Glencoe Mathematics

Mastering the TAKS

(Texas Assessment of Knowledge and Skills)

Grade 8

Diagnose   Prescribe   Practice   Benchmark

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 that 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 in any way that will help you solve the problem.

- When you have finished each problem, reread it to make sure that 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.

Road Map to TAKS Success
An Annotated Table of Contents

Checkpoint Ahead

Road Map to TAKS Success
An Annotated Table of Contents

Practice ▸ **Mastery**

Steps to Success   **Page(s)**

3 Practice Your Test Skills

Take the Practice Test to determine how you have improved your mathematics skills.

Approximately 25 weeks before your test date, begin the Countdown to TAKS. This contains problems that are similar to those found on the TAKS.

Work on the problems for each day unless your teacher instructs you to do otherwise. Each question tells which Objective is being assessed.

4 Benchmark Your Progress

Monitor your progress as the year progresses by taking Benchmark Tests. You can record your progress with each test.

Each Benchmark Test assesses the same concepts but is taken at a different time during the school year. Your test scores should improve with each test taken.
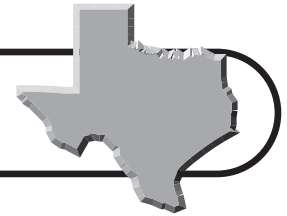
Welcome to **Success!**

Student Recording Chart

Directions Mark an × next to each question from the Diagnostic Test that you answered *incorrectly*. If there is an × marked for an Objective, write *Yes* in the *Need Practice?* box. Then complete the practice pages for that Objective.

Objective 1	8.1(A)	8.1(B)	8.1(C)	8.1(D)
Test Questions	24 ☐	8 ☐	35 ☐	25 ☐
Need Practice?				
Practice Pages	13	13–14	14–15	15

Objective 1	8.2(A)	8.2(B)	8.2(C)	8.2(D)
Test Questions	7 ☐	21 ☐	17 ☐	22 ☐
Need Practice?				
Practice Pages	16	16–17	17–18	18

Objective 2	8.3(A)	8.3(B)	8.4	8.5(A)	8.5(B)
Test Questions	28 ☐	5 ☐	15 ☐ 32 ☐ 34 ☐	41 ☐ 44 ☐	10 ☐ 33 ☐ 48 ☐
Need Practice?					
Practice Pages	19–20	20–21	21–23	23–24	24–25

Objective 3	8.6(A)	8.6(B)	8.7(A)	8.7(B)	8.7(C)	8.7(D)
Test Questions	12 ☐	4 ☐ 40 ☐	2 ☐ 45 ☐	9 ☐	29 ☐	16 ☐
Need Practice?						
Practice Pages	26–27	27–28	28–29	29	30–31	29

Objective 4	8.8(A)	8.8(C)	8.9(A)	8.9(B)	8.10(A)	8.10(B)
Test Questions	20 ☐	14 ☐ 47 ☐ 49 ☐	27 ☐	30 ☐	31 ☐	42 ☐
Need Practice?						
Practice Pages	32	33	34	35	36	37

Objective 5	8.11(A)	8.11(B)	8.12(A)	8.12(B)	8.12(C)	8.13(A)	8.13(B)
Test Questions	26 ☐	11 ☐ 23 ☐	1 ☐	36 ☐ 50 ☐	18 ☐	43 ☐	3 ☐
Need Practice?							
Practice Pages	38	38–39	40	40–41	42–43	43–44	44–45

Objective 6	8.14(A)	8.14(B)	8.14(C)	8.15(A)	8.16(A)	8.16(B)
Test Questions	6 ☐	37 ☐	13 ☐	38 ☐ 46 ☐	39 ☐	19 ☐
Need Practice?						
Practice Pages	46	46–47	47–48	49–50	50–51	52

TAKS Objectives and Texas Essential Knowledge and Skills, Grade 8 Mathematics

OBJECTIVE 1: Number, Operation, and Quantitative Reasoning The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.		
(8.1)	The student understands that different forms of numbers are appropriate for different situations. The student is expected to:	
	(A)	compare and order rational numbers in various forms including integers, percents, and positive and negative fractions and decimals;
	(B)	select and use appropriate forms of rational numbers to solve real-life problems including those involving proportional relationships;
	(C)	approximate (mentally and with calculators) the value of irrational numbers as they arise from problem situations (such as π, $\sqrt{2}$); and
	(D)	express numbers in scientific notation, including negative exponents, in appropriate problem situations.
(8.2)	The student selects and uses appropriate operations to solve problems and justify solutions. The student is expected to:	
	(A)	select appropriate operations to solve problems involving rational numbers and justify the selections;
	(B)	use appropriate operations to solve problems involving rational numbers in problem situations;
	(C)	evaluate a solution for reasonableness; and
	(D)	use multiplication by a constant factor (unit rate) to represent proportional relationships.
Objective 2: Patterns, Relationships, and Algebraic Thinking The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.		
(8.3)	The student identifies proportional or non-proportional linear relationships in problem situations and solves problems. The student is expected to:	
	(A)	compare and contrast proportional and non-proportional linear relationships; and
	(B)	estimate and find solutions to application problems involving percents and other proportional relationships such as similarity and rates.
(8.4)	The student makes connections among various representations of a numerical relationship. The student is expected to generate a different representation of data given another representation of data (such as a table, graph, equation, or verbal description).	
(8.5)	The student uses graphs, tables, and algebraic representations to make predictions and solve problems. The student is expected to:	
	(A)	predict, find, and justify solutions to application problems using appropriate tables, graphs, and algebraic equations; and
	(B)	find and evaluate an algebraic expression to determine any term in an arithmetic sequence (with a constant rate of change).

	OBJECTIVE 3: Geometry and Spatial Reasoning The student will demonstrate an understanding of geometry and spatial reasoning.	
(8.6)	The student uses transformational geometry to develop spatial sense. The student is expected to:	
	(A) generate similar figures using dilations including enlargements and reductions; and	
	(B) graph dilations, reflections, and translations on a coordinate plane.	
(8.7)	The student uses geometry to model and describe the physical world. The student is expected to:	
	(A) draw three-dimensional figures from different perspectives;	
	(B) use geometric concepts and properties to solve problems in fields such as art and architecture;	
	(C) use pictures or models to demonstrate the Pythagorean Theorem; and	
	(D) locate and name points on a coordinate plane using ordered pairs of rational numbers.	
	OBJECTIVE 4: Measurement The student will demonstrate an understanding of the concepts and uses of measurement.	
(8.8)	The student uses procedures to determine measures of three-dimensional figures. The student is expected to:	
	(A) find lateral and total surface area of prisms, pyramids, and cylinders using concrete models and nets (two-dimensional models);	
	(B) connect models of prisms, cylinders, pyramids, spheres, and cones to formulas for volume of these objects; and	
	(C) estimate measurements and use formulas to solve application problems involving lateral and total surface area and volume.	
(8.9)	The student uses indirect measurement to solve problems. The student is expected to:	
	(A) use the Pythagorean Theorem to solve real-life problems; and	
	(B) use proportional relationships in similar two-dimensional figures or similar three-dimensional figures to find missing measurements.	
(8.10)	The student describes how changes in dimensions affect linear, area, and volume measures. The student is expected to:	
	(A) describe the resulting effects on perimeter and area when dimensions of a shape are changed proportionally; and	
	(B) describe the resulting effect on volume when dimensions of a solid are changed proportionally.	

