GLENCOE MATHEMATICS

Grade 8

Virginia Standards of Learning (SOL) Assessment

Practice and Sample Test Workbook

Includes:

- Standards of Learning for Grade 8
- Grade 8 Mathematics Formula Sheet
- Student Recording Chart
- Diagnostic Test
- Numerous Practice Questions for Each SOL
- Full-Size Sample Test

Test-Taking Tips

- Go to bed early the night before the test. You will think more clearly after a good night's rest.
- Read each problem carefully and think about ways to solve the problem before you try to answer the question.
- Relax. Most people get nervous when taking a test. It's natural. Just do your best.
- Answer questions you are sure about first. If you do not know the answer to a question, skip it and go back to that question later.
- Think positively. Some problems may seem hard to you, but you may be able to figure out what to do if you read each question carefully.
- If no figure is provided, draw one. If one is furnished, mark it up to help you solve the problem.
- When you have finished each problem, reread it to make sure your answer is reasonable.
- Become familiar with a variety of formulas and when they should be used.
- Make sure that the number of the question on the answer sheet matches the number of the question on which you are working in your test booklet.

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Virginia Standards of Learning (SOL) Assessment, Grade 8
Practice and Sample Test Workbook

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Overview

The material in this booklet is designed to help you prepare for the Virginia Standards of Learning (SOL) Assessment for Grade 8.

It contains:

- a Student Recording Chart,
- the Virginia Standards of Learning, Grade 8, correlated to *Glencoe Mathematics: Applications and Concepts,* Course 3, and *Glencoe Pre-Algebra*,
- a Formula Sheet,
- a Diagnostic Test,
- practice for each SOL, and
- a Sample Test.

How to Use This Book

Diagnostic Test This test will help you identify any weaknesses you may have as you prepare to take the SOL. Once you've taken the test and it's been graded, complete the Student Recording Chart that is found on page v. Mark an × in the square for each question that you answered *incorrectly*.

Practice If you missed one or two of the questions for a particular SOL, you could probably use some extra practice with that standard. The Student Recording Chart lists practice pages for each SOL. Complete the appropriate practice pages. If you are unsure about how to do some of the problems, you may want to refer to your mathematics book.

Sample Test After you have completed your practice worksheet(s), take the Sample Test on pages 57 to 68.

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Student Recording Chart

Directions Mark an × by each question from the Diagnostic Test that you answered *incorrectly*. If there are one or two ×s marked for a SOL, write ***Yes*** in the ***Need Practice?*** box. Then complete the practice pages for that standard.

Standard	8.1a	8.1b	8.1c	8.2	8.3
Test Questions	1 ☐ 17 ☐ 32 ☐	7 ☐ 52 ☐	15 ☐ 41 ☐	30 ☐ 51 ☐	2 ☐ 18 ☐ 21 ☐ 58 ☐
Need Practice?					
Practice Pages	13–14	15–16	17–18	19	20–22

Standard	8.4	8.5	8.6	8.7	8.8
Test Questions	3 ☐ 35 ☐ 46 ☐	14 ☐ 43 ☐ 60 ☐	10 ☐ 38 ☐ 54 ☐	24 ☐ 42 ☐ 59 ☐	16 ☐ 28 ☐ 47 ☐
Need Practice?					
Practice Pages	23–24	25–26	27–28	29–30	31–32

Standard	8.9	8.10a	8.10b	8.11
Test Questions	23 ☐ 34 ☐	20 ☐ 27 ☐	5 ☐ 33 ☐	11 ☐ 36 ☐ 45 ☐
Need Practice?				
Practice Pages	33–34	35–36	37–38	39–40

Standard	8.12	8.13	8.14a	8.14b
Test Questions	9 ☐ 26 ☐ 39 ☐ 50 ☐ 57 ☐	19 ☐ 53 ☐	12 ☐ 40 ☐	22 ☐ 37 ☐
Need Practice?				
Practice Pages	41–43	44–45	46–47	48–49

Standard	8.15	8.16	8.17	8.18
Test Questions	8 ☐ 29 ☐ 55 ☐	13 ☐ 48 ☐	4 ☐ 31 ☐ 44 ☐ 49 ☐	6 ☐ 25 ☐ 56 ☐
Need Practice?				
Practice Pages	50–51	52–53	54–55	56

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Virginia Standards of Learning, Grade 8, Correlated to *Glencoe Mathematics: Applications and Concepts,* Course 3

Lessons in which the standards are a primary focus are indicated in **bold**.

Standards of Learning		Student Edition Lesson(s)
Number and Number Sense		
8.1a	The student will simplify numerical expressions involving positive exponents, using rational numbers, order of operations, and properties of operations with real numbers;	**1-2, 1-3, 1-4, 1-5, 1-6,** 2-8
8.1b	The student will recognize, represent, compare, and order numbers expressed in scientific notation; and	**2-9**
8.1c	The student will compare and order decimals, fractions, percents, and numbers written in scientific notation.	**2-2, 2-9, 5**-2
8.2	The student will describe orally and in writing the relationship between the subsets of the real number system.	**3-3**
8.3	The student will solve practical problems involving rational numbers, percents, ratios, and proportions. Problems will be of varying complexities and will involve real-life data, such as finding a discount and discount prices and balancing a checkbook.	**1-4,** 2-3, 2-4, 2-5, 2-6, 2-8a, 3-3a, **4-1,** 4-2, **4-4,** 4-5a, **4-6, 4-7,** 5-2, **5-3, 5-4,** 5-5a, **5-5, 5-6, 5-7, 5-8, 5-8b**
8.4	The student will apply the order of operations to evaluate algebraic expressions for given replacement values of the variables. Problems will be limited to positive exponents.	**1-2, 1-6,** 7-1, 7-2, 7-3, 7-5, 7-6, 7-7, 7-8
8.5	The student, given a whole number from 0 to 100, will identify it as a perfect square or find the two consecutive whole numbers between which the square root lies.	**3-1, 3-2**
Measurement		
8.6	The student will verify by measuring and describe the relationships among vertical angles, supplementary angles, and complementary angles and will measure and draw angles of less than 360°.	**6-1,** PS12
8.7	The student will investigate and solve practical problems involving volume and surface area of rectangular solids (prisms), cylinders, cones, and pyramids.	**7-5, 7-6, 7-7, 7-8**

PS = Prerequisite Skill

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Standards of Learning		Student Edition Lesson(s)
Geometry		
8.8	The student will apply transformations (rotate or turn, reflect or flip, translate or slide, and dilate or scale) to geometric figures represented on graph paper. The student will identify applications of transformations, such as tiling, fabric design, art, and scaling.	**6-7, 6-8, 6-9**
8.9	The student will construct a three-dimensional model, given the top, side, and/or bottom views.	**7-4a**
8.10a	The student will verify the Pythagorean Theorem, using diagrams, concrete materials, and measurement; and	**3-4**
8.10b	The student will apply the Pythagorean Theorem to find the missing length of a side of a right triangle when given the lengths of the other two sides.	**3-4, 3-5,** 3-6
Probability and Statistics		
8.11	The student will analyze problem situations, including games of chance, board games, or grading scales, and make predictions, using knowledge of probability.	8-1, **8-6,** 8-7
8.12	The student will make comparisons, predictions, and inferences, using information displayed in frequency distributions; box-and-whisker plots; scattergrams; line, bar, circle, and picture graphs; and histograms.	**9-1, 9-2, 9-6, 9-7, 11-6a, 11-6,** 11-6b, PS2
8.13	The student will use a matrix to organize and describe data.	**9-8**
Patterns, Functions, and Algebra		
8.14a	The student will describe and represent relations and functions, using tables, graphs, and rules; and	**11-2,** 11-3a, **11-3**
8.14b	The student will relate and compare tables, graphs, and rules as different forms of representation for relationships.	**11-2, 11-3a, 11-3**
8.15	The student will solve two-step equations and inequalities in one variable, using concrete materials, pictorial representations, and paper and pencil.	**10-2,** 10-3, **10-6, 10-7**
8.16	The student will graph a linear equation in two variables, in the coordinate plane, using a table of ordered pairs.	**11-3**
8.17	The student will create and solve problems, using proportions, formulas, and functions.	**3-4, 3-5, 3-6, 4-4,** 4-5, **4-6, 4-7,** 4-8, **5-3, 5-8, 7-1, 7-2, 7-3, 7-5, 7-6, 7-7, 7-8,** 11-2
8.18	The student will use the following algebraic terms appropriately: *domain, range, independent variable,* and *dependent variable.*	**11-2**

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Virginia Standards of Learning, Grade 8, Correlated to *Glencoe Pre-Algebra*

Lessons in which the standards are a primary focus are indicated in **bold**.

Standards of Learning		Student Edition Lesson(s)
Number and Number Sense		
8.1a	The student will simplify numerical expressions involving positive exponents, using rational numbers, order of operations, and properties of operations with real numbers;	**1-2,** 1-3F, 1-4, 2-2, 2-3, 2-4, 2-5, 3-1, 4-2, **4-5,** 4-6, 5-3, 5-4, 5-5, 5-7, 5-9, 9-1,
8.1b	The student will recognize, represent, compare, and order numbers expressed in scientific notation; and	**4-8**
8.1c	The student will compare and order decimals, fractions, percents, and numbers written in scientific notation.	**4-8,** 5-1, 5-6, **6-4,** 9-2
8.2	The student will describe orally and in writing the relationship between the subsets of the real number system.	**5-2, 9-2**
8.3	The student will solve practical problems involving rational numbers, percents, ratios, and proportions. Problems will be of varying complexities and will involve real-life data, such as finding a discount and discount prices and balancing a checkbook.	4-5, 5-1, **5-2,** 5-3, 5-4, 5-5, 5-7, 5-9, 6-1, 6-2, 6-3, 6-4, **6-5, 6-6, 6-7,** 6-7F, **6-8,** 9-7, 9-8, 9-8F, 11-6
8.4	The student will apply the order of operations to evaluate algebraic expressions for given replacement values of the variables. Problems will be limited to positive exponents.	**1-3,** 2-1, 2-2, **2-3,** 2-4, 2-5, 4-2, 5-3, 5-4, 5-5
8.5	The student, given a whole number from 0 to 100, will identify it as a perfect square or find the two consecutive whole numbers between which the square root lies.	**9-1,** 9-2
Measurement		
8.6	The student will verify by measuring and describe the relationships among vertical angles, supplementary angles, and complementary angles and will measure and draw angles of less than 360°.	**9-3,** 9-4, 10-1, 10-1F
8.7	The student will investigate and solve practical problems involving volume and surface area of rectangular solids (prisms), cylinders, cones, and pyramids.	11-2P, **11-2, 11-3, 11-4, 11-5,** 11-6P, **11-6**
Geometry		
8.8	The student will apply transformations (rotate or turn, reflect or flip, translate or slide, and dilate or scale) to geometric figures represented on graph paper. The student will identify applications of transformations, such as tiling, fabric design, art, and scaling.	**10-3, 10-3F,** 10-6, 10-6F

P = Preview Lesson, F = Follow-Up Lesson, PS = Prerequisite Skill, RM = Reading Math

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Standards of Learning		Student Edition Lesson(s)
8.9	The student will construct a three-dimensional model, given the top, side, and/or bottom views.	**11-1P**
8.10a	The student will verify the Pythagorean Theorem, using diagrams, concrete materials, and measurement; and	**9-5P,** 9-5
8.10b	The student will apply the Pythagorean Theorem to find the missing length of a side of a right triangle when given the lengths of the other two sides.	**9-5**
Probability and Statistics		
8.11	The student will analyze problem situations, including games of chance, board games, or grading scales, and make predictions, using knowledge of probability.	**6-9,** 6-9F, 12-6, 12-6F, 12-7, 12-8, **12-9,** 12-9F
8.12	The student will make comparisons, predictions, and inferences, using information displayed in frequency distributions; box-and-whisker plots; scattergrams; line, bar, circle, and picture graphs; and histograms.	1-7P, 1-7, 1-7F, 6-9, 8-8, 9-3F, **12-3,** 12-3F, **12-4,** 12-4F, 12-5, **PS15**
8.13	The student will use a matrix to organize and describe data.	page 705
Patterns, Functions, and Algebra		
8.14a	The student will describe and represent relations and functions, using tables, graphs, and rules; and	1-6, 2-6, 8-1P, **8-1,** 8-2P, **8-2,** RM8, 8-3, 8-5, 8-6, 8-6F, 8-7, **13-5, 13-6,** 13-6F
8.14b	The student will relate and compare tables, graphs, and rules as different forms of representation for relationships.	1-6, 8-1P, **8-1, 8-2,** 8-7, **13-5, 13-6**
8.15	The student will solve two-step equations and inequalities in one variable, using concrete materials, pictorial representations, and paper and pencil.	**3-5,** 3-6, 3-7, 6-2, 6-3, 6-5, 7-1P, 7-1, **7-6**
8.16	The student will graph a linear equation in two variables, in the coordinate plane, using a table of ordered pairs.	**8-2**
8.17	The student will create and solve problems, using proportions, formulas, and functions.	3-7, 6-1, **6-2,** 6-2F, 6-3, 6-5, 8-1P, 8-1, 8-2P, 8-7, 9-6, 9-7, 10-5, 10-7, 10-8, 11-1, 11-2, 11-3, 11-4, 11-5, 11-6P, 11-6
8.18	The student will use the following algebraic terms appropriately: *domain, range, independent variable,* and *dependent variable.*	**1-6,** 8-2P, **8-2,** RM8

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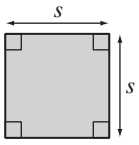
Commonly Used Formulas

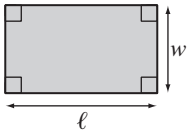
Perimeter, Area, and Circumference

square



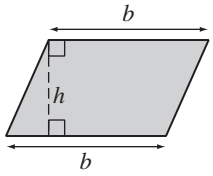
$p = 4s$
$A = s^2$

rectangle



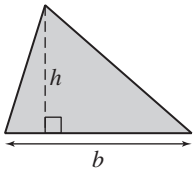
$p = 2\ell + 2w$
$A = \ell w$

parallelogram



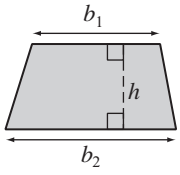
$A = bh$

triangle



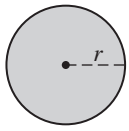
$A = \frac{1}{2}bh$

trapezoid



$A = \frac{1}{2}h(b_1 + b_2)$

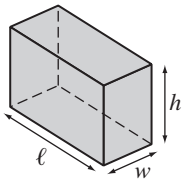
circle



$C = 2\pi r$
$A = \pi r^2$

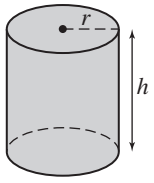
Volume and Surface Area

rectangular prism



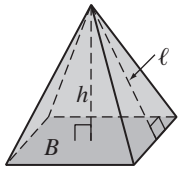
$V = \ell wh$
$S.A. = 2\ell w + 2\ell h + 2wh$

cylinder



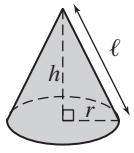
$V = \pi r^2 h$
$S.A. = 2\pi rh + 2\pi r^2$

pyramid



$V = \frac{1}{3}bh$
$S.A. = \frac{1}{2}\ell p + B$

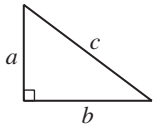
cone



$V = \frac{1}{3}\pi r^2 h$
$S.A. = \pi r\ell + \pi r^2$

Pythagorean Theorem

right triangle



$c^2 = a^2 + b^2$

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Name Date

Diagnostic Test

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

1 Which is equivalent to $15 - (8 + 6) \div 2$? **8.1a** **1** _____

A 4 **B** 6.5
C 8 **D** 10

2 Samantha had $44 in her checking account. She deposited $75 into her account and wrote a check for $33.98 for two tickets to the Virginia State Fair. What is the balance in her account now? **8.3** **2** _____

F $51.10 **G** $64.98
H $85.02 **J** $152.98

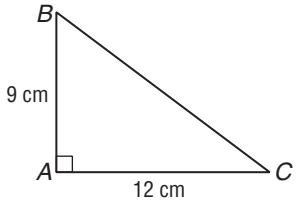
3 What is the value of $x^2 - x + 2(x + 5)$ when $x = 3$? **8.4** **3** _____

A 22 **B** 29
C 40 **D** 64

4 Dorri walks a $7\frac{1}{2}$-mile trail near Troutville in 2.5 hours. On average, how far did she walk in 0.5 hour? **8.17** **4** _____

F $1\frac{1}{2}$ mi **G** 3 mi
H $5\frac{1}{2}$ mi **J** 6 mi

5 In $\triangle ABC$, $\overline{AB}$ measures 9 centimeters and $\overline{AC}$ measures 12 centimeters. What is the length of $\overline{BC}$? **8.10b** **5** _____



A 42 cm
B 21 cm
C 15 cm
D 10 cm

6 In the function $y = {}^-9x + 2$, which is the dependent variable? **8.18** **6** _____

F ${}^-9$ **G** 2
H x **J** y

7 There are about 1.964×10^5 acres of land in Shenandoah National Park in northern Virginia. Which is equivalent to this number of acres? **8.1b** **7** _____

