spent 4.0 hours mowing the lawn for customer 1 .
- He spent 2.5 hours mowing the lawn for customer 2 .
- He spent 5.0 hours mowing the lawn for customer 3 .

Explain why the equation $y = 20(11.5) + 5$ is **not** appropriate to use to determine the total amount Jeff charged his customers last week. As part of your explanation, state what both the slope and the y-intercept of the equation $y = 20x + 5$ represent, and determine the total amount Jeff charged his customers last week.

Write your response on the grid below.

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42 The equation below represents the relationship between the number of games (g) Matt plays at an arcade and the remaining amount of money (m), in dollars, Matt has to spend.

$$16.75 - 0.50g = m$$

Using the equation, which statements are true? Select **all** that apply.

- ☐ **A** Matt spends $0.50 to play 1 game.
- ☐ **B** Matt has a minimum of $16.75 to spend at the arcade.
- ☐ **C** Matt can play a maximum of 33 games.
- ☐ **D** Matt will have $6.75 remaining after playing 10 games.
- ☐ **E** Matt spends $8.00 to play 4 games.

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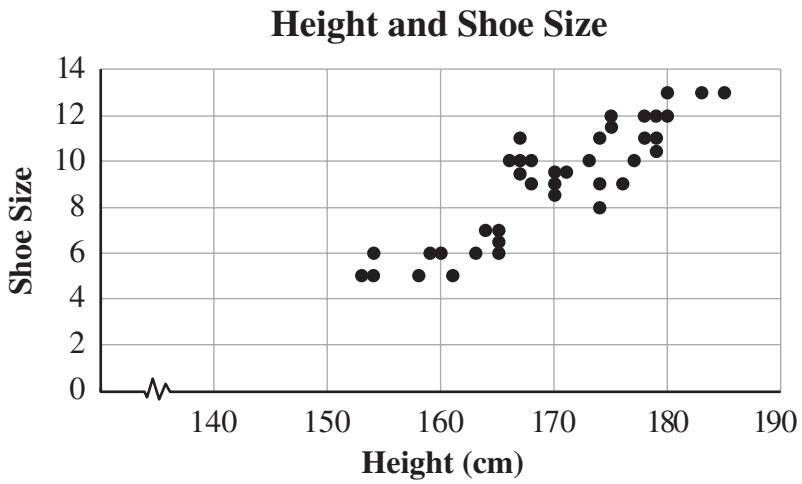
43 The scatter plot below shows a relationship between the heights and the shoe sizes of some high school students.



A What type of association **best** describes the data on the scatter plot? Explain your thinking. As part of your explanation, describe the relationship between height and shoe size as they change.

B Explain why the equation of a line of best fit for the data on the scatter plot might **not** be considered a good tool to predict the shoe size of any person that is any height.

Write your response on the grid on the next page.

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Go On
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A

B

Go On

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44 Sandy surveyed 40 students at her school about the classes they are taking. The data she collected from her survey are listed below.

- 23 students are taking music.
- 17 of the students taking music are taking biology.
- 32 students are taking biology.

Based on the data, complete the two-way table shown below.

	Taking Music	**Not Taking Music**	**Total**
Taking Biology			
Not Taking Biology			
Total			

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45 A survey is given to a group of people to determine whether they exercise regularly and eat at least three servings of vegetables every day. The results are shown in the table below.

		Exercise Regularly	
		Yes	**No**
Eat at Least Three Servings of Vegetables	**Yes**	82	95
	No	45	78

A What percentage of the people in the group exercise regularly and do **not** eat at least three servings of vegetables every day? Show your work or explain your thinking.

B Explain why a randomly selected person from the group is 18% more likely to eat at least three servings of vegetables every day than not to, no matter whether he or she exercises regularly or not. Show your work.

Write your response on the grid on the next page.

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A

B

STOP

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Superintendent of Public Instruction

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Grade 8