| OBJECTIVE 5: Probability and Statistics	
The student will demonstrate an understanding of probability and statistics.	
(8.11)	The student applies concepts of theoretical and experimental probability to make predictions. The student is expected to:
	(A) find the probabilities of dependent and independent events;
	(B) use theoretical probabilities and experimental results to make predictions and decisions; and
	(C) select and use different models to simulate an event.
(8.12)	The student uses statistical procedures to describe data. The student is expected to:
	(A) select the appropriate measure of central tendency or range to describe a set of data and justify the choice for a particular situation;
	(B) draw conclusions and make predictions by analyzing trends in scatterplots; and
	(C) select and use an appropriate representation for presenting and displaying relationships among collected data, including line plots, line graphs, stem and leaf plots, circle graphs, bar graphs, box and whisker plots, histograms, and Venn diagrams, with and without the use of technology.
(8.13)	The student evaluates predictions and conclusions based on statistical data. The student is expected to:
	(A) evaluate methods of sampling to determine validity of an inference made from a set of data; and
	(B) recognize misuses of graphical or numerical information and evaluate predictions and conclusions based on data analysis.

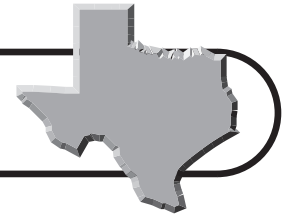| **OBJECTIVE 6: Underlying Processes and Mathematical Tools**	
The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.	
(8.14)	The student applies Grade 8 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to:
	(A) identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics;
	(B) use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness;
	(C) select or develop an appropriate problem-solving strategy from a variety of different types, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem; and
	(D) select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems.
(8.15)	The student communicates about Grade 8 mathematics through informal and mathematical language representations, and models. The student is expected to:
	(A) communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models; and
	(B) evaluate the effectiveness of different representations to communicate ideas.
(8.16)	The student uses logical reasoning to make conjectures and verify conclusions. The student is expected to:
	(A) make conjectures from patterns or sets of examples and nonexamples; and
	(B) validate his/her conclusions using mathematical properties and relationships.

Mastery of Objectives Chart
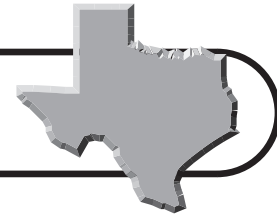
Directions Mark a ✔ by each question from the Benchmark Test that you answer *correctly*. The goal is to gain more ✔s with each Benchmark Test you take.

Objective	Test 1 Date:		Test 2 Date:		Test 3 Date:	
Number, Operation, and Quantitative Reasoning	Questions: ☐ 3 ☐ 12 ☐ 13 ☐ 15 ☐ 20	☐ 28 ☐ 42 ☐ 44 ☐ 50	Questions: ☐ 5 ☐ 10 ☐ 13 ☐ 15 ☐ 20	☐ 28 ☐ 40 ☐ 44 ☐ 50	Questions: ☐ 5 ☐ 12 ☐ 13 ☐ 15 ☐ 20	☐ 28 ☐ 42 ☐ 44 ☐ 47
Patterns, Relationships, and Algebraic Thinking	Questions: ☐ 4 ☐ 6 ☐ 18	☐ 21 ☐ 34 ☐ 35	Questions: ☐ 4 ☐ 6 ☐ 18	☐ 21 ☐ 34 ☐ 35	Questions: ☐ 4 ☐ 9 ☐ 18	☐ 21 ☐ 34 ☐ 35
Geometry and Spatial Reasoning	Questions: ☐ 1 ☐ 11 ☐ 24	☐ 41 ☐ 43 ☐ 45	Questions: ☐ 1 ☐ 3 ☐ 24	☐ 41 ☐ 43 ☐ 45	Questions: ☐ 1 ☐ 11 ☐ 24	☐ 41 ☐ 43 ☐ 45
Measurement	Questions: ☐ 8 ☐ 9 ☐ 10 ☐ 23 ☐ 33	☐ 37 ☐ 38 ☐ 40 ☐ 46 ☐ 49	Questions: ☐ 7 ☐ 8 ☐ 12 ☐ 23 ☐ 33	☐ 37 ☐ 38 ☐ 42 ☐ 46 ☐ 49	Questions: ☐ 7 ☐ 8 ☐ 10 ☐ 17 ☐ 23 ☐ 33	☐ 37 ☐ 38 ☐ 40 ☐ 46 ☐ 50
Probability and Statistics	Questions: ☐ 2 ☐ 7 ☐ 14 ☐ 19 ☐ 25	☐ 26 ☐ 30 ☐ 32 ☐ 39	Questions: ☐ 2 ☐ 11 ☐ 14 ☐ 19 ☐ 25	☐ 26 ☐ 27 ☐ 32 ☐ 39	Questions: ☐ 2 ☐ 6 ☐ 16 ☐ 19 ☐ 25	☐ 26 ☐ 27 ☐ 32 ☐ 39
Underlying Processes and Mathematical Tools	Questions: ☐ 5 ☐ 16 ☐ 17 ☐ 22 ☐ 27	☐ 29 ☐ 31 ☐ 36 ☐ 47 ☐ 48	Questions: ☐ 3 ☐ 16 ☐ 17 ☐ 22 ☐ 29	☐ 30 ☐ 31 ☐ 36 ☐ 47 ☐ 48	Questions: ☐ 3 ☐ 14 ☐ 22 ☐ 29 ☐ 30	☐ 31 ☐ 36 ☐ 48 ☐ 49

Mathematics Chart

Measurement Conversions

LENGTH

Metric	**Customary**
1 kilometer = 1000 meters	1 mile = 1760 yards
1 meter = 100 centimeters	1 mile = 5280 feet
1 centimeter = 10 millimeters	1 yard = 3 feet
	1 foot = 12 inches

CAPACITY AND VOLUME

Metric	**Customary**
1 liter = 1000 milliliters	1 gallon = 4 quarts
	1 gallon = 128 ounces
	1 quart = 2 pints
	1 pint = 2 cups
	1 cup = 8 ounces