A 19,640 acres **B** 196,400 acres
C 1,964,000 acres **D** 19,640,000 acres

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Go on

Name Date

Diagnostic Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

8 What values of x make $4x - 12 < 8$ true? **8.15** **8** _____

F $x < {}^{-}1$ **G** $x < 1$

H $x < 5$ **J** $x < 20$

9 Which scatter plot *best* shows the relationship between a person's height and their average bowling score? **8.12** **9** _____

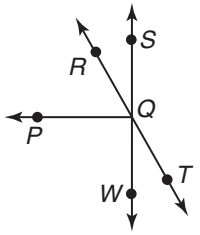
A

B

C

D

10 In the figure, $\overleftrightarrow{SW}$ is perpendicular to $\overleftrightarrow{QP}$. Which pair of angles is complementary? **8.6** **10** _____



F $\angle PQR$ and $\angle RQS$

G $\angle PQR$ and $\angle PQW$

H $\angle RQS$ and $\angle SQT$

J $\angle RQS$ and $\angle RQW$

11 If Isaac rolls a six-sided number cube 24 times, how many times will he *most likely* roll a number less than 3? **8.11** **11** _____

A 4 **B** 8

C 12 **D** 24

12 The table shows the number of tokens needed to play video games at an arcade. Which describes the relationship shown in the table? **8.14a** **12** _____

Games, *g*	3	6	9	12	15
Tokens, *t*	12	24	36	48	60

F $g = \frac{1}{4}t$ **G** $g = 4t$

H $g = 12t$ **J** $g = t - 3$

Go on

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Name Date

Diagnostic Test (continued)

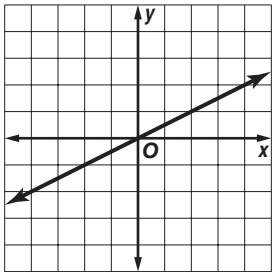
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

13 Which figure shows the graph of a line that contains the points given in the table of ordered pairs? **8.16**

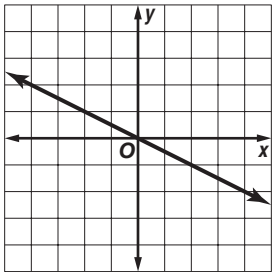
x	-4	-2	2	4
y	-2	-1	1	2

13 _____

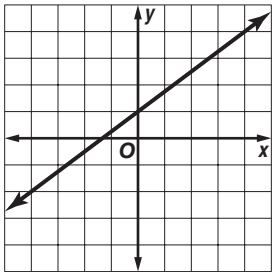
A



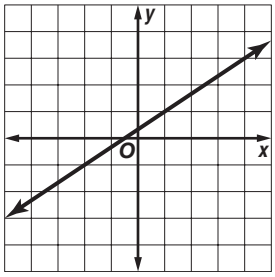
B



C



D



14 Which number is a perfect square? **8.5**

14 _____

F 81 **G** 40 **H** 12 **J** 8

15 Which is the *least* number? **8.1c**

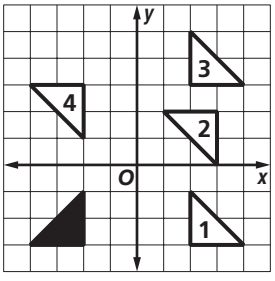
15 _____

A 1.2 **B** 1.2×10^{-1}

C 1.2% **D** $\frac{12}{100}$

16 Which numbered triangle shows where the shaded triangle would be if it were reflected across the y-axis? **8.8**

16 _____



F triangle 1
G triangle 2
H triangle 3
J triangle 4

17 What is the value of $7 + 28 \div 7 + 3^2$? **8.1a**

17 _____

A 14
B 20
C 64
D 196

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Go on

Name Date

Diagnostic Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

18 Mandy paid $6.00 for 8 oranges at a farmers market. What should she expect to pay tomorrow if she buys 3 more oranges from the same vendor? **8.3** **18** _____

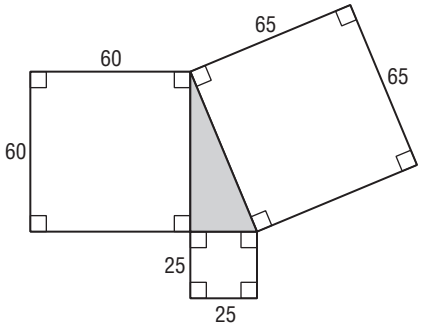
F $4.00 **G** $3.75
H $2.25 **J** $2.00

19 A middle school polled 6th, 7th, and 8th grade students to determine their interest in three new computer classes: desktop publishing, rendering, and animation. The matrix organizes the results of the poll. Which of these received the most votes? **8.13** **19** _____

	Grade 6	Grade 7	Grade 8
Desktop Publishing	14	22	32
Rendering	40	17	24
Animation	38	43	27

A Desktop Publishing, Grade 8
B Rendering, Grade 6
C Desktop Publishing, Grade 7
D Animation, Grade 7

20 Which equation verifies the Pythagorean Theorem for the shaded triangle in the figure? **8.10a** **20** _____



F $60^2 - 25^2 = 65^2$
G $60^2 + 25^2 = 65^2$
H $65^2 + 25^2 = 60^2$
J $\sqrt{60} + \sqrt{25} = \sqrt{65}$

21 A miniature golf course in Norfolk offered a 25% discount per game during its grand opening. If the regular price of a game is $5.00, what is the discounted price? **8.3** **21** _____

A $1.25 **B** $2.50
C $3.75 **D** $4.75

22 Which equation is true for all pairs in the table? **8.14b** **22** _____

x	$^-3$	$^-1$	0	2	4
y	$^-14$	$^-4$	1	11	21

F $y = {}^-5x + 1$ **G** $y = {}^-5x - 1$
H $y = 5x - 1$ **J** $y = 5x + 1$

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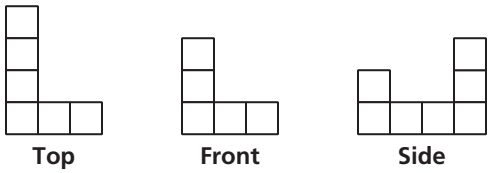
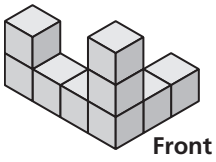
Diagnostic Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

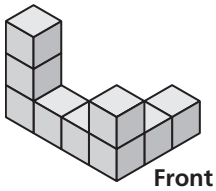
23 Here are three different views of a three-dimensional figure constructed from cubes. Which of the following could be the figure? **8.9** **23** _____



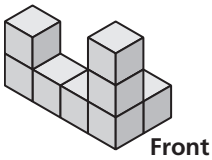
A



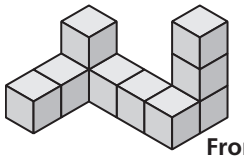
B



C

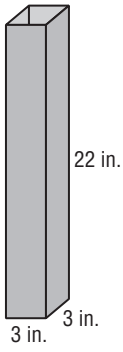


D



24 What is the volume of the container? **8.7** **24** _____

F 66 in^3
G 182 in^3
H 198 in^3
J 282 in^3



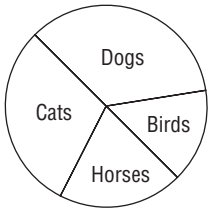
25 The table of values represents a function. What is the range of this function? **8.18** **25** _____

x	−3	−2	0	5	7
y	1	2	4	9	11

A *x*-values **B** *y*-values **C** (x, y) **D** $(-3, 11)$

26 The circle graph shows the favorite pet of students in Eddie's class. Which pet is the favorite of about 20% of the students? **8.12** **26** _____

F birds **G** cats
H dogs **J** horses



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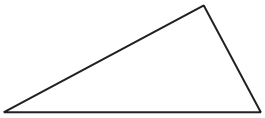
Diagnostic Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

27 Use your metric ruler to measure the triangle in millimeters. Which equation verifies the Pythagorean Theorem for this triangle? **8.10a** **27** _____

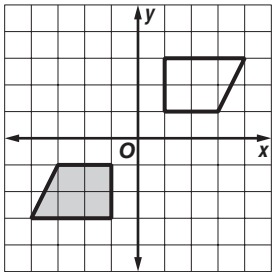


A $34^2 + 16^2 = 30^2$ **B** $34^2 = 16^2 + 30^2$

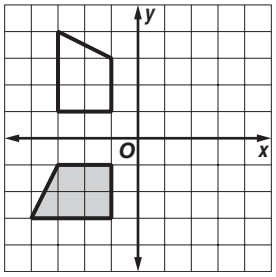
C $\sqrt{34} - \sqrt{30} = \sqrt{16}$ **D** $\sqrt{16} + \sqrt{30} = \sqrt{34}$

28 In which graph is the unshaded figure a 90° counterclockwise rotation of the shaded figure? **8.8** **28** _____

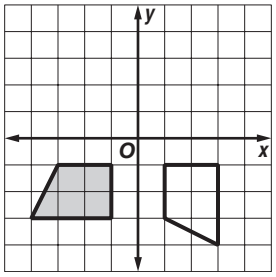
F



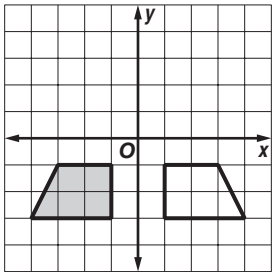
G



H



J



29 What is the solution of the equation $\frac{3x}{6} = 9$? **8.15** **29** _____

A 0.5 **B** 4.5

C 18 **D** 162

30 Which number is an integer? **8.2** **30** _____

F $\sqrt{15}$ **G** $\frac{4}{7}$

H $^{-}18$ **J** 0.45

31 Alison makes bracelets and then sells them for $8 each at a flea market. The total cost of the materials needed to make 12 bracelets is $60. What is Alison's profit if she sells 12 bracelets at the flea market? **8.17** **31** _____

A $36 **B** $40

C $96 **D** $156

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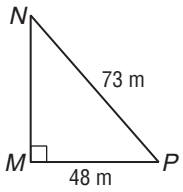
Diagnostic Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

32 What is the value of $84 + 3(2^3 - 3)^2$? **8.1a** **32** _____

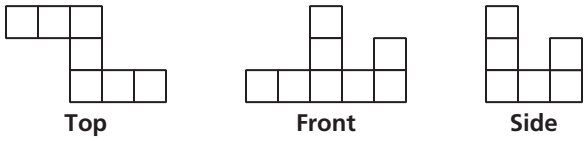
F 99 **G** 159
H 309 **J** 2,175

33 In $\triangle MNP$, $\overline{MP}$ measures 48 meters and $\overline{NP}$ measures 73 meters. Which is the length of $\overline{MN}$? **8.10b** **33** _____

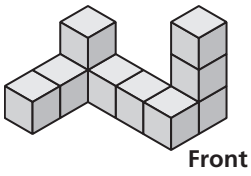


A 15 m
B 25 m
C 55 m
D 116 m

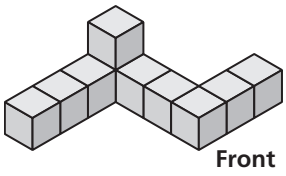
34 Here are three different views of a three-dimensional figure constructed from cubes. Which of the following could be the figure? **8.9** **34** _____



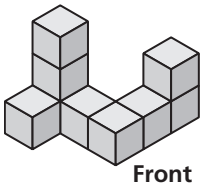
F



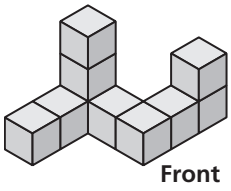
G



H



J



35 What is the value of $25 - \frac{a^3}{b} + c(a + b)$ if $a = 3$, $b = 9$, and $c = 6$? **8.4** **35** _____

A 49 **B** 90
C 94 **D** 336

36 A bag contains 4 yellow chips, 6 blue chips, and 8 green chips. If Beth reaches into the bag without looking and selects a chip, what is the probability that it is *not* blue? **8.11** **36** _____

F $\frac{2}{9}$ **G** $\frac{1}{3}$
H $\frac{4}{9}$ **J** $\frac{2}{3}$

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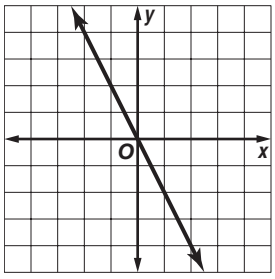
Diagnostic Test (continued)

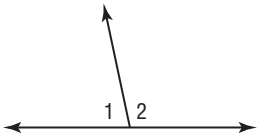
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

37 Which *best* describes the graph? **8.14b** **37** _____



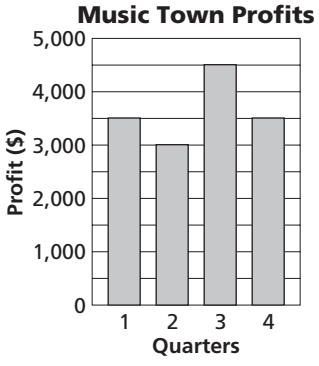
A $y = {}^{-}x$
B $y = {}^{-}2x$
C $y = x$
D $y = 2x$

38 If the measure of $\angle 1$ is 78°, what is the measure of $\angle 2$? **8.6** **38** _____



F 12°
G 78°
H 102°
J 168°

39 The bar graph shows the profits made at Music Town during each quarter last year. How much of a profit did the store make last year? **8.12** **39** _____



A $10,500
B $13,150
C $14,000
D $14,500

40 Mark and Katie collect movie posters. Together, they have 43 posters. Mark has 5 less than twice as many posters as Katie. If c represents the number of posters in Katie's collection, which equation models the relationship between the two collections? **8.14a** **40** _____

F $c + 2c - 5 = 43$
G $c - 2c - 5 = 43$
H $c + 2c + 5 = 43$
J $c - 2c + 5 = 43$

41 Which number is between 2.01 and 2.1? **8.1c** **41** _____

A 2.5
B 2.105
C 2.05
D 2.005

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Diagnostic Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

42 Emily ordered paper sleeves for the sugar cones at her ice cream parlor. If the diameter of each paper sleeve is 47 millimeters and the slant height is 112 millimeters, which is *closest* to the amount of paper used to make each sleeve? **8.7** **42** _____

F 8,264 mm^2
G 9,999 mm^2
H 16,529 mm^2
J 23,465 mm^2

43 Which number is *not* a perfect square? **8.5** **43** _____

A 25
B 30
C 49
D 100

44 A discount store opens 3 registers for every 45 customers in the store. If there are 105 customers in the store, how many registers are open? **8.17** **44** _____

F 7 registers
G 15 registers
H 20 registers
J 35 registers

45 Colton plays on a baseball team. The table shows his batting statistics for the last 16 times at bat. What is the probability that Colton will strike out the next time he is at bat? **8.11** **45** _____

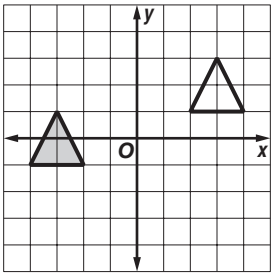
Batting Statistics	
Walks	3
Strikeouts	6
Singles	3
Doubles	2
Triples	1
Homeruns	1

A 0.375
B 0.4
C 0.6
D 0.625

46 What is the value of $9 + 18 \div 3 - y(y^2 - 6)^2$ when $y = 2$? **8.4** **46** _____

F $^-5$
G 1
H 7
J 112

47 Which description corresponds to the movement of the shaded figure to the unshaded figure? **8.8** **47** _____



A reflection across the x-axis
B translation 6 units right and 2 units up
C reflection across the y-axis
D 180° rotation about the origin

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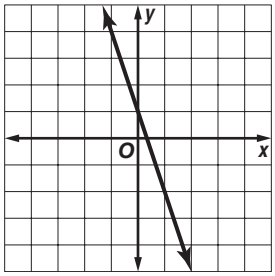
Diagnostic Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

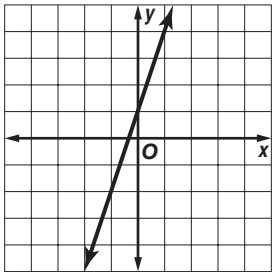
48 Which figure is the graph of a line that contains the points given in the table of ordered pairs? **8.16** **48** _____

x	-1	0	$\frac{1}{2}$	1
y	-2	1	$2\frac{1}{2}$	4

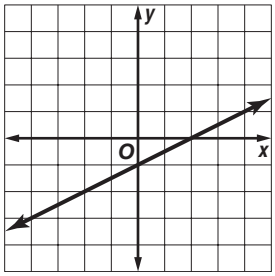
F



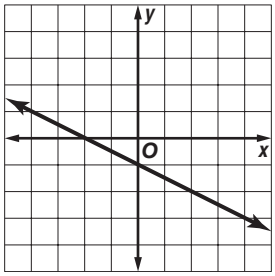
G



H



J

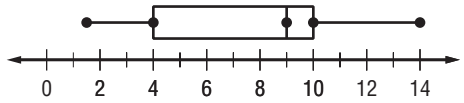


49 The table shows the income that Brianna makes for completing her newspaper route. Based on the pattern in the table, how much will Brianna make after completing 45 routes? **8.17** **49** _____