MASS AND WEIGHT

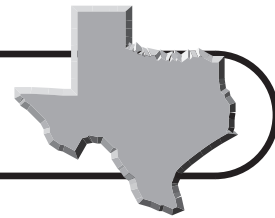| **Metric**	**Customary**
1 kilogram = 1000 grams	1 ton = 2000 pounds
1 gram = 1000 milligrams	1 pound = 16 ounces

TIME

1 year = 365 days

1 year = 12 months

1 year = 52 weeks

1 week = 7 days

1 day = 24 hours

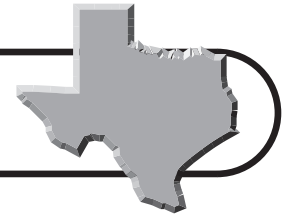1 hour = 60 minutes

1 minute = 60 seconds

20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Centimeters
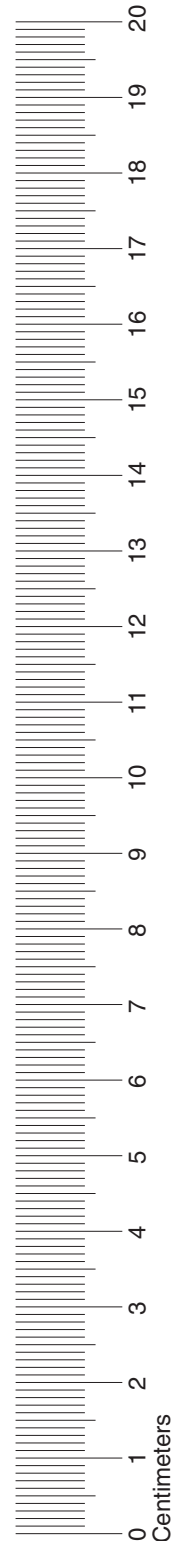
Mathematics Chart

Formulas

Perimeter	square	$P = 4s$
	rectangle	$P = 2\ell + 2w$ or $P = 2(\ell + w)$
Circumference	circle	$C = 2\pi r$ or $C = \pi d$
Area	square	$A = s^2$
	rectangle	$A = \ell w$ or $A = bh$
	triangle	$A = \frac{1}{2}bh$ or $A = \frac{bh}{2}$
	trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$ or $A = \frac{(b_1 + b_2)h}{2}$
	circle	$A = \pi r^2$
Surface Area	cube	$S = 6s^2$
	cylinder (lateral)	$S = 2\pi rh$
	cylinder (total)	$S = 2\pi rh + 2\pi r^2$ or $S = 2\pi r(h + r)$
	cone (lateral)	$S = \pi r \ell$
	cone (total)	$S = \pi r \ell + \pi r^2$ or $S = \pi r(\ell + r)$
	sphere	$S = 4\pi r^2$
Volume	prism	$V = Bh$*
	cylinder	$V = Bh$*
	pyramid	$V = \frac{1}{3}Bh$*
	cone	$V = \frac{1}{3}Bh$*
	sphere	$V = \frac{4}{3}\pi r^3$

B represents the area of the Base of a solid figure.

| **Pi** | π | $\pi \approx 3.14$ or $\pi \approx \frac{22}{7}$ |
| **Pythagorean Theorem** | | $a^2 + b^2 = c^2$ |
| **Simple Interest Formula** | | $I = prt$ |

Inches
0
1
2
3
4
5
6

Diagnostic Test

**Read each question carefully and choose the correct answer.**

1 Sophia's science test scores for the first quarter are 50, 50, 79, 82, 83, and 84. Which measure would show the highest result? **(8.12)(A)**

A Mean
B Median
C Mode
D Range

2 The pictures show three different views of a three-dimensional figure constructed from cubes.

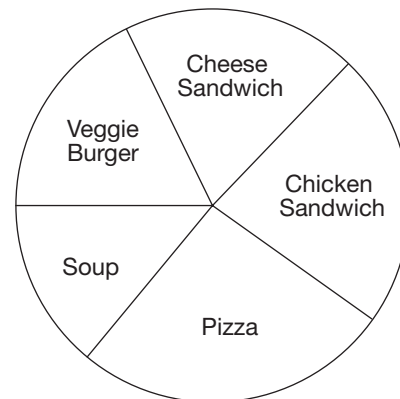top   front   side
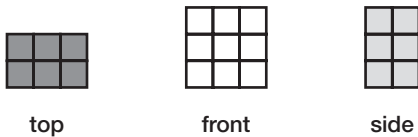
Which of the following could be the figure? **(8.7)(A)**

F

G

H

J
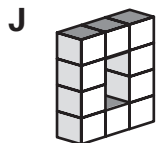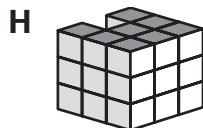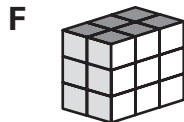
3 The table shows the lunch choices of students for one day.

Lunch	Number of Students
Cheese Sandwich	36
Chicken Sandwich	48
Pizza	58
Soup	29
Veggie Burger	23

Keith made a circle graph to represent the data in the table.

Student Lunch

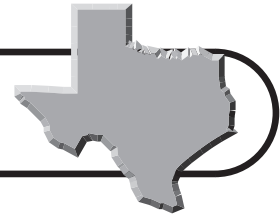

Which conclusion is supported by the data? **(8.13)(B)**

A Cheese sandwiches were the favorite lunch that day.
B More students ate pizza than soup or veggie burgers.
C Students will eat more veggie burgers than soup the next day.
D Twice as many students ate chicken sandwiches as pizza.

Go on

Diagnostic Test (continued)

4 Which diagram shows a translation of figure *A*? **(8.6)(B)**

F original

new

G original

new

H original

new

J original

new
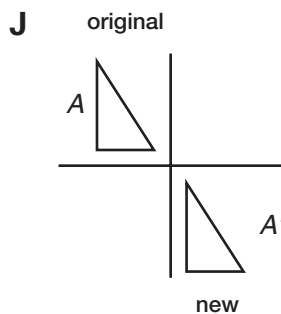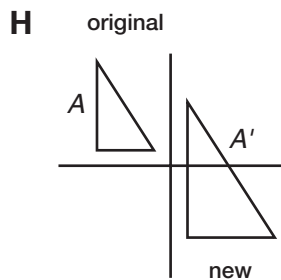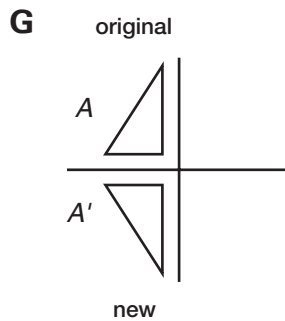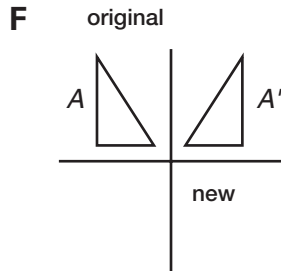
5 Horatio places a rubber duck in the current of the Rio Grande River. The rubber duck floats 12 miles downstream in $2\frac{2}{5}$ hours. At this rate, about how many miles will the duck travel in 5 hours? **(8.3)(B)**

A 15 miles   **C** 25 miles

B 20 miles   **D** 30 miles

6 A rectangular pool is 5 meters long, 6 meters wide, and 2 meters deep. If water fills the pool at a rate of 2 cubic meters per hour, how long will it take for the pool to be half full? **(8.14)(A)**

F 2 hours   **H** 12 hours

G 8 hours   **J** 15 hours

7 Teresa has an average of 87% on 5 tests. If her teacher drops Teresa's lowest grade, an 80%, which equation can be used to find *t*, Teresa's new test average? **(8.2)(A)**

A $t = \dfrac{(87 \times 5) - 80}{4}$

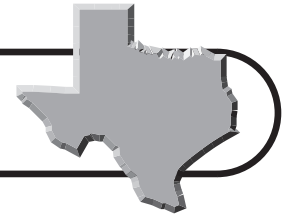**B** $t = \dfrac{87(80 - 5)}{4}$

C $t = \dfrac{87 - 80}{4}$

D $t = \dfrac{(87 \times 5) - 80}{5}$

8 The Garfield Middle School athletic department ordered 328 sweatshirts with the school's mascot printed on them. Of these sweatshirts, 82 were returned to the printing company because the wrong mascot was printed on them. What percent of the original order did the athletic department keep? **(8.1)(B)**
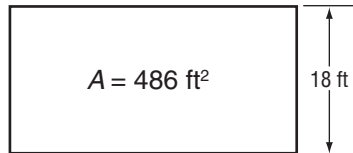
F 85%   **H** 33%

G 75%   **J** 25%

Go on

Diagnostic Test (continued)

9 Ms. Shaftner designed a rectangular room as an addition to her house. The area of the room is 486 square feet.

A = 486 ft²   18 ft

If the width of the room is 18 feet, what is its length? **(8.7)(B)**

A 21 ft

B 24 ft

C 27 ft

D 30 ft

10 Lorenzo dropped a ball from an open window 50 feet above the ground in the Tower of the Americas in San Antonio, Texas. If the ball rebounds half the distance it drops each time it bounces, what will be the height of the rebound after the third bounce? **(8.5)(B)**

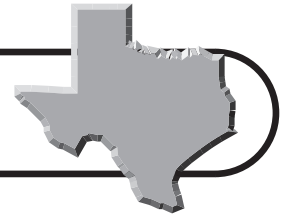**F** 3.125 ft

G 6.25 ft

H 12.5 ft

J 25 ft

11 Emily read an article that stated that on average 15% of men are left-handed and 9% of women are left-handed. Emily gathered her own data by surveying adults at a basketball game. She found that 5 out of 26 women were left-handed. What is the difference in percentage between the study's findings and Emily's experimental results? **(8.11)(B)**
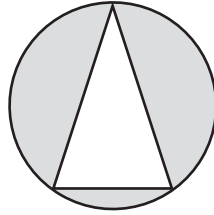
A 4.2%

B 6.2%

C 10.2%

D 19.2%

12 Triangle *ABC* was dilated by a scale factor of 2 to form triangle *DEF*. Which graph best represents this dilation? **(8.6)(A)**

F

G

H

J

Go on
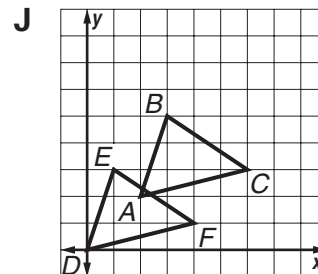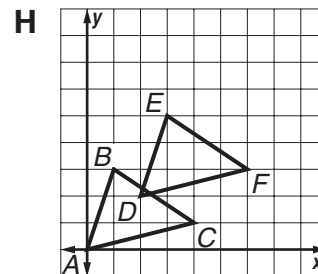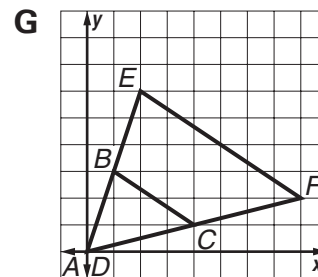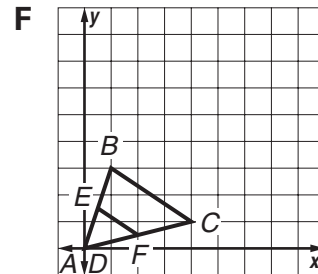
Diagnostic Test (continued)

13 The figure shows a triangle inside a circle.

Which procedure should be used to find the area of the shaded region? **(8.14)(C)**

A Find the perimeter of the triangle, and then subtract the circumference of the circle.

B Find the area of the triangle, and then subtract the area of the circle.

C Find the circumference of the circle, and then subtract the perimeter of the triangle.

D Find the area of the circle, and then subtract the area of the triangle.

14 The two rectangles forming the roof of the house below are congruent. A roofing company charges $1.50 per square foot to shingle a roof.
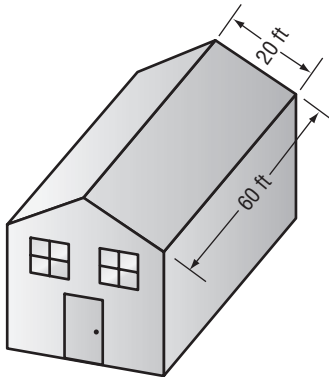
What will be the cost for shingling the roof of the house? **(8.8)(C)**

F $1200   **H** $2400

G $1800   **J** $3600

15 Ms. Jamison spends $75 each month eating out at fast food restaurants. She plans to reduce her spending for fast food by $5 each month until she has reduced her spending to $25 per month.