Routes	6	9	12	15	18	21
Income ($)	19.20	28.80	38.40	48.00	57.60	67.20

A $76.80
B $134.40
C $144.00
D $153.60

50 The box-and-whisker plot displays the lengths, in miles, of hiking trails in western Virginia. What is the median length of these trails? **8.12** **50** _____



F 4 mi
G 7 mi
H 9 mi
J 10 mi

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Diagnostic Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

51 Which number does *not* belong to the set of rational numbers? **8.2** **51** _____

A $\frac{11}{25}$ **B** 0.7777777…
C $^{-}43$ **D** 3.131131113…

52 The speed of sound in seawater is 1,531 meters per second. Express this number in scientific notation. **8.1b** **52** _____

F 0.153×10^3 **G** 1.531×10^3
H 15.31×10^2 **J** 153.1×10^3

53 The staff at a nature center records the number of chickadees (C), warblers (W), and mockingbirds (M) that visit the main feeder at various times of the day. Which matrix *best* organizes the data shown in the table? **8.13** **53** _____

9:00 A.M.	C	W	M	C	C	M	C	W	W	C		
11:00 A.M.	C	W	W	C	M	W	W	C	C	M	C	W
1:00 P.M.	M	M	C	C	W	M	C					

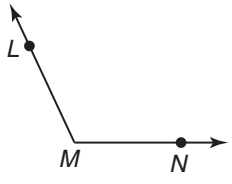
A
$$\begin{array}{c} \\ 9{:}00 \\ 11{:}00 \\ 1{:}00 \end{array}\begin{array}{c}\begin{array}{ccc} C & W & M \end{array}\\ \begin{bmatrix} 5 & 5 & 3 \\ 3 & 5 & 1 \\ 2 & 2 & 3 \end{bmatrix}\end{array}$$

B
$$\begin{array}{c} \\ 9{:}00 \\ 11{:}00 \\ 1{:}00 \end{array}\begin{array}{c}\begin{array}{ccc} C & W & M \end{array}\\ \begin{bmatrix} 5 & 3 & 2 \\ 5 & 5 & 2 \\ 3 & 1 & 3 \end{bmatrix}\end{array}$$

C
$$\begin{array}{c} \\ 9{:}00 \\ 11{:}00 \\ 1{:}00 \end{array}\begin{array}{c}\begin{array}{ccc} C & W & M \end{array}\\ \begin{bmatrix} 5 & 3 & 2 \\ 3 & 1 & 3 \\ 5 & 5 & 2 \end{bmatrix}\end{array}$$

D
$$\begin{array}{c} \\ 9{:}00 \\ 11{:}00 \\ 1{:}00 \end{array}\begin{array}{c}\begin{array}{ccc} C & W & M \end{array}\\ \begin{bmatrix} 5 & 3 & 5 \\ 3 & 1 & 5 \\ 2 & 3 & 2 \end{bmatrix}\end{array}$$

54 Which *best* approximates the measure of $\angle LMN$? **8.6** **54** _____



F 65°
G 85°
H 115°
J 155°

55 If $\frac{1}{2}(y + 12) = 14$, what is the value of y? **8.15** **55** _____

A 4
B 8
C 10
D 16

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Diagnostic Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

56 The function $p = 12h + 14$ can be used to determine the number of pages p that Shannon types in h hours, plus the 14 pages she has already typed. Which statement about this function is true? **8.18** **56** _____

F The range of the function is the set of possible values of p.
G The domain of the function is 12.
H The independent variable is 14.
J The dependent variable is h.

57 The frequency table shows the ages of the resort guests who signed up for sailing lessons. Which statement about the sailing lessons is true? **8.12** **57** _____

Ages	Frequency
11 to 25	38
26 to 35	42
36 to 45	51
46 to 55	33

A The median age of the guests who signed up for lessons is in the 36 to 45 age group.
B More than half of the guests who signed up are between 11 and 35 years of age.
C Fewer guests who are 26 to 35 years old signed up for lessons than guests who are 46 to 55 years old.
D Less than 50% of guests 26 to 45 years old signed up for lessons.

58 In the agricultural exhibit at a county fair, there were 12 hogs, 8 sheep, 9 cows, and 13 rabbits. What is the ratio of hogs to all other animals? **8.3** **58** _____

F $\frac{2}{7}$ **G** $\frac{2}{5}$
H $\frac{5}{7}$ **J** $\frac{4}{3}$

59 Mr. Adams plans to stain a wooden storage box that measures 8 feet by 2 feet by 3 feet. What is the surface area of this box? **8.7** **59** _____

A 46 ft^2
B 48 ft^2
C 92 ft^2
D 96 ft^2

60 Between which two consecutive whole numbers does $\sqrt{85}$ lie? **8.5** **60** _____

F 7 and 8
G 8 and 9
H 9 and 10
J 10 and 11

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.1a **The student will simplify numerical expressions involving positive exponents, using rational numbers, order of operations, and properties of operations with real numbers.**

1 Which is equivalent to $45 + (19 - 4) \div 3$? **1** _____

A 10
B 20
C 40
D 50

2 Which is equivalent to $86 - 2(4 + 9) \cdot 0.5$? **2** _____

F 30
G 73
H 300
J 546

3 What is the value of $4^2 + 24 \div 4 + 2^4$? **3** _____

A 38
B 26
C 22
D 2

4 What is the value of $8 + 2(3^3 - 12)^2$? **4** _____

F 2,500
G 2,250
H 908
J 458

5 Which is equivalent to $^{-}3 + 5(8 \div 2)^2$? **5** _____

A 32
B 64
C 77
D 128

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.1a **(continued)**

6 What is the value of $6^2 + 21 \cdot \frac{1}{3}(^-4 + 7)^3$? **6** _____

F 57
G 225
H 513
J 1,161

7 What is the value of $4^4 - 28 \div 4 + [(3 + 4)^2 \cdot 2]$? **7** _____

A 155
B 212
C 347
D 596

8 Which is equivalent to $14 \div \frac{1}{2} + 3 \cdot 5(2^3 \div 4)^2$? **8** _____

F 620
G 200
H 88
J 67

9 Which is equivalent to $(^-8)^2 \div 4 + (6 \cdot 1.5)^2$? **9** _____

A 65
B 97
C 337
D 1,089

10 What is the value of $58 - 6 \cdot 2 \div \frac{1}{4} + 3[(^-2)^5 + 35]$? **10** _____

F 19
G 64
H 211
J 425

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.1b **The student will recognize, represent, compare, and order numbers expressed in scientific notation.**

1 The estimated population of Virginia in 2002 was approximately 7,294,000. Which is this number expressed in scientific notation? **1** _____

A 729.4×10^3
B 72.94×10^5
C 7.294×10^6
D 7.294×10^3

2 The American Kennel Club registered about 155,000 Labrador Retrievers in 2002. Which is this number in scientific notation? **2** _____

F 155.0×10^3
G 15.5×10^4
H 1.55×10^3
J 1.55×10^5

3 A website had 1.8×10^4 hits in July. Which of the following shows the number of hits? **3** _____

A 180,000 hits
B 18,000 hits
C 1,800 hits
D 180 hits

4 A bee hummingbird weighs about 0.056 ounce. Which is this number in scientific notation? **4** _____

F 5.6×10^{-3}
G 5.6×10^{-2}
H 5.6×10^{-1}
J 56×10^2

5 A red blood cell has a diameter of about 1.0×10^{-5} meters. Which is equivalent to this length? **5** _____

A 0.00001 m
B 0.0001 m
C 0.001 m
D 0.01 m

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.1b **(continued)**

6 Which is the *least* number? **6** _____

F 1.0225×10^{-4}
G 1.025×10^{-4}
H 1.02×10^{-4}
J 1.2×10^{-4}

7 Which is the *greatest* number? **7** _____

A 1.0×10^{9}
B 1.01×10^{9}
C 1.001×10^{9}
D 1.0101×10^{9}

8 During its orbit, the closest that the planet Venus approaches the Sun is about 1.075×10^{8} kilometers. Its maximum distance from the Sun during its orbit is about 1.089×10^{8} kilometers. Which number lies between these two distances? **8** _____

F 1.0705×10^{8}
G 1.0809×10^{8}
H 1.09×10^{8}
J 1.07×10^{8}

9 Which list of numbers is in order from *least to greatest*? **9** _____

A 2.0×10^{-6}, 2.008×10^{-6}, 2.08×10^{-6}
B 2.0×10^{-6}, 2.08×10^{-6}, 2.008×10^{-6}
C 2.008×10^{-6}, 2.08×10^{-6}, 2.0×10^{-6}
D 2.08×10^{-6}, 2.008×10^{-6}, 2.0×10^{-6}

10 Which list shows these moons of Jupiter in order from *greatest to least* mass? **10** _____

F Ganymede, Callisto, Io, Europa
G Europa, Io, Callisto, Ganymede
H Io, Europa, Ganymede, Callisto
J Callisto, Ganymede, Europa, Io

Moon	Mass
Callisto	1.0759×10^{23} kg
Europa	4.8×10^{22} kg
Ganymede	1.4819×10^{23} kg
Io	8.932×10^{22}kg

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.1c **The student will compare and order decimals, fractions, percents, and numbers written in scientific notation.**

1 Which of the following statements is *not* true? **1** _____

A $\frac{3}{5} = 0.6 = 60\%$

B $1\frac{5}{8} = 1.625 = 162.5\%$

C $2\frac{1}{4} = 2.25 = 225\%$

D $3\frac{9}{10} = 3.9 = 39\%$

2 Trey walks between $3\frac{3}{8}$ miles and $3\frac{4}{5}$ miles to school. Which could be the number of miles he walked to school on Tuesday? **2** _____

F 3.35 mi

G 3.45 mi

H 3.85 mi

J 3.95 mi

3 Which number is between 4.7 and 4.8? **3** _____

A 4.078

B 4.08

C 4.708

D 4.87

4 Which list of numbers is in order from *least to greatest*? **4** _____

F $\frac{7}{25}$, 28.5%, 0.3

G 28.5%, 0.3, $\frac{7}{25}$

H 28.5%, $\frac{7}{25}$, 0.3

J 0.3, 28.5%, $\frac{7}{25}$

5 Which is the *least* number? **5** _____

A 11.5%

B 1.15×10^{-3}

C 0.0115

D $\frac{115}{1{,}000}$

6 Which statement is true? **6** _____

F $\frac{4}{7} < \frac{5}{9}$

G $\frac{3}{8} > 38\%$

H $2.1 \times 10^{-2} > 0.21$

J $1.6\% < 0.16$

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.1c (continued)

7 Which list of numbers is in order from *greatest to least*? **7** _____

A $\frac{11}{16}$, 0.649, 6.489×10^{-1}

B $\frac{11}{16}$, 6.489×10^{-1}, 0.649

C 0.649, $\frac{11}{16}$, 6.489×10^{-1}

D 6.489×10^{-1}, 0.649, $\frac{11}{16}$

8 The specific gravities of three minerals are shown in the table. Which list gives the minerals in order from *least to greatest* specific gravity? **8** _____

Mineral	Specific Gravity
Amethyst	2.63
Turquoise	2.9
Stilbite	2.235

F Amethyst, Stilbite, Turquoise

G Turquoise, Stilbite, Amethyst

H Turquoise, Amethyst, Stilbite

J Stilbite, Amethyst, Turquoise

9 Which is the *greatest* number? **9** _____

A $2\frac{2}{5}$

B 2.45×10^{-1}

C 20.25%

D 2.25

10 Which statement is *not* true? **10** _____

F $8.9 \times 10^{-1} = 0.89 = 89\%$

G $\frac{9}{25} = 36\% = 0.36$

H $1\frac{7}{8} = 1.875 = 18.75\%$

J $2.5 \times 10^{-2} = \frac{25}{1{,}000} = 2.5\%$

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.2 **The student will describe orally and in writing the relationship between the subsets of the real number system.**

1 Which number is both a rational number and an integer? **1** _____

A $\frac{3}{5}$

B $^{-}\sqrt{13}$

C 0.2

D $^{-}6$

2 Which *best* describes the set(s) of numbers to which $\sqrt{49}$ belongs? **2** _____

F irrational

G rational, whole

H rational, whole, integers

J rational, integers

3 Which number does *not* belong to the set of irrational numbers? **3** _____

A $\sqrt{11}$

B 0.222222…

C $^{-}\sqrt{3}$

D 8.1223334444…

4 Which statement is true? **4** _____

F Some integers are irrational numbers.

G Every terminating decimal is an integer.

H Every integer is a whole number.

J All integers are rational numbers.

5 Which of the following is a *not* a rational number? **5** _____

A $\sqrt{35}$

B $\frac{7}{20}$

C $\sqrt{225}$

D 0.12121212…

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.3 **The student will solve practical problems involving rational numbers, percents, ratios, and proportions. Problems will be of varying complexities and will involve real-life data, such as finding a discount and discount prices and balancing a checkbook.**

Use the following information for Questions 1 and 2.

Lauren performs a weekly inventory of the trees at Thompson Nursery. The most recent inventory revealed the data given in the table.

Trees at Thompson Nursery					
Birch	Maple	Dogwood	Hickory	Redbud	Spruce
6	8	14	4	8	12

1 What is the ratio of spruce to dogwood trees at the nursery? **1** _____

A $\frac{1}{6}$ **B** $\frac{3}{4}$

C $\frac{6}{7}$ **D** $\frac{7}{6}$

2 What is the ratio of maple trees to the total number of trees? **2** _____

F $\frac{13}{2}$ **G** $\frac{11}{2}$

H $\frac{2}{13}$ **J** $\frac{2}{11}$

3 In a scale drawing, a grasshopper is 16 centimeters in length. If the length of the actual grasshopper is 40 millimeters, which of these is most likely the scale used to make the drawing? **3** _____

A 1 centimeter represents 0.25 millimeter.
B 1 centimeter represents 2.5 millimeters.
C 1 centimeter represents 0.4 millimeter.
D 1 centimeter represents 4 millimeters.

4 Cody reduced a 12-inch by 15-inch photograph by 40%. What are the new dimensions of the photograph? **4** _____

F 16.8 in. × 21 in.
G 7.2 in. × 9 in.
H 4.8 in. × 6 in.
J 3 in. × 3.75 in.

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.3 **(continued)**

5 On a diving expedition, Alejandra went from a depth of $^{-}2.5$ meters to a depth of $^{-}3.25$ meters. What is the difference between the two depths? **5** _____

A $^{-}0.25$ m **B** 0.75 m
C 1.5 m **D** 5.75 m

6 A watering trough for horses holds about $20\frac{1}{2}$ gallons of water. If Zachary uses a $\frac{3}{4}$ gallon bucket to fill the trough, approximately how many times will he need to fill the bucket? **6** _____

F more than 30 times
G between 26 and 29 times
H between 21 and 25 times
J less than 20 times

7 Tyesha bought 6 books at a library book sale. The books ranged in price from \$0.50 to \$2.25. Which is the *best* estimate of the total cost of the books she purchased? **7** _____

A \$3 **B** \$7
C \$14 **D** \$18

8 Eduardo had \$131.28 in his checking account. He wrote a \$26.50 check for two Smith Mountain Lake boat cruises. How much did he have left in his account after writing the check? **8** _____

F \$115.78 **G** \$105.68
H \$105.22 **J** \$104.78

9 A sporting goods store reduced its prices on all skateboards by 25%. If the original price of a skateboard was \$68, what is its discount price? **9** _____

A \$17 **B** \$43
C \$51 **D** \$85

10 How much is the discount on a coat that was originally priced at \$129.95 if it is on sale for 35% off? **10** _____

F \$45.48 **G** \$71.47
H \$84.47 **J** \$94.95

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.3 (continued)

11 The attendance at a school fair increased from 780 people in 2003 to 975 people in 2004. What is the percent of increase in attendance? **11** _____

A 2.5%
B 20%
C 25%
D 80%

12 Ms. Kensington bought a multi-function office machine for $640. Two months later she saw it advertised for $416. What is the percent of decrease in the price? **12** _____

F 3.5%
G 6.5%
H 35%
J 65%

13 A recipe for potato soup calls for $3\frac{1}{2}$ cups of water and $1\frac{3}{4}$ cups of milk. If Mr. Gomez halves the recipe, how many total cups of these two liquids will he use to make the soup? **13** _____

A $2\frac{5}{8}$ c
B $2\frac{3}{4}$ c
C $5\frac{1}{4}$ c
D $10\frac{1}{2}$ c

14 The Holliday Lake Lakeshore Trail in Appomattox County is $4\frac{3}{5}$ miles long. If Kyle hikes the trail $4\frac{1}{2}$ times, how many miles will he walk? **14** _____

F $20\frac{7}{10}$ mi
G $18\frac{2}{5}$ mi
H 18 mi
J $9\frac{1}{10}$ mi

15 Cassandra ordered 4 T-shirts at an online store for $6.50 each, plus 4.5% sales tax and $3.50 for shipping. What was the total cost of her order? **15** _____

A $41.20
B $38.30
C $30.67
D $28.58

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.4 **The student will apply the order of operations to evaluate algebraic expressions for given replacement values of the variables. Problems will be limited to positive exponents.**

1 What is the value of $b^2(8 - b) + 12$ when $b = 6$? **1** _____

A 294
B 84
C 72
D 24

2 What is the value of $2x^2 + 5(x^3 - 4)$ when $x = 3$? **2** _____

F 133
G 149
H 529
J 617

3 What is the value of $3(y^2 + y) - \frac{y^3}{4}$ when $y = 4$? **3** _____

A $^-1$
B 12
C 36
D 44

4 What is the value of $15 + (n^2 + 8) - 5(n + 3)$ when $n = 7$? **4** _____

F 505
G 110
H 40
J 22

5 What is the value of $16 - \frac{x^2}{x} + 7(x + 2)$ when $x = 8$? **5** _____

A 150
B 84
C 78
D 66

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.4 **(continued)**

6 What is the value of $a^2 + b(11 - a)$ if $a = 2$ and $b = 9$? **6** _____

F 22
G 85
H 117
J 141

7 What is the value of $z^2(y - x)$ if $x = 2$, $y = 7$, and $z = 3$? **7** _____

A 61
B 45
C 25
D 16

8 What is the value of $\frac{a^3}{c} + b(a + c)$ if $a = 3$, $b = 7$, and $c = 9$? **8** _____

F 33
G 85
H 87
J 120

9 What is the value of $y^2 + 2(x^2 - y^2) - \frac{x^2}{4}$ if $x = 6$ and $y = 5$? **9** _____

A 38
B 40
C 52
D 63

10 What is the value of $5r - \frac{m}{p^2} + 4(r + m)$ if $p = 2$, $m = 8$, and $r = 6$? **10** _____

F 84
G 200
H 420
J 448

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.5 **The student, given a whole number from 0 to 100, will identify it as a perfect square or find the two consecutive whole numbers between which the square root lies.**

1 Which number is a perfect square? **1** _____

A 12
B 35
C 50
D 64

2 Which number is a perfect square? **2** _____

F 20
G 25
H 40
J 45

3 Which number is *not* a perfect square? **3** _____

A 36
B 49
C 72
D 100

4 Which number is *not* a perfect square? **4** _____

F 4
G 9
H 16
J 32

5 The irrational number $\sqrt{55}$ lies between which two consecutive whole numbers? **5** _____

A 7 and 8
B 8 and 9
C 9 and 10
D 10 and 11

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OBJECTIVE 8.5 **(continued)**

6 The irrational number $\sqrt{66}$ lies between which two consecutive whole numbers? **6** _____

F 7 and 8
G 8 and 9
H 9 and 10
J 10 and 11

7 The irrational number $\sqrt{18}$ lies between which two consecutive whole numbers? **7** _____

A 2 and 3
B 3 and 4
C 4 and 5
D 5 and 6

8 Between which two consecutive whole numbers does $\sqrt{54}$ lie? **8** _____

F 4 and 5
G 5 and 6
H 6 and 7
J 7 and 8

9 Between which two consecutive whole numbers does $\sqrt{78}$ lie? **9** _____

A 6 and 7
B 7 and 8
C 8 and 9
D 9 and 10

10 Between which two consecutive whole numbers does $\sqrt{97}$ lie? **10** _____

F 9 and 10
G 10 and 11
H 11 and 12
J 12 and 13

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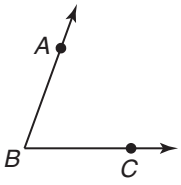
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

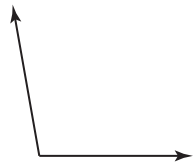
OBJECTIVE 8.6 **The student will verify by measuring and describe the relationships among vertical angles, supplementary angles, and complementary angles and will measure and draw angles of less than 360°.**

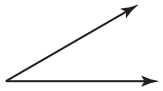
1 Which *best* approximates the measure of $\angle ABC$? **1** _____

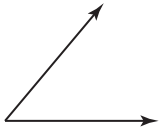


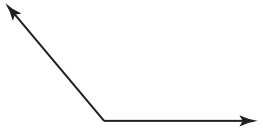
A 40°
B 70°
C 90°
D 110°

2 Which angle has a measure closest to 130°? **2** _____

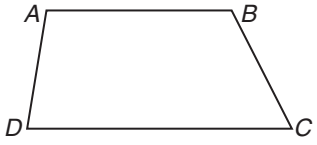
F


G


H


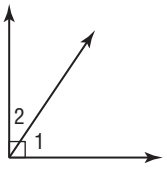
J


3 Which angle in this quadrilateral has a measure *closest* to 63°? **3** _____



A $\angle A$
B $\angle B$
C $\angle C$
D $\angle D$

4 If the measure of $\angle 1$ is 56°, what is the measure of $\angle 2$? **4** _____



F 34°
G 44°
H 90°
J 146°

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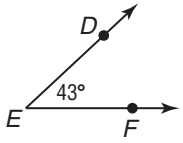
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.6 (continued)

5 What is the measure of an angle that is complementary to $\angle DEF$?

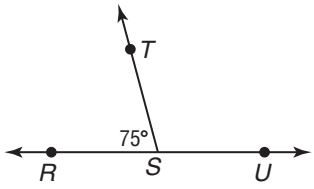
A 137°
B 133°
C 90°
D 47°



5 _____

6 If $\angle TSU$ is supplementary to $\angle RST$, what is its measure?

F 95°
G 105°
H 165°
J 180°



6 _____

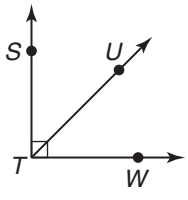
7 What is the value of x?

A 33
B 57
C 123
D 147

7 _____

8 Which term *best* describes the relationship between $\angle STU$ and $\angle UTW$?

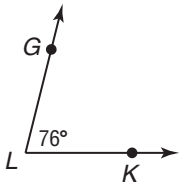
F right angles
G vertical angles
H complementary angles
J supplementary angles



8 _____

9 What is the measure of an angle that is supplementary to $\angle GLK$?

A 23°
B 90°
C 104°
D 180°



9 _____

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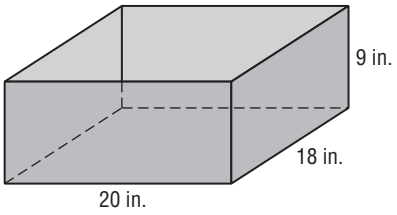
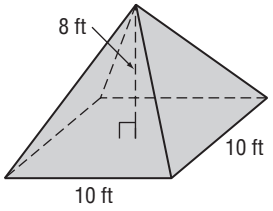
OBJECTIVE 8.7 **The student will investigate and solve practical problems involving volume and surface area of rectangular solids (prisms), cylinders, cones, and pyramids.**

1 Jared filled the planter with dirt until the dirt was 1 inch from the top. What is the volume of dirt in the planter? **1** _____



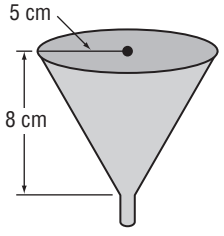
A 1,440 in^3
B 1,584 in^3
C 2,880 in^3
D 3,240 in^3

2 While on a camping trip at Shenandoah National Park, Derek and Andrea pitched a tent that has the shape of a pyramid. Which is *closest* to the volume of the tent? **2** _____



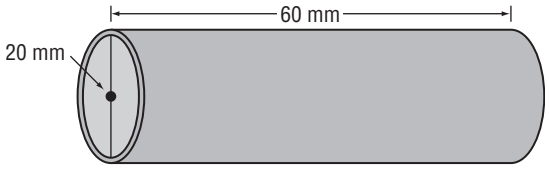
F 800 ft^3
G 400 ft^3
H 267 ft^3
J 133 ft^3

3 Caleb used a funnel to pour oil into a bottle. If he fills the funnel to the top, which is *closest* to the amount of oil contained in the cone-shaped portion of the funnel? **3** _____



A 126 cm^3
B 209 cm^3
C 335 cm^3
D 629 cm^3

4 Which is *closest* to the volume of water that can be held by the section of garden hose shown? **4** _____



F 6,280 mm^3
G 18,840 mm^3
H 75,360 mm^3
J 226,080 mm^3

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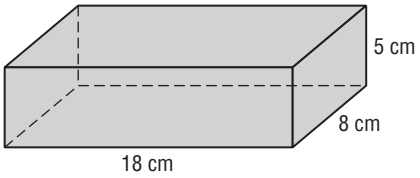
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

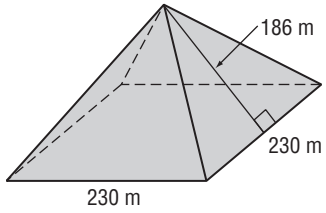
OBJECTIVE 8.7 **(continued)**

5 Erica wants to cover the top and sides of her jewelry box with fabric. How much fabric does she need? **5** _____



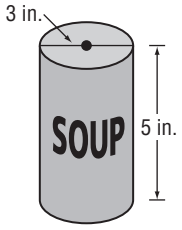
A 404 cm^2
B 548 cm^2
C 576 cm^2
D 720 cm^2

6 The great pyramid of Khufu is located in Egypt. The dimensions of the pyramid when it was built are given in the figure. What was the surface area of the pyramid when it was built excluding the base? **6** _____



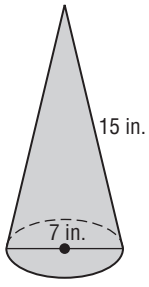
F 42,780 m^2
G 74,290 m^2
H 85,560 m^2
J 138,460 m^2

7 Lindsey is designing a label for a can of soup. If the label covers the entire curved surface of the can, which is *closest* to the amount of paper she needs to make the label? **7** _____



A 150 in^2
B 61 in^2
C 47 in^2
D 35 in^2

8 Collin made a conical hat with an opening of diameter 7 inches. Which is *closest* to the amount of material he used for the hat? **8** _____



F 165 in^2
G 203 in^2
H 330 in^2
J 484 in^2

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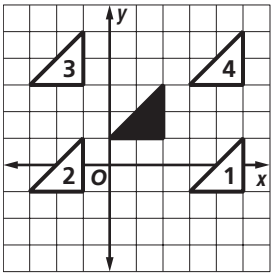
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.8 **The student will apply transformations (rotate or turn, reflect or flip, translate or slide, and dilate or scale) to geometric figures represented on graph paper. The student will identify applications of transformations, such as tiling, fabric design, art, and scaling.**

1 Which numbered triangle shows where the shaded triangle would be if it were translated 3 units right and 2 units down?

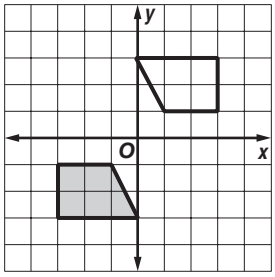
A triangle 1
B triangle 2
C triangle 3
D triangle 4



1 _____

2 Which description corresponds to the movement of the shaded figure to the unshaded figure?

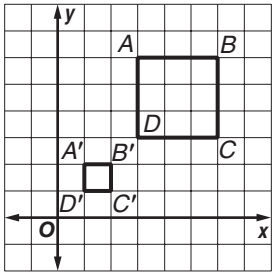
F reflection across the *x*-axis
G translation 3 units right and 4 units up
H reflection across the *y*-axis
J 180° rotation about the origin



2 _____

3 Which scale factor did Jorge *most likely* use to dilate figure *ABCD* to get *A′B′C′D′*?

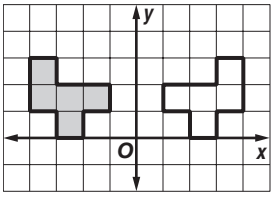
A 3
B 2
C $\frac{1}{2}$
D $\frac{1}{3}$



3 _____

4 Which description corresponds to the movement of the shaded figure to the unshaded figure?

F reflection across the *x*-axis
G translation 5 units right
H reflection across the *y*-axis
J 90° counterclockwise rotation about the origin



4 _____

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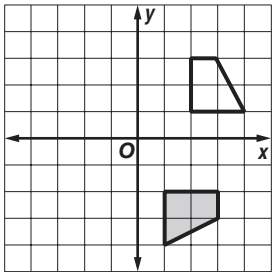
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

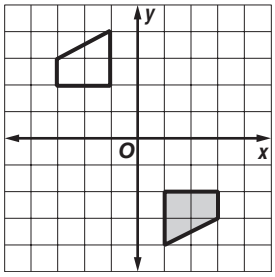
OBJECTIVE 8.8 **(continued)**

5 In which graph is the unshaded figure a 90° clockwise rotation of the shaded figure? **5** _____

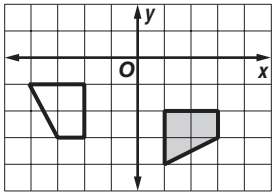
A



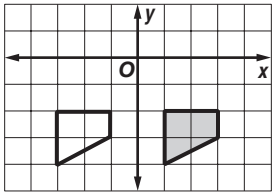
B



C



D



6 Adam transformed Figure A to create the design in Figure B. Which of these transformations did he *most likely* use to create the design? **6** _____

F rotations only
G reflections only
H translations only
J translations and rotations

Figure A

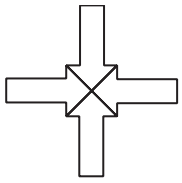
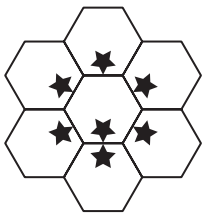


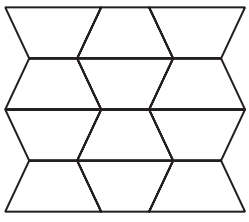
Figure B

7 Which tiling could have been created using *only* translations? **7** _____

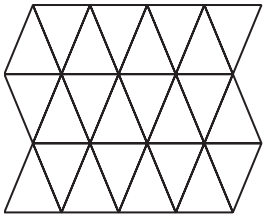
A



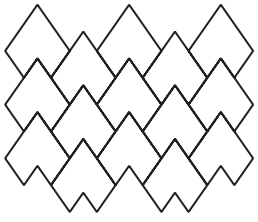
B



C



D



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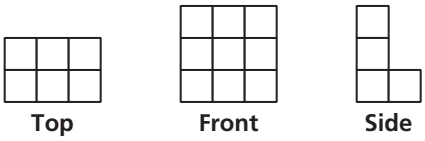
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

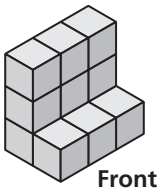
OBJECTIVE 8.9 **The student will construct a three-dimensional model, given the top, side, and/or bottom view.**

1 Here are three different views of a three-dimensional figure constructed from cubes. **1** _____

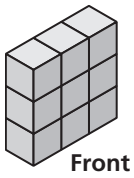


Which of the following could be the figure?

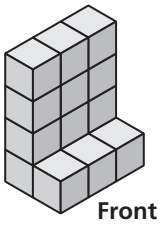
A



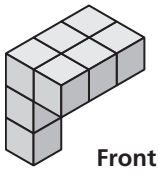
B



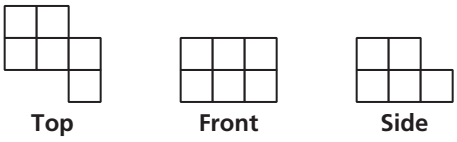
C



D

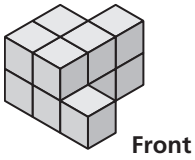


2 Here are three different views of a three-dimensional figure constructed from cubes. **2** _____

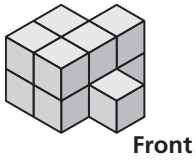


Which of the following could be the figure?

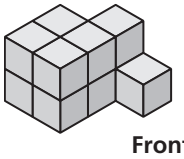
F



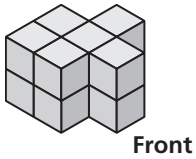
G



H



J



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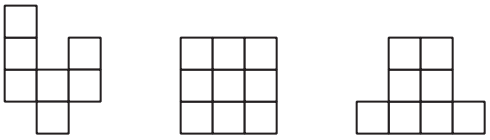
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

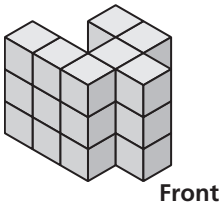
OBJECTIVE 8.9 **(continued)**

3 Here are three different views of a three-dimensional figure constructed from cubes. **3** _____

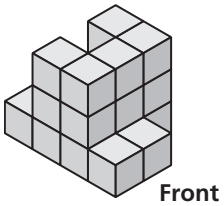


Which of the following could be the figure?

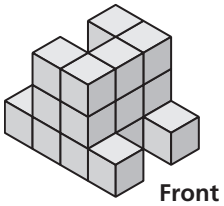
A



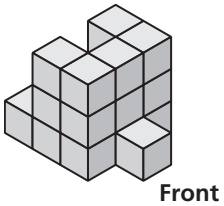
B



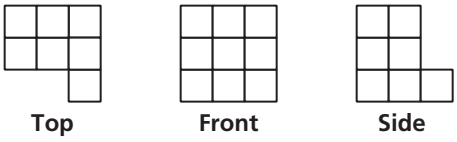
C



D

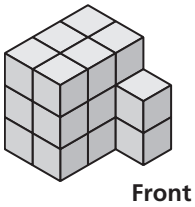


4 Here are three different views of a three-dimensional figure constructed from cubes. **4** _____

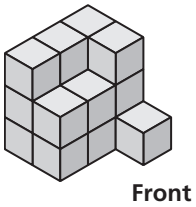


Which of the following could be the figure?