Which equation can be used to determine *m*, the number of months it will take for Ms. Jamison to reduce her fast food spending to $25 per month? **(8.4)(A)**

A $\frac{1}{3}(5m + 75) = 25$

B $75 - 5m = 25$

C $5m + 75m = 25$

D $\frac{1}{3}m + 75 = 25$

16 Colleen is an interior decorator. Her drawing of the layout of the Brown Family's new living room furniture is shown on the coordinate grid.
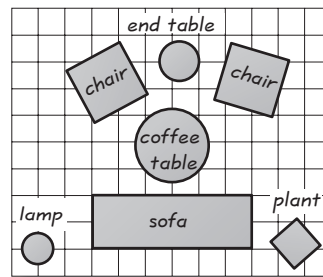
If the center of the lamp is located at the coordinates (0, 0), what are the coordinates of the center of the coffee table? **(8.7)(D)**

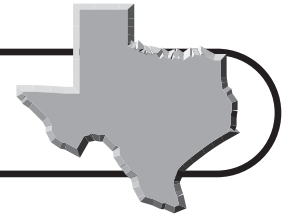**F** (0, 5)   **H** (5, 4)

G (5, 0)   **J** (0, 4)

17 During a field trip to a park, Mr. Hamilton's Earth Science class collected rocks. There were 13 boys and 15 girls in his class. The least number of rocks collected by a student was 17, and the greatest number was 35. Which is a reasonable total number of rocks collected by all the students? **(8.2)(C)**

A 364   **C** 728

B 476   **D** 980

Go on

Diagnostic Test (continued)

18 Lola conducted a survey of her classmates in which she asked each student to choose his or her favorite cafeteria lunch. She listed her results in the table below.

| Favorite Lunch Item	Number of Students
Hamburger	5
Pizza	9
Turkey sandwich	4
Pasta	4
Salad	3
Other	5

If she wants to create a circle graph showing the percentage of students who chose each type of lunch, what will be the degree measure of the sector labeled "Pizza"? **(8.12)(C)**

F 154°
G 108°
H 30°
J 9°

19 Madeline bought a 10-pound bag of pink grapefruit for $4.99. If white grapefruit sold for $0.59 per pound, why did Madeline think that she made the best buy? **(8.16)(B)**

A The cost per pound of pink grapefruit is $0.10 more than the cost per pound of white grapefruit.

B The cost per pound of pink grapefruit is $0.10 less than the cost per pound of white grapefruit.

C The cost for different kinds of grapefruit in 10-pound bags is the same.

D The number of white grapefruit in a 10-pound bag is fewer than the number of pink grapefruit in a 10-pound bag.

20 The figure below is the net of a cylinder.
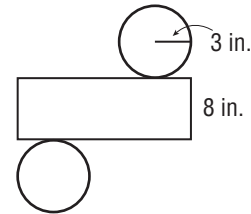
What is the lateral surface area of the cylinder to the nearest tenth? **(8.8)(A)**

F 47.1 in²
G 122.5 in²
H 141.4 in²
J 150.7 in²

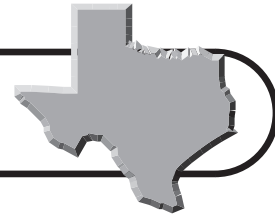**21** Margaret feeds her dog about 300 grams of dog food with each meal. If she feeds her dog twice a day, about how kilograms of food does she need to feed her dog for a week? **(8.2)(B)**

Record your answer and fill in the bubbles. Be sure to use the correct place value.
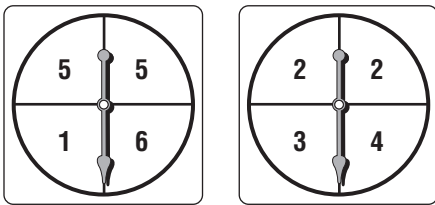
Go on

Diagnostic Test (continued)

22 Joseph is traveling at an average rate of 50 miles per hour. He began driving at 11:00 A.M. If he does not make any stops, at what time will Joseph arrive at his destination, 175 miles from his starting location? **(8.2)(D)**

- **A** 12:30 P.M.
- **B** 1:00 P.M.
- **C** 2:00 P.M.
- **D** 2:30 P.M.

23 For a school carnival, Mia creates a game involving the spinners below.

A contestant plays the game by first choosing one of the four rules listed below and then spinning the spinner. Which rule should a contestant choose to have the greatest chance of winning a prize? **(8.11)(B)**

- **F** Win a prize if the product is greater than 17.
- **G** Win a prize if the product is odd.
- **H** Win a prize if the sum is less than 3.
- **J** Win a prize if the sum or the product is 10.

24 For her science experiment, Katie chose a magnet that is greater than $\frac{5}{8}$ inch and less than $\frac{11}{16}$ inch. Which of these could be the length of the magnet she chose? **(8.1)(A)**

- **A** 0.45 in.
- **C** 0.67 in.
- **B** 0.58 in.
- **D** 0.75 in.

**25** The total population of Texas is about 22,500,000. What is this number in scientific notation? **(8.1)(D)**

- **F** 2.25×10^{-7}
- **G** 2.25×10^{-6}
- **H** 2.25×10^{6}
- **J** 2.25×10^{7}

26 A spinner and a fair number cube are used in a game. The spinner has four equal sections: red, blue, yellow, or green. The faces of the cube are numbered 1 through 6. What is the probability of a player spinning the color red and rolling a 5 or 6? **(8.11)(A)**

- **A** $\frac{1}{24}$
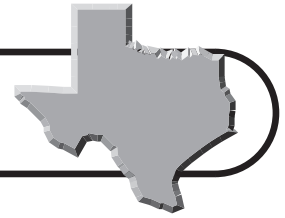- **C** $\frac{1}{7}$
- **B** $\frac{1}{12}$
- **D** $\frac{7}{12}$

27 A large tree in Mrs. Santiago's yard was struck by lightning and fell as shown in the diagram below. Which equation could be used to find the length of the fallen part of the tree? **(8.9)(A)**
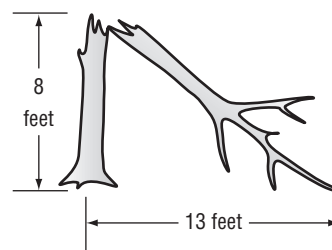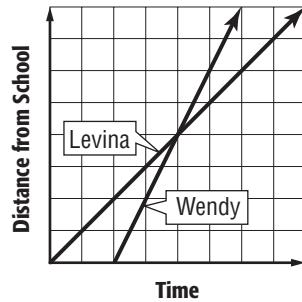

- **F** $8^2 + 13^2 = x$
- **G** $\sqrt{8^2 + 13^2} = x$
- **H** $13^2 - 8^2 = x$
- **J** $\sqrt{13^2 - 8^2} = x$

Go on

Diagnostic Test (continued)

28 Levina and Wendy are neighbors, and they both attend the same school. Levina left school at 2:30 P.M., and Wendy left school at 2:35 P.M. The following graph represents the beginning of their walk home from school one day.

Which of the following statements does NOT represent the information in the graph? **(8.3)(A)**

A Wendy walked about twice as fast as Levina.

B Wendy started her walk home later than Levina.

C Wendy had been walking for about half as long as Levina when she overtook Levina.

D Wendy had walked about half as far as Levina when she overtook Levina.

29 What is the area of the largest square in the figure below? **(8.7)(C)**
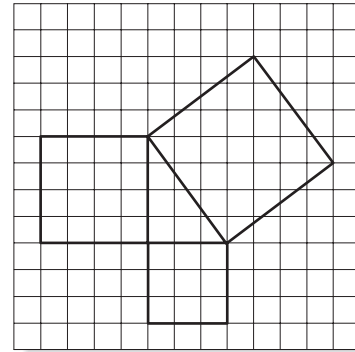
F 5 square units
G 9 square units
H 16 square units
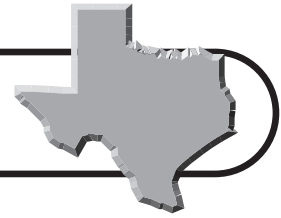**J** 25 square units

30 △*ABC* is similar to △*DEF*.
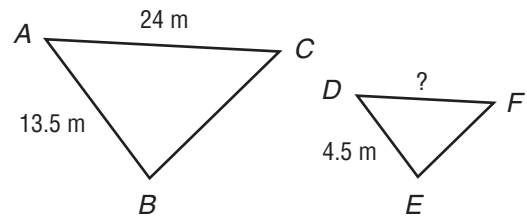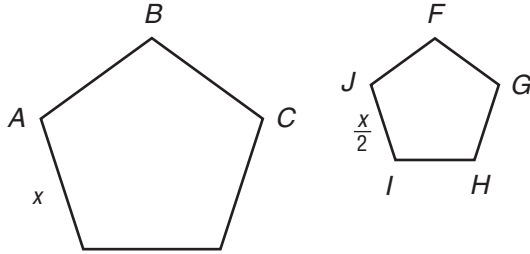

Find the length of $\overline{DF}$. **(8.9)(B)**

A 8 meters
B 9 meters
C 12 meters
D 15 meters

Diagnostic Test (continued)

31 *ABCDE* and *FGHIJ* are regular pentagons.

If the area of *ABCDE* is 50 square inches, what is the area of *FGHIJ*? **(8.10)(A)**

F 50 in²
G 25 in²
H 12.5 in²
J 6.25 in²

32 Ashley mows lawns to earn money. She buys a new mower for $200 and charges $30 per lawn. If she mows *n* lawns, which of the following equations could you use to find *p*, Ashley's profit? **(8.4)(A)**

A $p = 30n - 200$
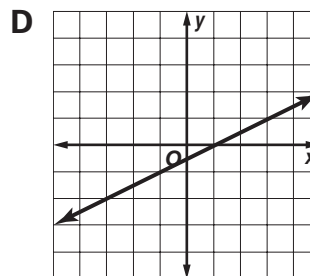**B** $p = 30n + 200$
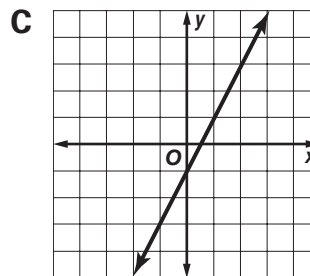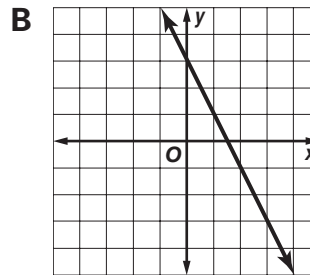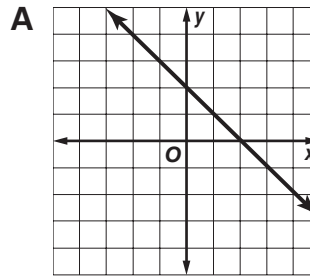**C** $p = n(200 - 30)$
D $p = 200 - 30n$

33 The table shows the pattern of a sequence. Which expression describes the pattern? **(8.5)(B)**

n	s
1	−0.5
2	0.5
3	1.5
4	2.5

F $\dfrac{n}{2}$

G $\dfrac{n}{2} - 1$

H $\dfrac{n+1}{2}$

J $\dfrac{2n-3}{2}$

34 Which line graphed below best represents the table of values shown? **(8.4)(A)**

x	y
0	−1
1	1
2	3
4	7

A

B

C

D

Go on

Diagnostic Test (continued)

35 Using the Pythagorean Theorem, Kay calculates that the distance from her home outside Dallas to her office in Fort Worth is $\sqrt{300}$ miles. Between which two integers is $\sqrt{300}$? **(8.1)(C)**

**F** 15 and 16   **H** 17 and 18
**G** 16 and 17   **J** 18 and 19

36 The graph shows the annual sales for Stan's Savory Snacks since 1985. Based on the data shown in the graph, which is the best prediction for sales in the year 2015? **(8.12)(B)**


Snack Sales
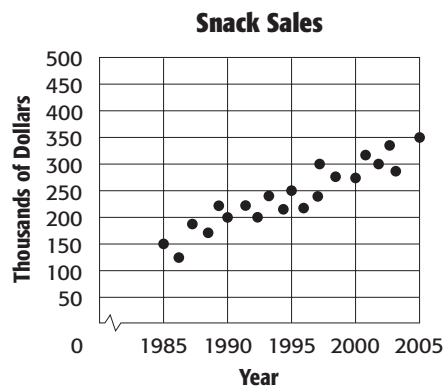
A $500,000   **C** $400,000
B $450,000   **D** $350,000

37 Hannah and Michael are playing a game in which the object is to be the first to reach the finish line. They start the game by standing 20 feet away from the finish line. Each takes turns moving. Hannah always moves one half the distance between herself and the finish line. Michael always moves 4 feet toward the finish line. Who will reach the finish line first? **(8.14)(B)**

F It will be a tie.
G No one will win.
H Hannah
J Michael

38 Which graph shows a triangle with one vertex at coordinates (–4, –2) and at least one vertex in the fourth quadrant? **(8.15)(A)**

A

B

C

D

Go on
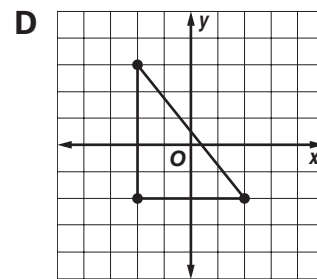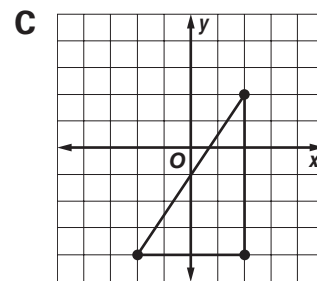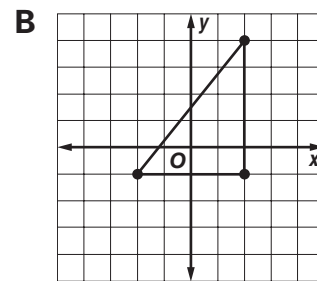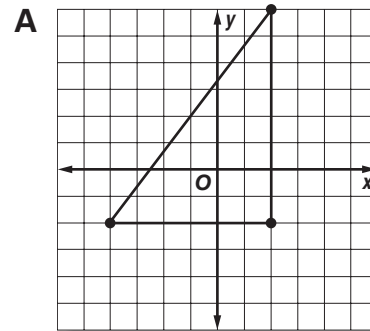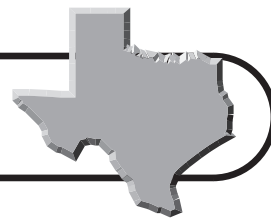
Diagnostic Test (continued)