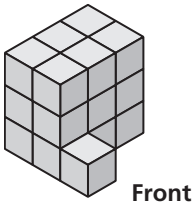
F



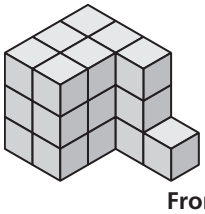
G



H



J



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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.10a **The student will verify the Pythagorean Theorem, using diagrams, concrete materials, and measurement.**

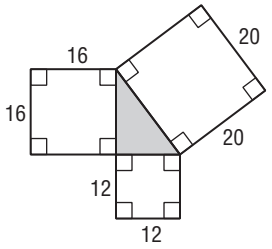
1 Which equation verifies the Pythagorean Theorem for the shaded triangle in the figure?

A $32^2 + 24^2 = 40^2$

B $12^2 + 16^2 = 20^2$

C $12^2 + 20^2 = 16^2$

D $\sqrt{16} + \sqrt{12} = \sqrt{20}$



1 _____

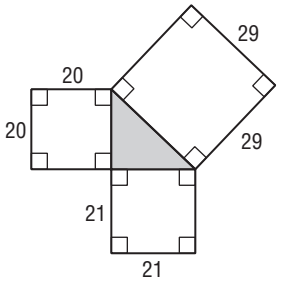
2 Which equation verifies the Pythagorean Theorem for the shaded triangle in the figure?

F $\sqrt{20} + \sqrt{21} = \sqrt{29}$

G $21^2 - 20^2 = 29^2$

H $29 = (20 + 21)^2$

J $29^2 = 21^2 + 20^2$



2 _____

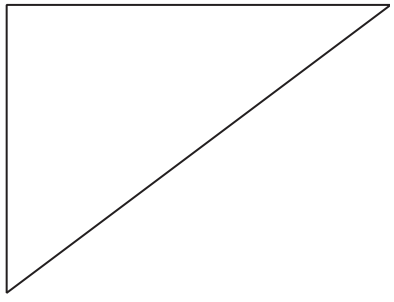
3 Use your customary ruler to measure the triangle in inches. Which equation verifies the Pythagorean Theorem for this triangle?

A $1.5^2 + 2^2 = 2.5^2$

B $2.5^2 + 1.5^2 = 2^2$

C $5^2 + 4^2 = 6.5^2$

D $6.5^2 = 5^2 - 4^2$



3 _____

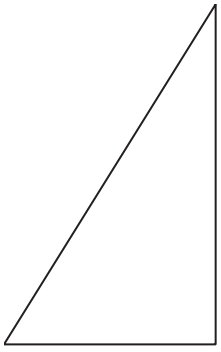
4 Use your metric ruler to measure the triangle in millimeters. Which equation verifies the Pythagorean Theorem for this triangle?

F $2.8^2 + 5.3^2 = 4.5^2$

G $\sqrt{2.8 + 4.5} = \sqrt{5.3}$

H $53^2 = 45^2 - 28^2$

J $53^2 = 28^2 + 45^2$



4 _____

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.10a (continued)

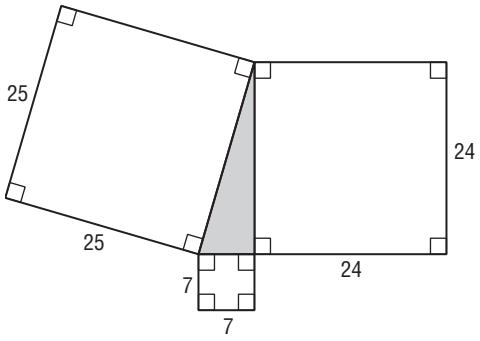
5 Which equation verifies the Pythagorean Theorem for the shaded triangle in the figure?

A $25 = \sqrt{24^2 - 7^2}$

B $24^2 - 7^2 = 25^2$

C $7^2 + 24^2 = 25^2$

D $\sqrt{25} - \sqrt{24} = \sqrt{7}$



5 _____

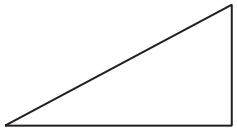
6 Use your metric ruler to measure the triangle in centimeters. Which equation verifies the Pythagorean Theorem for this triangle?

F $3^2 + 1.6^2 = 3.4^2$

G $3.4^2 + 1.6^2 = 3^2$

H $3^2 - 1.6^2 = 3.4^2$

J $30^2 - 16^2 = 34^2$



6 _____

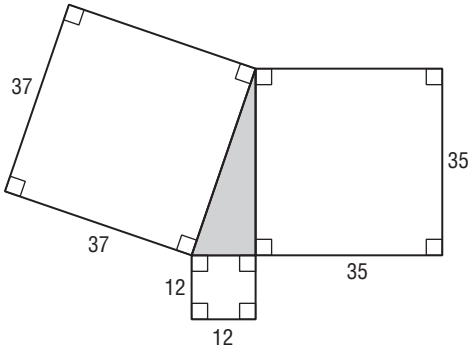
7 Which equation verifies the Pythagorean Theorem for the shaded triangle in the figure?

A $37^2 + 12^2 = 35^2$

B $37^2 + 35^2 = 12^2$

C $\sqrt{35} + \sqrt{12} = \sqrt{37}$

D $\sqrt{12^2 + 35^2} = 37$



7 _____

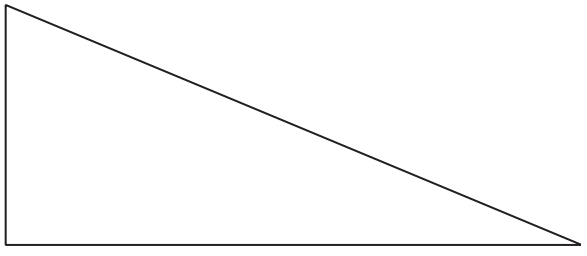
8 Use your customary ruler to measure the triangle in inches. Which equation verifies the Pythagorean Theorem for this triangle?

F $3^2 - 1.25^2 = 3.25^2$

G $3.25^2 = 1.25^2 + 3^2$

H $3.5^2 = 3^2 + 1.5^2$

J $7.5^2 + 3.2^2 = 8.3^2$



8 _____

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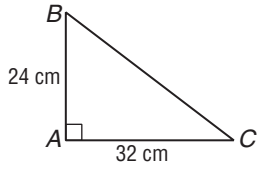
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.10b **The student will apply the Pythagorean Theorem to find the missing length of a side of a right triangle when given the lengths of the other two sides.**

1 In $\triangle ABC$, $\overline{AB}$ measures 24 centimeters and $\overline{AC}$ measures 32 centimeters. What is the length of $\overline{BC}$?

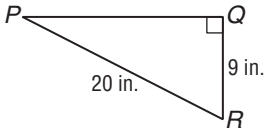
A $\sqrt{40}$ cm
B $\sqrt{448}$ cm
C 40 cm
D 56 cm



1 _____

2 In $\triangle PQR$, $\overline{PR}$ measures 20 inches and $\overline{QR}$ measures 9 inches. Which is *closest* to the length of $\overline{PQ}$?

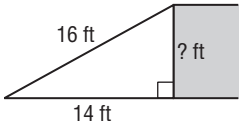
F 15 in.
G 18 in.
H 19 in.
J 22 in.



2 _____

3 A loading dock at a warehouse in Alexandria has a ramp that is 16 feet in length. The length from the edge of the loading dock to the end of the ramp is 14 feet. Which is *closest* to the height of the loading dock?

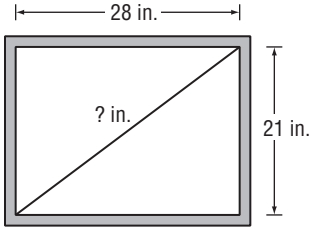
A 4 ft
B 7 ft
C 8 ft
D 10 ft



3 _____

4 The size of a television is determined by the length of the diagonal of its screen. What size is the television shown in the diagram?

F 30 in.
G 32 in.
H 35 in.
J 49 in.



4 _____

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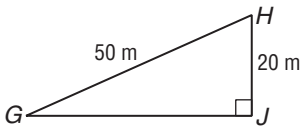
OBJECTIVE 8.10b **(continued)**

5 In $\triangle GHJ$, $\overline{GH}$ measures 50 meters and $\overline{HJ}$ measures 20 meters. Which is *closest* to the length of $\overline{GJ}$?

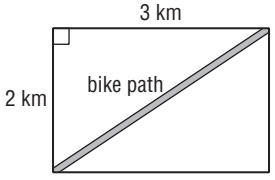
A 54 m
B 46 m
C 35 m
D 30 m



5 _____

6 Mia is preparing for a bicycle marathon. On Tuesday, she plans to ride on a diagonal bike path that cuts through a park in Arlington. If Mia takes the path, which is *closest* to the distance she will ride?

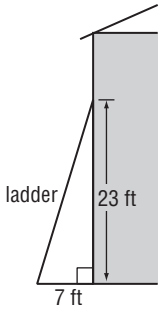
F 2.2 km
G 3.6 km
H 3.8 km
J 4.1 km



6 _____

7 Tomas wants to paint the trim on a third floor window that is 23 feet above the ground. If he places a ladder so it is just under the window and the bottom of the ladder is 7 feet from the base of the outside wall of the house, which is *closest* to the length of the ladder?

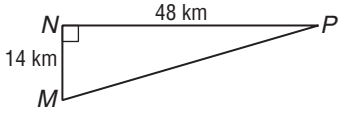
A 20 ft
B 22 ft
C 24 ft
D 25 ft



7 _____

8 In $\triangle MNP$, $\overline{MN}$ measures 14 kilometers and $\overline{NP}$ measures 48 kilometers. What is the length of $\overline{MP}$?

F 52 km
G 50 km
H 49 km
J 46 km



8 _____

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.11 **The student will analyze problem situations, including games of chance, board games, or grading scales, and make predictions, using knowledge of probability.**

Use the following information for Questions 1 and 2.

Nina and Rico are playing a word game in which they select letter tiles from a box when it is their turn to play. The tiles in the box are lying upside down so that the players cannot see the letters when making their selections. The table shows the number of letter tiles remaining in the box.

Tile	Number
A	4
B	3
E	2
S	6
T	5

1 If Nina selects one tile, what is the probability that it is a vowel? **1** _____

A 20% **B** 30%

C 60% **D** 70%

2 Suppose that after Nina's turn, in which she selected an S tile, Rico now selects one tile. What is the probability that it is a consonant? **2** _____

F $\frac{13}{19}$ **G** $\frac{13}{20}$

H $\frac{14}{19}$ **J** $\frac{14}{20}$

3 A bag contains 5 yellow marbles, 2 blue marbles, and 3 red marbles. If Tara reaches into the bag without looking and grabs a marble, what is the probability that it is blue? **3** _____

A $\frac{1}{5}$ **B** $\frac{1}{4}$

C $\frac{3}{8}$ **D** $\frac{1}{2}$

4 Rashawn is playing a game in which he needs to roll a 4 or greater on a number cube to move his playing piece off the board. What is the probability he will get a 4 or greater on his next roll? **4** _____

F 30% **G** $33\frac{1}{3}\%$

H 50% **J** $66\frac{2}{3}\%$

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.11 **(continued)**

5 To win a card game, Kevin must draw a queen from a shuffled deck of 52 standard playing cards. What is the probability that he will draw the card he needs? **5** _____

A $\frac{1}{52}$ **B** $\frac{1}{26}$

C $\frac{1}{13}$ **D** $\frac{1}{4}$

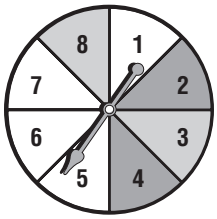
6 The table shows the grades received on Ms. Randall's most recent science test. What is the probability that a student selected at random received an A on the test? **6** _____

Grades	
A	4
B	15
C	24
D	3
F	2

F $\frac{1}{4}$ **G** $\frac{1}{5}$

H $\frac{1}{11}$ **J** $\frac{1}{12}$

7 What is the probability that the spinner will land on a number greater than 3? **7** _____



A 0.5
B 0.6
C 0.625
D 0.75

8 A random survey of 50 students at a middle school in Winchester showed that 8 students walk to and from school each day. If there are 250 students at the school, how many can be expected to walk? **8** _____

F 24 students **G** 32 students

H 40 students **J** 50 students

9 A quarterback completed 18 of 25 passes in his last football game. At this rate, how many passes will he *most likely* complete out of 75? **9** _____

A 68 passes **B** 54 passes

C 48 passes **D** 36 passes

10 In a random sample of 500 sweatshirts, 30 had defects. How many sweatshirts in a sample of 350 can be predicted to have defects? **10** _____

F 9 sweatshirts **G** 21 sweatshirts

H 42 sweatshirts **J** 45 sweatshirts

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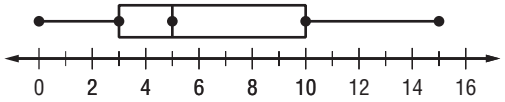
OBJECTIVE 8.12 **The student will make comparisons, predictions, and inferences, using information displayed in frequency distributions; box-and-whisker plots; scattergrams; line, bar, circle, and picture graphs; and histograms.**

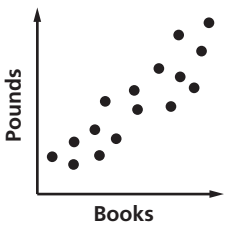
1 The box-and-whisker plot shows the number of dolphin sightings near Virginia Beach each day during a 14-day period. Which statement about the dolphin sightings *must* be true? **1** _____



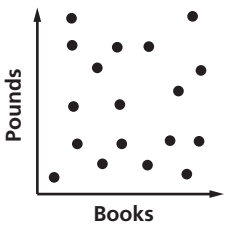
A The range in sightings per day was 7.
B The greatest number of sightings per day was 10.
C The mean number of sightings per day was 15.
D The median number of sightings per day was 5.

2 Which scatter plot *best* shows the relationship between the number of books in a student's backpack and the weight of the backpack? **2** _____

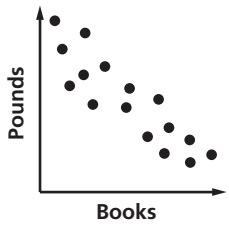
F



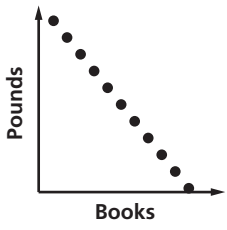
G



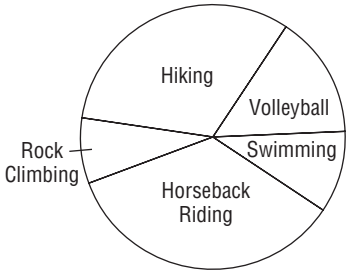
H



J



3 The circle graph shows the favorite camp activities at a summer camp in the Blue Ridge Mountains. Which camp activity is about twice as popular as rock climbing? **3** _____



A horseback riding
B swimming
C volleyball
D hiking

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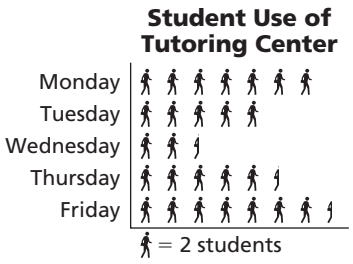
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.12 **(continued)**

4 The picture graph shows the number of students who used the tutoring center each day last week at Brooks Middle School. On which day did three times as many students use the center as used it on Wednesday?

F Monday
G Tuesday
H Thursday
J Friday



4 _____

5 The frequency table shows the number of hours that customers rented canoes last month at a rental shop near the Shenandoah River in Greene County. Which statement about the rentals is *not* true?

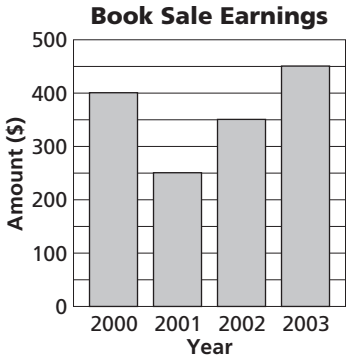
Canoe Rentals	
Hours	**Frequency**
0 to 2	9
2 to 4	47
4 to 6	19
6 to 8	38

A The two most popular time intervals were about 3 times as popular as the two least popular intervals.
B More rentals lasted from 0 to 4 hours than from 4 to 8 hours.
C The 0 to 2 interval was about half as popular as the 4 to 6 interval.
D The 2 to 4 interval was about 2.5 times as popular as the 4 to 6 interval.

5 _____

6 Each year Edgemont Middle School has a book sale. During which year were the earnings *closest* to the mean earnings for the entire period from 2000 through 2003?

F 2000
G 2001
H 2002
J 2003



6 _____

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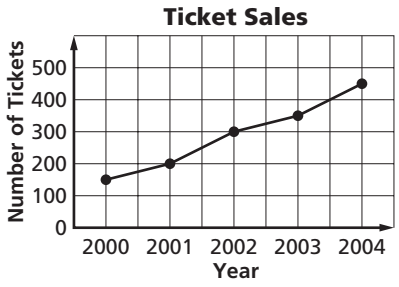
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.12 **(continued)**

7 The line graph shows the number of tickets sold each spring at a county fair. If the number of tickets sold continues to increase at the rate shown in the graph, what is the *best* prediction of ticket sales for 2008? **7** _____

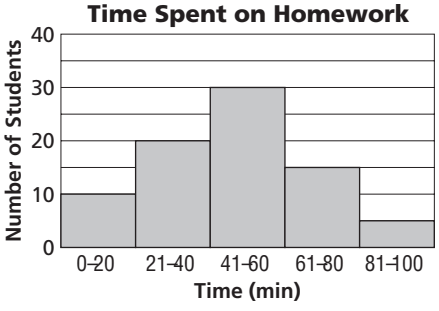


A 525 tickets
B 600 tickets
C 750 tickets
D 1,050 tickets

8 Based on the graph in Question 7, which statement is true? **8** _____

F The greatest increase in sales occurred between 2002 and 2003.
G The least increase in sales occurred between 2003 and 2004.
H The greatest increase in sales during one year was 150 tickets.
J The least increase in sales during one year was 50 tickets.

9 The histogram shows the number of minutes that students at a middle school in Roanoke spent on homework each night last month. What *percentage* of students spent 41 to 60 minutes on their homework? **9** _____



A 30%
B 37.5%
C 60%
D 62.5%

10 Based on the histogram in Question 9, which statement is *not* true? **10** _____

F The percentage of students who spent 21–40 minutes on homework is the same as those who spent 61 minutes or more.
G About 81% of the students spent 21–80 minutes on homework.
H About 50% of the students spent 0–40 minutes on homework.
J The median number of minutes spent on homework is 41–60 minutes.

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.13 **The student will use a matrix to organize and describe data.**

1 An animal shelter for cats and dogs recorded the number of male and female adoptions during a 7-day period. Which matrix *best* organizes the data given in the table? **1** _____

	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7	
Gender	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
Cats	1	3	3	2	2	3	6	2	4	1	3	1	2	3
Dogs	4	2	4	5	4	2	1	3	5	2	2	4	3	2

A
$$\begin{array}{c} \\ \text{Cats} \\ \text{Dogs} \end{array}\begin{array}{c}\begin{array}{cc}\text{Male} & \text{Female}\end{array}\\ \begin{bmatrix} 23 & 20 \\ 21 & 15 \end{bmatrix}\end{array}$$

B
$$\begin{array}{c} \\ \text{Cats} \\ \text{Dogs} \end{array}\begin{array}{c}\begin{array}{cc}\text{Male} & \text{Female}\end{array}\\ \begin{bmatrix} 21 & 15 \\ 23 & 20 \end{bmatrix}\end{array}$$

C
$$\begin{array}{c} \\ \text{Cats} \\ \text{Dogs} \end{array}\begin{array}{c}\begin{array}{cc}\text{Male} & \text{Female}\end{array}\\ \begin{bmatrix} 21 & 23 \\ 15 & 20 \end{bmatrix}\end{array}$$

D
$$\begin{array}{c} \\ \text{Cats} \\ \text{Dogs} \end{array}\begin{array}{c}\begin{array}{cc}\text{Male} & \text{Female}\end{array}\\ \begin{bmatrix} 15 & 21 \\ 20 & 23 \end{bmatrix}\end{array}$$

2 During their annual T-shirt sale, the student council members at a middle school in Richmond sold 52 small, 54 medium, and 18 large T-shirts to 6th graders; 18 small, 58 medium, and 24 large T-shirts to 7th graders; and 5 small, 62 medium, and 22 large T-shirts to 8th graders. Which matrix *best* displays this information? **2** _____

F
$$\begin{array}{c} \\ \text{6th} \\ \text{7th} \\ \text{8th} \end{array}\begin{array}{c}\begin{array}{ccc}\text{S} & \text{M} & \text{L}\end{array}\\ \begin{bmatrix} 52 & 18 & 5 \\ 54 & 58 & 62 \\ 18 & 24 & 22 \end{bmatrix}\end{array}$$

G
$$\begin{array}{c} \\ \text{6th} \\ \text{7th} \\ \text{8th} \end{array}\begin{array}{c}\begin{array}{ccc}\text{S} & \text{M} & \text{L}\end{array}\\ \begin{bmatrix} 52 & 54 & 18 \\ 18 & 58 & 62 \\ 54 & 24 & 22 \end{bmatrix}\end{array}$$

H
$$\begin{array}{c} \\ \text{6th} \\ \text{7th} \\ \text{8th} \end{array}\begin{array}{c}\begin{array}{ccc}\text{S} & \text{M} & \text{L}\end{array}\\ \begin{bmatrix} 52 & 5 & 18 \\ 54 & 62 & 58 \\ 18 & 22 & 24 \end{bmatrix}\end{array}$$

J
$$\begin{array}{c} \\ \text{6th} \\ \text{7th} \\ \text{8th} \end{array}\begin{array}{c}\begin{array}{ccc}\text{S} & \text{M} & \text{L}\end{array}\\ \begin{bmatrix} 52 & 54 & 18 \\ 18 & 58 & 24 \\ 5 & 62 & 22 \end{bmatrix}\end{array}$$

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.13 **(continued)**

3 The students in three social studies classes at a middle school in Fredericksburg voted for their choice of three destinations for a field trip. The matrix displays the results of the vote. Which statement about the data is true? **3** _____

	Class A	Class B	Class C
Luray Caverns	11	7	10
Williamsburg	11	12	9
Monticello	9	12	8

A The students in classes A and C prefer Williamsburg.
B Most students in class B want to go to Luray Caverns.
C Monticello is the favorite destination for two classes.
D The least favorite destination for class C is Monticello.

Use the following information for Questions 4 and 5.

A planetarium offers morning, afternoon, and evening shows and sells tickets priced for adults or children. The matrix shows the number of adult and child tickets sold for each of the shows last month.

	Adult	Child
9:00 A.M.	128	243
1:00 P.M.	211	256
7:00 P.M.	374	61

4 Which statement *best* describes the data? **4** _____

F The most popular show time was 1:00 P.M.
G The least popular show time was 7:00 P.M.
H More child tickets than adult tickets were sold last month.
J More tickets were sold for the 9:00 A.M. shows than were sold for the 7:00 P.M. shows.

5 Which statement is true? **5** _____

A Twice as many children as adults attended the 1:00 P.M. shows.
B More children were at the 9:00 A.M. shows than were at the 1:00 P.M. shows.
C There were fewer children than adults at the 1:00 P.M. shows.
D Most adults attended the 7:00 P.M. shows.

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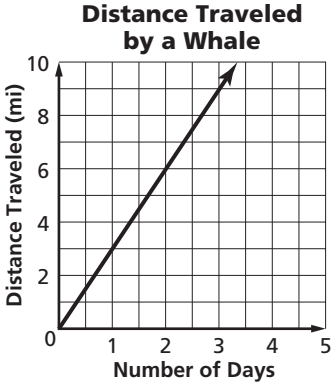
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.14a **The student will describe and represent relations and functions, using tables, graphs, and rules.**

1 Miguel and Jeremy spent at least \$50 on a fishing trip to Chesapeake Bay. While on the trip, they spent \$15 on bait and bought 2 fishing licenses. If x represents the cost of a fishing license, which inequality models this situation? **1** _____

A $2x - 15 \leq 50$ **B** $2x - 15 \geq 50$
C $2x + 15 \leq 50$ **D** $2x + 15 \geq 50$

2 The graph models the distance traveled by a whale migrating along the coast of Virginia. Which describes the relationship shown in the graph? **2** _____



F The whale averaged 1 mile per day.
G The whale averaged 1.5 miles per day.
H The whale averaged 2.5 miles per day.
J The whale averaged 3 miles per day.

3 The table shows the cost to make photocopies at a printing shop. Which statement describes the relationship shown in the table? **3** _____

Photocopies, *p*	2	4	6	8	10
Cost (\$), *c*	0.16	0.32	0.48	0.64	0.80

A Each photocopy costs 8 cents.
B Each photocopy costs 14 cents.
C Each photocopy costs 16 cents.
D Each photocopy costs 18 cents.

4 Diego scored 6 points less than Monica on a math test. The sum of their scores was 188. If x represents Monica's score, which equation models the relationship between their scores? **4** _____

F $x - 6 = 188$
G $x + 6 = 188$
H $x + (x - 6) = 188$
J $x + (x + 6) = 188$

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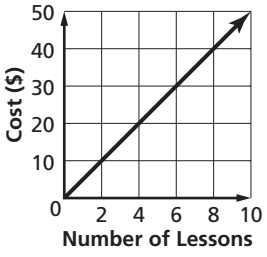
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

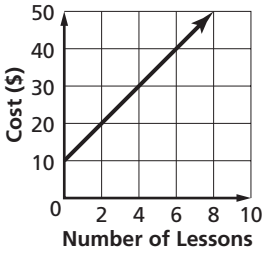
OBJECTIVE 8.14a **(continued)**

5 A martial arts instructor charges a one-time enrollment fee of \$10 for group classes plus \$5 per lesson. Which graph can be used to find the total cost of instruction for a given number of lessons? **5** _____

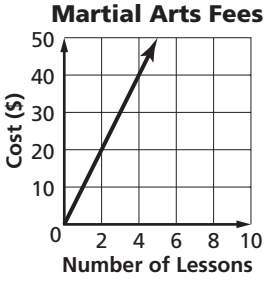
A



B



C



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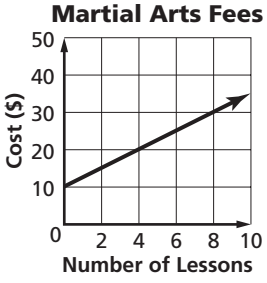

6 In a science class, there are 2 test tubes for every 3 students. Which table correctly represents the relationship between the number of students and the number of test tubes? **6** _____

F

Students	12	15	18	21	24
Test Tubes	4	5	6	7	8

G

Students	8	10	12	14	16
Test Tubes	12	15	18	21	24

H

Students	12	14	16	18	20
Test Tubes	8	10	12	14	16

J

Students	12	15	18	24	27
Test Tubes	8	10	12	16	18

7 A scout troop plans to hike a 21-mile trail in the Appalachian Mountains. They expect to hike the trail at a rate of 3.5 miles per day. Which equation models the relationship between the hiking time t they have remaining on the trail and the number of days d they have already hiked? **7** _____

A $t = 21(3.5d)$ **B** $t = (21 - 3.5)d$

C $t = 21 - 3.5d$ **D** $t = 21 + 3.5d$

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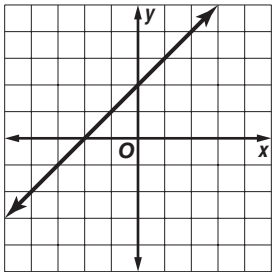
Standards Practice

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

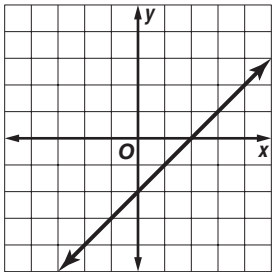
OBJECTIVE 8.14b **The student will relate and compare tables, graphs, and rules as different forms of representation for relationships.**

1 Which *best* represents the graph of $y = x - 2$? **1** _____

A



B



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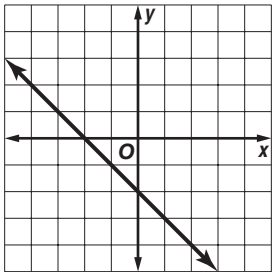
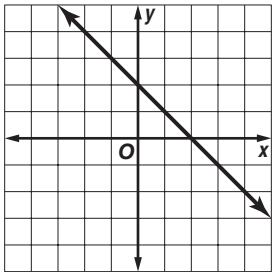


D



2 Which table contains only pairs that satisfy the equation $y = 4x - 6$? **2** _____

F

x	$^-1$	0	2	3
y	$^-10$	$^-6$	2	6

G

x	$^-2$	0	1	2
y	6	$^-6$	$^-2$	10

H

x	$^-3$	$^-2$	1	2
y	18	10	2	2

J

x	$^-1$	1	3	5
y	$^-2$	$^-10$	$^-18$	$^-26$

3 Which of the following equations models the relationship between x and y shown in the table? **3** _____

x	*y*
$^-4$	2
$^-2$	3
0	4
4	6
6	7

A $y = -\frac{1}{2}x + 4$

B $y = 4 - x$

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

D $y = x + 4$

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.14b **(continued)**

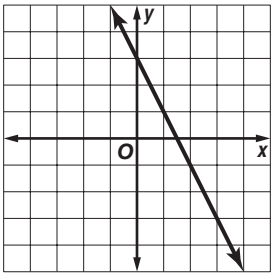
4 Which *best* describes the graph?

F $y = {}^{-}2x + 3$

G $y = {}^{-}2x - 3$

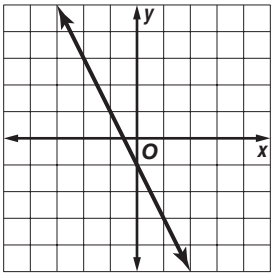
H $y = 2x + 3$

J $y = 2x - 3$



4 _____

5 Which table shows ordered pairs that satisfy the graphed function?



5 _____

A

x	y
3	$^{-}2$
1	$^{-}1$
$^{-}1$	0
$^{-}3$	1

B

x	y
2	3
1	1
0	$^{-}1$
$^{-}1$	$^{-}3$

C

x	y
2	$^{-}5$
1	$^{-}1$
0	$^{-}2$
$^{-}1$	3

D

x	y
$^{-}2$	3
$^{-}1$	1
0	$^{-}1$
1	$^{-}3$

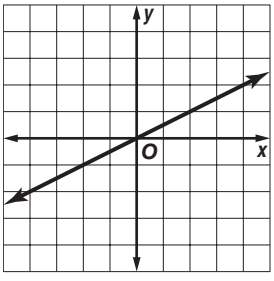
6 Which *best* describes the graph?

F $y = {}^{-}2x$

G $y = {}^{-}\frac{1}{2}x$

H $y = \frac{1}{2}x$

J $y = 2x$



6 _____

7 Which equation is true for all pairs of values in the table?

A $y = 3x + 2$

B $y = {}^{-}3x - 2$

C $y = {}^{-}x - 2$

D $y = x + 10$

x	y
$^{-}3$	7
$^{-}2$	4
0	$^{-}2$
1	$^{-}5$
2	$^{-}8$

7 _____

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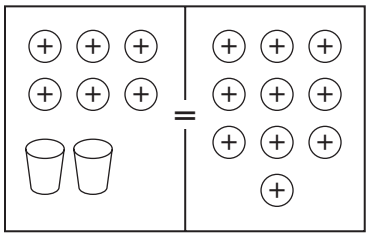
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.15 **The student will solve two-step equations and inequalities in one variable, using concrete materials, pictorial representations, and paper and pencil.**

1 Which is the solution of the equation modeled on the equation mat shown?



A $x = 2$
B $x = 4$
C $x = 5$
D $x = 8$

1 _____

2 What value of a makes the sentence $3(a + 0.35) = 1.5$ true?

F 2.55
G 0.85
H 0.45
J 0.15

2 _____

3 If $\frac{1}{4}(x - 8) = 7$, what is the value of x?

A 9.75
B 20
C 36
D 60

3 _____

4 What is the solution of the equation $4y - 5 = 11$?

F $1\frac{1}{2}$
G 4
H 24
J 64

4 _____

5 What value of x makes $\frac{x - 15}{3} = 9$ true?

A $^{-}12$
B 12
C 18
D 42

5 _____

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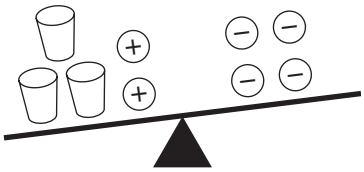
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.15 **(continued)**

6 Which is the solution set of the inequality modeled by the balance shown?



F $x > -\frac{2}{3}$

G $x > -2$

H $x > \frac{2}{3}$

J $x > 2$

6 _____

7 If $\frac{y-9}{2} < -4$, what are the values of y?

A $y < 7$

B $y < 1$

C $y < -11$

D $y < -17$

7 _____

8 What is the solution set of the inequality $4(x - 0.6) \geq 10$?

F $x \geq 1.9$

G $x \geq 2.35$

H $x \geq 2.65$

J $x \geq 3.1$

8 _____

9 What values of m make $\frac{2}{3}m \leq 6$ true?

A $m \leq 1$

B $m \leq 4$

C $m \leq 9$

D $m \leq 36$

9 _____

10 What values of b make $3 - 2b \leq 17$ true?

F $b \geq -7$

G $b \leq -7$

H $b \geq -28$

J $b \leq 28$

10 _____

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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