39 Which triangle does not belong in the group? **(8.16)(A)**
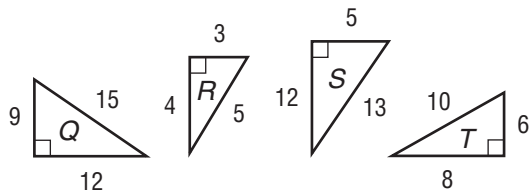
F △Q	**H** △S
G △R	**J** △T

40 Tameka draws a polygon on a coordinate grid.

Which figure shows the reflection across the *y*-axis of the polygon that Tameka drew? **(8.6)(B)**

A

B

C

D

Go on

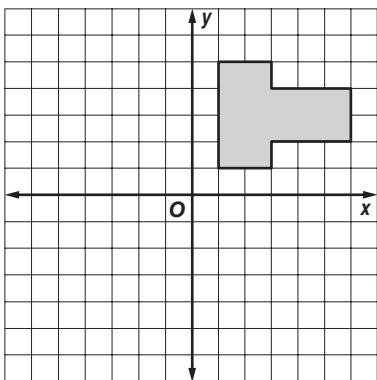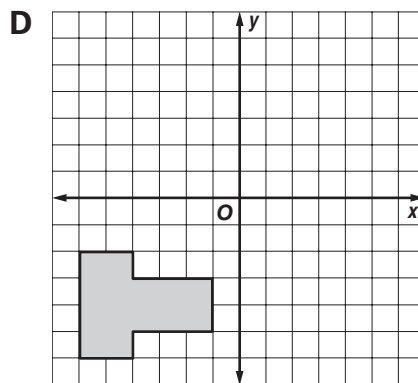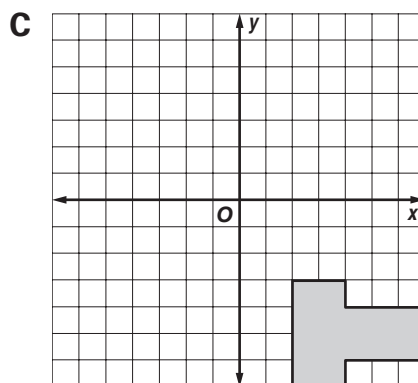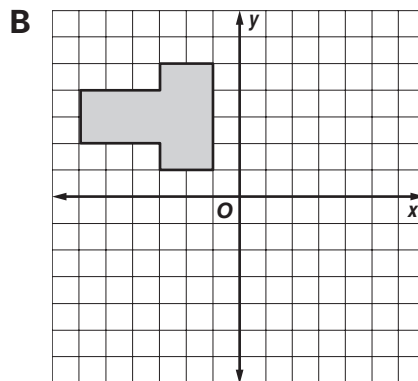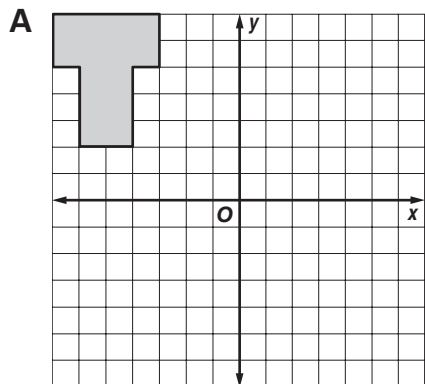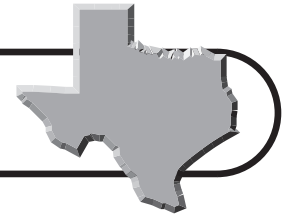**41** The state of Ohio has 88 counties. Texas has 10 fewer than three times as many counties. How many counties are in Texas? **(8.5)(A)**

F 264   H 244
G 254   J 39

42 What happens to the volume of a cube when the dimensions of each side are doubled? **(8.10)(B)**

A The volume is half as much as the original volume.
B The volume is twice the original volume.
C The volume is three times the original volume.
D The volume is eight times the original volume.

43 Carlos read an article in the local newspaper that states that the city park levy was expected to pass at the next election. Carlos surveyed the people in his neighborhood and gathered the following data.

| Survey Results for Carlos' Neighborhood	
Vote	Number
For the Park Levy	28
Against the Park Levy	71

From these results, Carlos concluded that the newspaper article was incorrect. Which is the best explanation for why this conclusion might not be reasonable? **(8.13)(A)**

F The sample does not represent all of the voters in the city.
G The sample size is too large.
H The newspaper surveys are always reliable.
J The data collector is biased.

44 Ivan drove 318 miles on the first day of his trip from Austin, Texas, to New Orleans, Louisiana, and 194 miles on the second day. His average speed was s miles per hour the first day and t miles per hour on the second day. Which equation can be used to find p, the time it took Ivan to complete his trip? **(8.5)(A)**

A $p = \frac{318}{s} + \frac{194}{t}$
B $p = 318s + 194t$
C $p = 512(s + t)$
D $p = \frac{512}{s + t}$

45 Christina folds the net below into a cube.
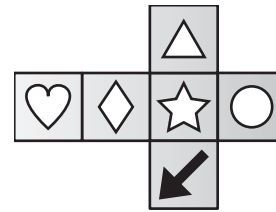
Which figure shows the cube? **(8.7)(A)**
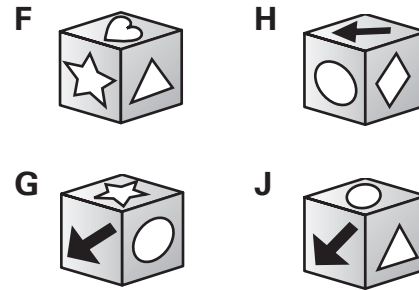
46 Coby has $9 less than Melanie. Together they have $21. Which equation could be solved to find m, the amount Melanie has? **(8.15)(A)**

A $(m - 9) + m = 21$
B $m + (m + 9) = 21$
C $m = 21 - 9$
D $m = (21 + m) - 9$

Diagnostic Test (continued)

47 Jordan's architecture class built a square pyramid out of plywood. They plan to paint the outside of the pyramid, including the bottom. The pyramid has the dimensions shown.