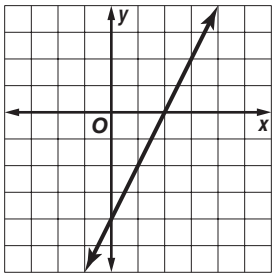
OBJECTIVE 8.16 **The student will graph a linear equation in two variables, in the coordinate plane, using a table of ordered pairs.**

1 Which figure is the graph of a line that contains the points given in the table of ordered pairs?

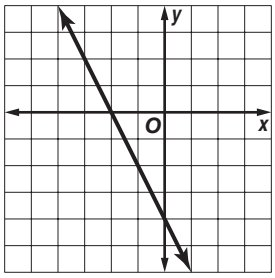
x	0	1	2	3
y	-4	-2	0	2

1 _____

A



B



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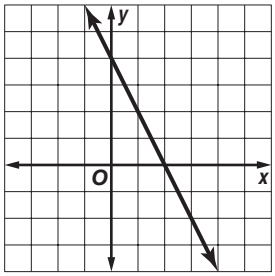
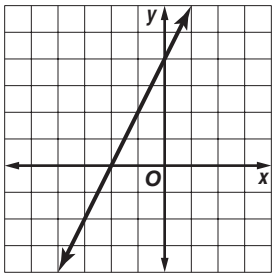


D

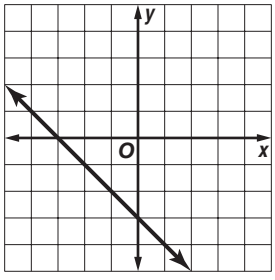


2 Which figure is the graph of a line that contains the points given in the table of ordered pairs?

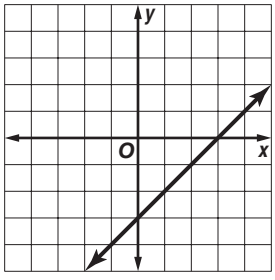
x	-1	0	1	4
y	4	3	2	-1

2 _____

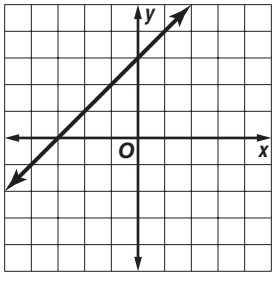
F



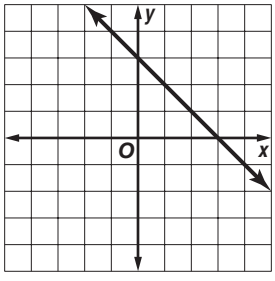
G



H



J



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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

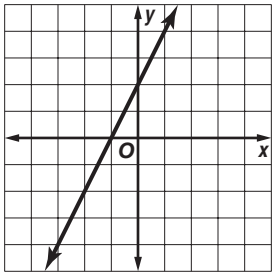
OBJECTIVE 8.16 **(continued)**

3 Which figure is the graph of a line that contains the points given in the table of ordered pairs?

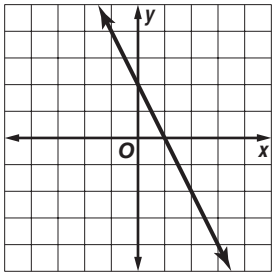
x	-1	0	1	2
y	4	2	0	-2

3 _____

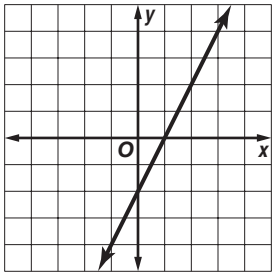
A



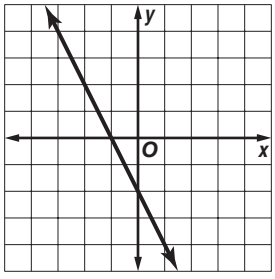
B



C



D

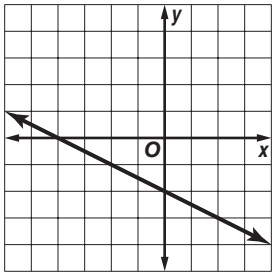


4 Which figure is the graph of a line that contains the points given in the table of ordered pairs?

x	-2	0	2	4
y	-3	-2	-1	0

4 _____

F



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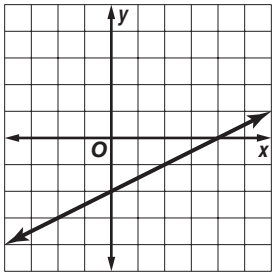

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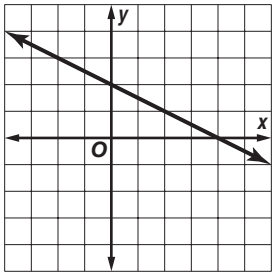
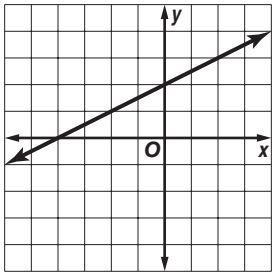


J



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Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.17 **The student will create and solve problems, using proportions, formulas, and functions.**

1 A wildlife sanctuary currently houses 7 owls for every 2 groundhogs. If there are 8 groundhogs at the sanctuary, how many owls are there? **1** _____

A 14 owls **B** 16 owls
C 28 owls **D** 56 owls

2 On a trip from Wytheville to Williamsburg, the Moore family drove 115 miles in $1\frac{3}{4}$ hours. If they continue the trip at the same speed, about how long will it take them to drive the remaining 195 miles to Roanoke? **2** _____

F $2\frac{1}{2}$ h **G** 3 h
H $3\frac{1}{4}$ h **J** 4 h

3 The table shows the top rate at which a bottlenose dolphin can swim. If the dolphin continues to swim at its top speed, how far will the dolphin travel in 1.4 hours? **3** _____

Hours	0.1	0.2	0.3	0.4	0.5	0.6
Kilometers	0.8	1.6	2.4	3.2	4.0	4.8

A 6.4 km **B** 9.6 km
C 10.4 km **D** 11.2 km

4 A manufacturing plant can produce machine parts at a rate of 7 parts every 3 minutes. If the plant continues to produce parts at this rate, how many machine parts will be produced in $3\frac{1}{2}$ hours? **4** _____

F 140 machine parts **G** 245 machine parts
H 490 machine parts **J** 735 machine parts

5 A telecommunications company charges a flat service fee of $135 to troubleshoot equipment, plus $47.50 per half hour of actual time spent on the job. What is the fee if 2 hours are spent on a job? **5** _____

A $182.50 **B** $230.00
C $317.50 **D** $325.00

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Standards Practice

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.17 **(continued)**

6 At a local swimming pool, Nathan is swimming at a rate of 14 laps every 4 minutes. If he continues swimming at this rate, how many laps can he swim in 10 minutes? **6** _____

F 30 laps
G 35 laps
H 40 laps
J 56 laps

7 Mrs. Esposito bought 3 ounces of a bulk mix of spices for $1.41. If she spends $2.35 on an additional purchase of the same bulk mix of spices, how many additional ounces did she purchase? **7** _____

A 3.8 oz
B 4.6 oz
C 4.82 oz
D 5 oz

8 Earth travels about 1,050 kilometers every 35 seconds during its orbit around the Sun. Which proportion could Javier use to determine how long it takes Earth to travel about 1,770 kilometers as it orbits the Sun? **8** _____

F $\frac{1{,}050}{35} = \frac{1{,}770}{x}$
G $\frac{35}{1{,}770} = \frac{1{,}050}{x}$
H $\frac{x}{35} = \frac{1{,}050}{1{,}770}$
J $\frac{x}{1{,}770} = \frac{1{,}050}{35}$

9 Meghan just printed 98 pages in 7 minutes on a color printer. If she has 5 minutes until class begins, how many more pages can she print? **9** _____

A 14 pages
B 35 pages
C 60 pages
D 70 pages

10 Holley is saving money to join a ski club. It costs $55 to join the club and ski lessons are $15 each. How much money will Holley need to earn if she wants to buy 12 lessons as soon as she joins the ski club? **10** _____

F $180
G $205
H $235
J $840

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Standards Practice

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

OBJECTIVE 8.18 **The student will use the following algebraic terms appropriately: *domain, range, independent variable,* and *dependent variable.***

1 Which *best* describes the circled portion of the function? **1** _____

$\textcircled{y} = 5x - 3$

A dependent variable
B independent variable
C coefficient
D constant

2 The table of values represents a function. Which term describes the x-values of the function? **2** _____

x	y
$^{-}2$	$^{-}1$
$^{-}1$	0
0	1
1	2
2	3

F dependent variable
G independent variable
H domain
J range

3 In the function $y = 4x - 7$, which is the independent variable? **3** _____

A 4 **B** 7
C x **D** y

4 The table shows the profits a company made each quarter last year. If Chiavo displays the data as a set of ordered pairs, which is the range of the data? **4** _____

Quarter	Profit (millions of dollars)
1	12
2	14
3	13
4	15

F {(1, 12), (2, 14), (3, 13), (4, 15)}
G {12, 15}
H {1, 2, 3, 4}
J {12, 13, 14, 15}

5 The distance Tess walks can be modeled by the function $d = 3.5h + 2$ where d is the distance in miles, h is the time walking in hours, 3.5 is the rate at which she walks in miles per hour, and 2 is the number of miles she has already walked. Which is the dependent variable? **5** _____

A d **B** h
C 3.5 **D** 2

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Sample Test

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

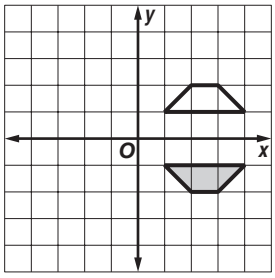
1 The manager at a sports complex maintains an inventory of 3 baseballs for every 7 basketballs. If the manager records 39 baseballs in the weekly inventory, what should be the count for basketballs? **1** _____

A 21 basketballs
B 60 basketballs
C 91 basketballs
D 117 basketballs

2 Without looking, Devon selected a marble from a bag containing 9 blue marbles, 6 red marbles, and 5 yellow marbles. What is the probability that the marble is either blue or yellow? **2** _____

F 30%
G 45%
H 70%
J 75%

3 Which description corresponds to the movement of the shaded figure to the unshaded figure? **3** _____



A reflection across the x-axis
B translation 3 units down
C reflection across the y-axis
D 90° clockwise rotation about the origin

4 Which table contains only values that satisfy $y = {}^{-}3x + 8$? **4** _____

F

x	$^{-}1$	0	2	3
y	11	8	2	$^{-}1$

G

x	$^{-}1$	0	2	3
y	5	8	14	17

H

x	$^{-}2$	$^{-}1$	1	2
y	2	5	8	11

J

x	$^{-}2$	$^{-}1$	1	2
y	$^{-}2$	$^{-}5$	6	9

5 A random sampling of 250 books at a school library found that 30 books need to be repaired. If there are 3,825 books in the library, which is the *best* estimate of the number of books needing to be repaired? **5** _____

A 430 books
B 460 books
C 750 books
D 1,275 books

6 The first ship named USS Virginia was launched in 1777. Art plans to build a model of the ship using a scale of 0.5 inch = 9.25 feet. If the model will be 8 inches long, what was the actual length of the ship? **6** _____

F 37 ft
G 74 ft
H 148 ft
J 296 ft

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Go on

Name Date

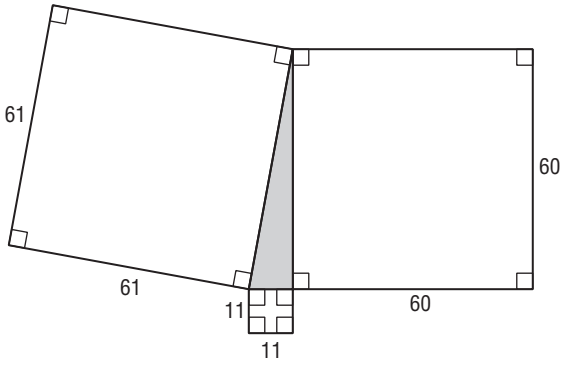
Sample Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

7 Which *best* describes the set(s) of numbers to which $^{-}12$ belongs? **7** _____

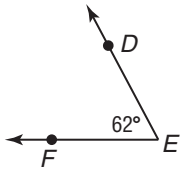
A rational, integers
B rational, integers, whole
C irrational, integers, whole
D integers, irrational

8 Which equation verifies the Pythagorean Theorem for the shaded triangle in the figure? **8** _____



F $\sqrt{11} + \sqrt{60} = \sqrt{61}$
G $60^2 - 11^2 = 61^2$
H $61^2 = (60 + 11)^2$
J $60^2 + 11^2 = 61^2$

9 What is the measure of an angle that is supplementary to $\angle DEF$? **9** _____



A 28°
B 62°
C 118°
D 128°

10 Julia rolls two six-sided number cubes. What is the probability that both of the number cubes land on 5? **10** _____

F $\frac{1}{36}$ **G** $\frac{1}{25}$ **H** $\frac{2}{5}$ **J** $\frac{2}{3}$

11 What is the solution set of $\frac{3}{4}x > {}^{-}6$? **11** _____

A $x > {}^{-}8$ **B** $x > {}^{-}4\frac{1}{2}$ **C** $x > {}^{-}\frac{1}{2}$ **D** $x < 8$

12 Jane built a pyramid for a history project. If the base is an 8 inch square and the height is 9 inches, what is its volume? **12** _____

F 96 in^3 **G** 160 in^3 **H** 192 in^3 **J** 224 in^3

13 Which of the following statements is *not* true? **13** _____

A $\frac{7}{25} = 0.28 = 28\%$
B $1.7 \times 10^{-3} = 0.0017$
C $2\frac{2}{5} = 2.4 = 240\%$
D $0.56 \times 10^{-1} = \frac{56}{100}$

Go on

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Sample Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

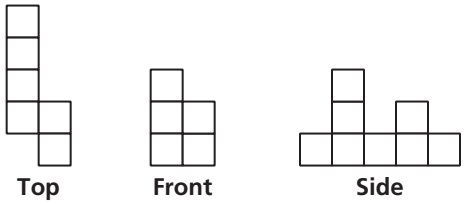
14 The picture graph shows the number of pears sold at a farmer's stand each weekday last week. On which day were half as many pears sold as on Tuesday? **14** _____

F Monday
G Wednesday
H Thursday
J Friday

15 Rafael burns an average of 45 calories for every 8 minutes that he walks. If Rafael burned 225 calories, how long did he walk? **15** _____

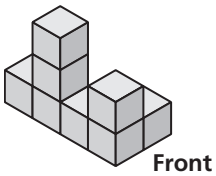
A 22.5 min **B** 37.5 min **C** 40 min **D** 96 min

16 Seth used these three views to construct a three-dimensional figure. **16** _____

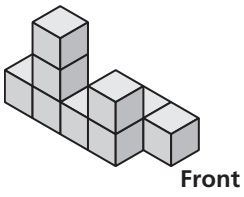


Which of the following could be the figure?

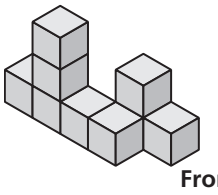
F



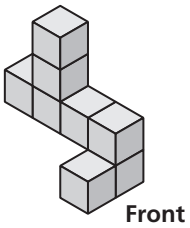
G



H



J



17 Which list of numbers is in order from *least to greatest*? **17** _____

A 2.0×10^6, 2.0099×10^6, 2.08×10^6, 2.098×10^6
B 2.0×10^6, 2.08×10^6, 2.098×10^6, 2.0099×10^6
C 2.098×10^6, 2.08×10^6, 2.0×10^6, 2.0099×10^6
D 2.098×10^6, 2.08×10^6, 2.0099×10^6, 2.0×10^6

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Name Date

Sample Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

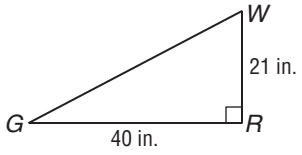
18 Between which two consecutive whole numbers does $\sqrt{43}$ lie? **18** _____

F 5 and 6
H 6 and 7
H 7 and 8
J 8 and 9

19 A bakery in Falls Church made a cake in the design of a square pyramid for a convention of Egyptologists. The base measures 24 inches by 24 inches and the slant height is 20 inches. What is the surface area of the sides of the cake that need to be frosted? **19** _____

A 960 in^2
B 1,536 in^2
C 3,072 in^2
D 3,830 in^2

20 In $\triangle GRW$, $\overline{GR}$ measures 40 inches and $\overline{RW}$ measures 21 inches. Which is *closest* to the length of $\overline{GW}$? **20** _____



F 34 in.
G 41 in.
H 45 in.
J 61 in.

21 The table shows the relationship between the number of hours h that a car is parked in a garage and the parking charge c. Which equation models the relationship between the number of hours and the parking charge? **21** _____

Hours, *h*	1	2	3	4	5
Cost ($), *c*	$0.75	$1.50	$2.25	$3.00	$3.75

A $c = 0.75h$
B $c = h + 0.75$
C $c = h - 0.75$
D $c = 0.75(h - 3.75)$

22 The table of values represents a function of x. Which of the following is the domain of the function? **22** _____

x	$^-2$	$^-1$	0	1	2
y	$^-1$	0	1	2	3

F $\{^-2, ^-1\}$
G $\{^-2, ^-1, 0, 1, 2\}$
H $\{^-1, 0, 1, 2, 3\}$
J $\{^-2, 3\}$

23 Paige pours wax into cylindrical molds to make candles. Which is *closest* to the volume of wax she can pour into a mold with a diameter of 4 inches and a height of 9 inches? **23** _____

A 113 in^3
B 452 in^3
C 508 in^3
D 1,017 in^3

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Sample Test (continued)

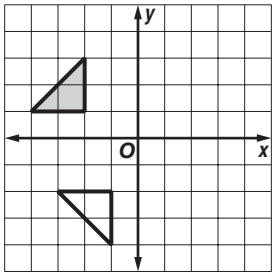
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

24 What is the value of $12 + \frac{x^2}{x} - 7(x - 6)$ when $x = {}^-4$? **24** _____

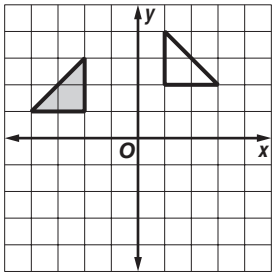
F $^-62$
G $^-10$
H 78
J 86

25 In which graph is the unshaded triangle a 180° rotation about the origin of the shaded triangle? **25** _____

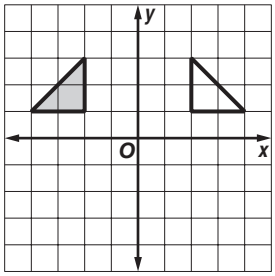
A



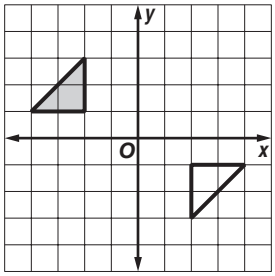
B



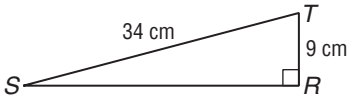
C



D

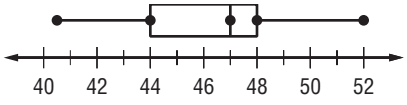


26 In $\triangle RST$, $\overline{RT}$ measures 9 centimeters and $\overline{ST}$ measures 34 centimeters. Which is *closest* to the length of $\overline{RS}$? **26** _____



F 25 cm
G 33 cm
H 35 cm
J 43 cm

27 The box-and-whisker plot displays the lengths in inches of fish caught by anglers in an annual fishing tournament. Which statement *must* be true? **27** _____



A The range of the lengths is 4 inches.
B Half of the fish are at least 47 inches long.
C The median length is 46 inches.
D The shortest fish is 44 inches long.

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Sample Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

28 Kristin bought a CD player on sale for $24.50 before tax. If the original price of the player was $35, what is the percent of the discount? **28** _____

F 3% **G** 7%
H 30% **J** 70%

29 If $\frac{a + 7}{4} \geq 8$, what are the values of a? **29** _____

A $a \geq {}^{-}4$ **B** $a \geq 9$
C $a \geq 25$ **D** $a \geq 39$

30 At a fund-raiser for the math club, Lydia washed 7 more cars than Joey washed. Together, they washed 39 cars. If x represents the number of cars Lydia washed, which equation models this situation? **30** _____

F $x + (x - 7) = 39$ **G** $x - (x - 7) = 39$
H $x + (x + 7) = 39$ **J** $x - 7 = 39$

31 The cost c of dance lessons is modeled by the function $c = 8n + 50$, where n is the number of lessons, 8 is the cost (in dollars) per lesson, and 50 is the cost to enroll. Which is the independent variable? **31** _____

A 8 **B** 50
C c **D** n

32 Tristan drew a card from a shuffled deck of 52 standard playing cards. What is the probability that he drew either a jack or a red card? **32** _____

F $\frac{1}{26}$ **G** $\frac{11}{26}$
H $\frac{7}{13}$ **J** $\frac{15}{26}$

33 Park employees are clearing debris from a hiking trail after a hurricane hit the park. The table shows the number of miles of trail they plan to have cleared at the end of each day. If they maintain the pattern in the table, how many days will it take to clear 10.8 miles of the trail? **33** _____

Days	1	2	3	4	5	6
Miles	0.3	0.6	0.9	1.2	1.5	1.8

A 24 days **B** 36 days
C 54 days **D** 60 days

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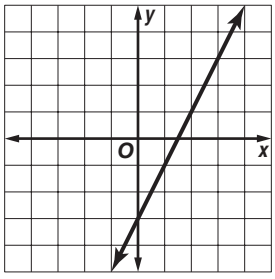
Sample Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

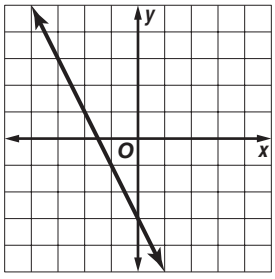
34 Which figure is the graph of a line that contains the points given in the table of ordered pairs? **34** _____

x	$^-3$	$^-2$	$^-1$	0
y	3	1	$^-1$	$^-3$

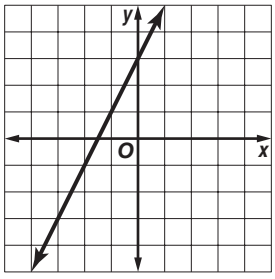
F



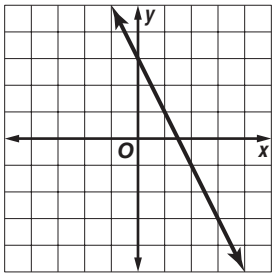
G



H



J



35 Use your metric ruler to measure the triangle in centimeters. Which equation verifies the Pythagorean Theorem for this triangle? **35** _____

A $1^2 + 2.4^2 = 2.6^2$

B $\sqrt{1 + 2.4} = \sqrt{2.6}$

C $24^2 = 26^2 + 10^2$

D $26^2 = 24^2 - 10^2$

36 The table gives a breakdown of the members of an astronomy club. If a member is chosen at random to represent the club at a state meeting, what is the probability that this member is *not* in the 6th grade? **36** _____

Club Membership	
Grade	**Number**
6th	4
7th	7
8th	13

F $\frac{1}{6}$

G $\frac{1}{5}$

H $\frac{4}{5}$

J $\frac{5}{6}$

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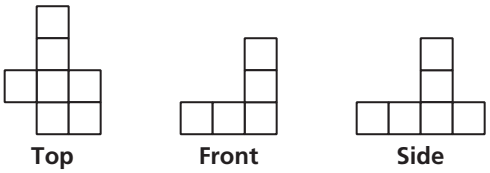
Sample Test (continued)

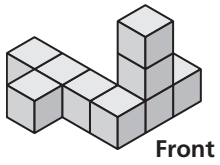
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

37 Here are three different views of a three-dimensional figure constructed from cubes. **37** _____

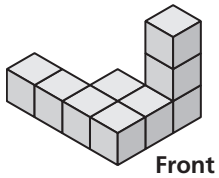


Which of the following could be the figure?

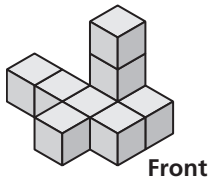
A



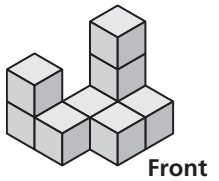
B



C



D



38 To promote a new stock of toys, a toy store gave away paddleballs (p), whistles (w), and yo-yos (y) at three of its stores. Store A gave away 86 paddleballs, 59 yo-yos, and 88 whistles. Store B gave away 96 whistles, 42 paddleballs, and 41 yo-yos. Store C gave away 28 yo-yos, 82 whistles, and 19 paddleballs. Which matrix *best* displays this information? **38** _____

F

$$\begin{array}{c} \\ y \\ w \\ p \end{array}\begin{array}{c} \begin{array}{ccc} A & B & C \end{array} \\ \begin{bmatrix} 59 & 88 & 86 \\ 41 & 96 & 42 \\ 28 & 82 & 19 \end{bmatrix} \end{array}$$

G

$$\begin{array}{c} \\ y \\ w \\ p \end{array}\begin{array}{c} \begin{array}{ccc} A & B & C \end{array} \\ \begin{bmatrix} 86 & 96 & 28 \\ 59 & 42 & 82 \\ 88 & 41 & 19 \end{bmatrix} \end{array}$$

H

$$\begin{array}{c} \\ y \\ w \\ p \end{array}\begin{array}{c} \begin{array}{ccc} A & B & C \end{array} \\ \begin{bmatrix} 86 & 59 & 88 \\ 96 & 42 & 41 \\ 28 & 82 & 19 \end{bmatrix} \end{array}$$

J

$$\begin{array}{c} \\ y \\ w \\ p \end{array}\begin{array}{c} \begin{array}{ccc} A & B & C \end{array} \\ \begin{bmatrix} 59 & 41 & 28 \\ 88 & 96 & 82 \\ 86 & 42 & 19 \end{bmatrix} \end{array}$$

39 Which number is a rational number? **39** _____

A 0.1875

B 0.5252252225…

C $\sqrt{17}$

D π

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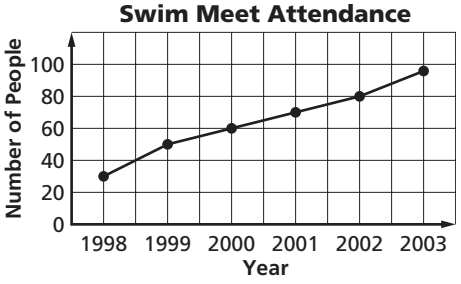
Sample Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

40 The line graph shows the attendance at a local swim meet for 6 years. If attendance continues to increase at the rate shown in the graph, what is the *best* prediction of attendance at the meet in 2008? **40** _____



F 105 people
G 170 people
H 260 people
J 390 people

41 Oak Hills Middle School keeps a record of student (S) and non-student (NS) ticket sales for its events. The matrix displays the ticket sales for last year's soccer, basketball, and football games. What is a reasonable conclusion based on the data? **41** _____

	S	NS
soccer	45	96
basketball	82	108
football	76	152

A Student tickets outsold non-student tickets for all events.
B Basketball tickets were the most popular among students.
C Football tickets were the least popular among non-students.
D Total ticket sales for these events were greater for students than for non-students.

42 Which number is a perfect square? **42** _____

F 24 **G** 36 **H** 48 **J** 60

43 The cost to rent a rowboat is \$27 for the first hour and \$13.50 for each additional hour. If Ty rents a boat for 4 hours, what is the cost? **43** _____

A \$40.50 **B** \$54.00 **C** \$67.50 **D** \$81.00

44 The distance from Earth to the Sun is about 150 million kilometers. What is this distance represented in scientific notation? **44** _____

F 15.0×10^8 km
G 15.0×10^7 km
H 1.5×10^8 km
J 1.5×10^7 km

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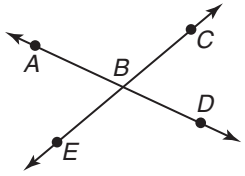
Sample Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

45 For a camping trip to Clinch Mountain, Nabuko purchased a sleeping bag, hiking boots, a tent, and a camp stove. The items she purchased ranged in price from \$45 to \$135. Which is the *most reasonable* estimate of the total amount she spent on her camping gear? **45** _____

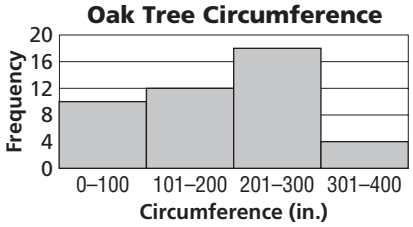
A \$190 **B** \$240
C \$330 **D** \$460

46 Which term *best* describes the relationship between $\angle ABC$ and $\angle DBE$? **46** _____



F complementary angles
G supplementary angles
H right angles
J vertical angles

47 The histogram displays the circumference of champion oak trees in Virginia. How many trees have a circumference that is from 101 inches to 300 inches? **47** _____



A 12 trees
B 18 trees
C 30 trees
D 40 trees

48 Simplify $24 \div 2 - 4(6^2 \div 9)^2$. **48** _____

F $^{-}76$ **G** $^{-}52$
H 128 **J** 1,024

49 At an orchard, Dana picked 2 less than twice as many apples as Bree. The two girls picked a total of 25 apples. If b represents the number of apples that Bree picked, which equation models the relationship between the number of apples each of the girls picked? **49** _____

A $2b - 2 = 25$ **B** $2b + 2 = 25$
C $3b - 2 = 25$ **D** $3b + 2 = 25$

50 Mick filled a small cone-shaped party hat with confetti. Which is *closest* to the volume of the party hat if its height is 18 centimeters and the diameter of its base is 13 centimeters? **50** _____

F 245 cm^3 **G** 734 cm^3
H 796 cm^3 **J** 2,388 cm^3

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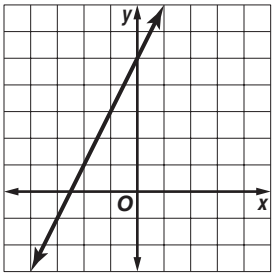
Sample Test (continued)

Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

51 What value of n makes the sentence $^{-}3(n - 0.2) = 3.3$ true? **51** _____

A $^{-}1.3$ **B** $^{-}0.9$
C 0.9 **D** 1.3

52 Which *best* describes the graph? **52** _____



F $y = {}^{-}2x + 5$
G $y = {}^{-}x + 5$
H $y = x + 5$
J $y = 2x + 5$

53 If the measure of $\angle 1$ is 37°, what is the measure of an angle that is complementary to $\angle 1$? **53** _____

A 37° **B** 53°
C 127° **D** 143°

54 In the function $y = 4x + 1$, which is the dependent variable? **54** _____

F y **G** 4
H x **J** 1

55 Ming needs between $2\frac{1}{4}$ yards and $2\frac{5}{8}$ yards of fabric to make a shirt. Which could be the actual yards of fabric she uses for the shirt? **55** _____

A $2\frac{1}{3}$ yd **B** $2\frac{3}{4}$ yd
C $2\frac{4}{5}$ yd **D** $2\frac{5}{6}$ yd

56 Which equation is true for all the pairs in the table? **56** _____

x	$^{-}2$	$^{-}1$	0	2
y	9	5	1	$^{-}7$

F $y = {}^{-}4x + 1$ **G** $y = {}^{-}2x + 5$
H $y = 2x + 1$ **J** $y = 4x + 1$

57 What is the value of $b^2 - 2c(b - c)$ if $b = 7$ and $c = 3$? **57** _____

A 10 **B** 25
C 172 **D** 564

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Go on

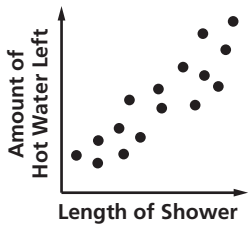
Name Date

Sample Test (continued)

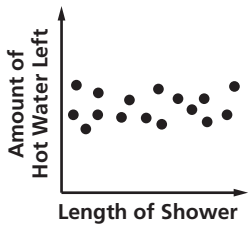
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

58 Which scatter plot *best* shows the relationship between the length of a shower and the amount of hot water in the water heater? **58** _____

F



G



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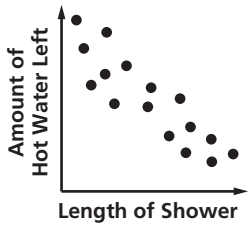

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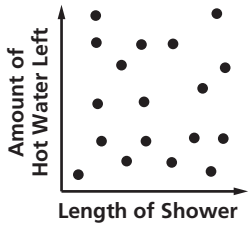


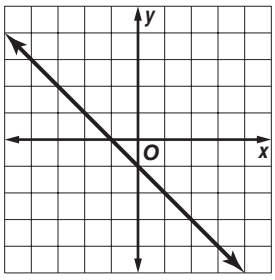
59 What is the value of $9^2 - 56 \cdot \frac{1}{8}(^-6 + 4)^3$? **59** _____

A $^-25$ **B** 25
C 106 **D** 137

60 Which figure is the graph of a line that contains the points given in the table of ordered pairs? **60** _____

x	$^-3$	$^-1$	0	2
y	2	0	$^-1$	$^-3$

F



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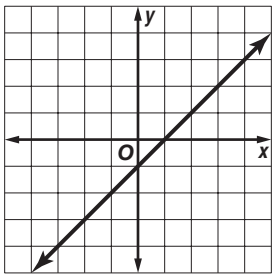

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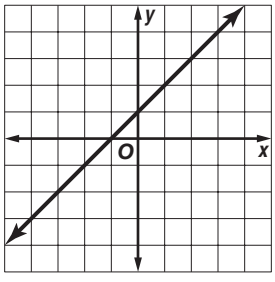

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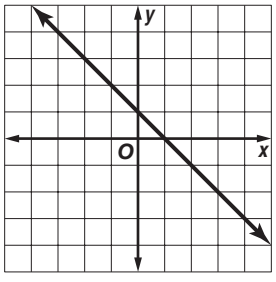

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