What is the total surface area of the pyramid? **(8.8)(C)**
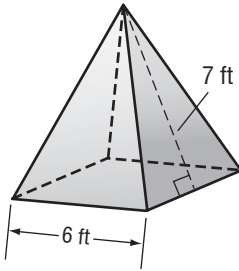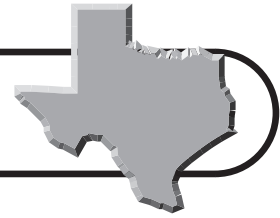
F 21 square feet   **H** 120 square feet
G 84 square feet   **J** 204 square feet

48 The number of diagonals that can be drawn in a polygon with n sides can be determined by $\dfrac{n(n-3)}{2}$. How many diagonals can be drawn in a polygon with 9 sides? **(8.5)(B)**

A 18   **C** 39
B 27   **D** 54

49 A garbage and recycling collection company distributed recycling bins to its customers. Each bin is a rectangular prism that has a square base 2 feet long on each side and a volume of 6 cubic feet. How tall is each bin? **(8.8)(C)**

F 1.5 ft
G 2 ft
H 3 ft
J 4 ft

50 Which scatter plot shows the relationship between the number of gallons of gasoline remaining in a motorcycle's tank and the number of miles driven since the tank was filled? **(8.12)(B)**

A

B

C

D
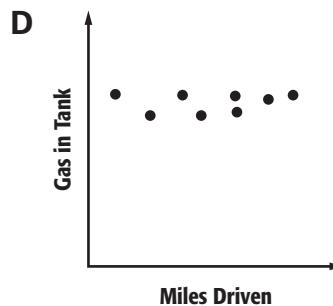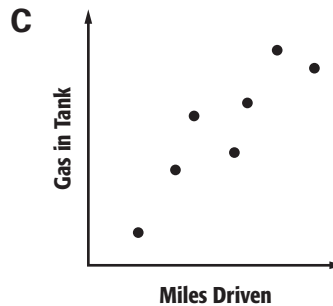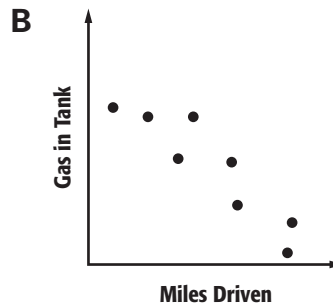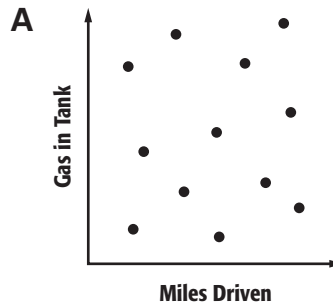
TAKS Practice

OBJECTIVE 1

Read each question and choose the correct answer.

(8.1)(A) **Number, operation, and quantitative reasoning** The student understands that different forms of numbers are appropriate for different situations. The student is expected to compare and order rational numbers in various forms, including integers, percents, and positive and negative fractions and decimals.

1 Which set of numbers is in order from least to greatest?

A $0.003, 3\%, \frac{3}{10}, 3, 10^3$

B $3, \frac{3}{10}, 0.003, \frac{3}{10}, 3\%$

C $\frac{3}{10}, 3\%, 0.003, 3, 10^3$

D $3, 10^3, 3\%, 0.003, \frac{3}{10}$

2 Which of the following indicates the greatest weight?

F $\frac{2}{5}$ tons

G 0.35 tons

H $-\frac{1}{4}$ ton

J 0.55 ton

3 Which best describes the value of $(4.5)^2$?
A Greater than 4 and less than 9
B Greater than 9 and less than 16
C Greater than 16 and less than 25
D Greater than 25

4 Annabel was practicing her free throws. She made between $\frac{1}{2}$ and $\frac{3}{4}$ of her shots. Which percentage has an equivalent fraction value between $\frac{1}{2}$ and $\frac{3}{4}$?
F 6.5%
G 15%
H 60%
J 80%
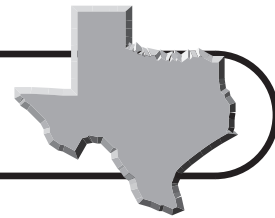
5 Which of the following is a true statement?

A $\frac{3}{5} < 0.60 < 6\%$

B $\frac{3}{5} = 0.06 = 6\%$

C $\frac{3}{5} > 0.60 > 60\%$

D $\frac{3}{5} = 0.60 = 60\%$

(8.1)(B) **Number, operation, and quantitative reasoning** The student understands that different forms of numbers are appropriate for different situations. The student is expected to select and use appropriate forms of rational numbers to solve real-life problems, including those involving proportional relationships.

1 Bacteria grown in a lab double in population every 30 minutes. If 100 bacteria are in a Petri dish at 2:00 P.M., how many bacteria will be in the Petri dish at 4:00 P.M.?
A 400
B 800
C 1,600
D 3,200

2 Hillary is making an egg casserole for breakfast. The recipe makes enough to serve 8 people. How many cups of onion will Hillary need if she wants to prepare enough casserole to serve 4 people?

F 1 cup

G $\frac{1}{2}$ cup

H $\frac{1}{4}$ cup

J $\frac{1}{8}$ cup

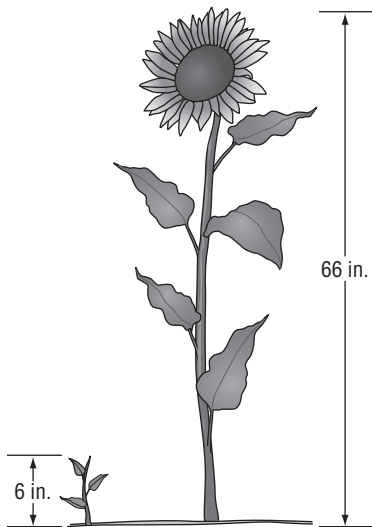| Egg Casserole Recipe |
|---|
| 24 eggs |
| 1 cup sour cream |
| 1 cup green pepper |
| $\frac{1}{2}$ cup onion, chopped |
| 2 cups cheese |
| 1 teaspoon salt |
| 1 teaspoon pepper |

3 The diagram shows the height of a sunflower when it was first planted in Karen's yard, and the height of the same sunflower sixty days later when it was in full bloom.

66 in.

6 in.

Which of the following can be used to find the height of the younger plant as a percent of the older plant?

A $\frac{6}{72}$

B $\frac{6}{60}$

C $\frac{66}{6} \times 100$

D $\frac{6}{66} \times 100$

4 Of the 22 million residents in Texas, about 30% are under the age of 18. About how many Texas residents are under the age of 18?

F 600,000

G 7,000,000

H 25,000,000

J 60,000,000

(8.1)(C) **Number, operation, and quantitative reasoning** The student understands that different forms of numbers are appropriate for different situations. The student is expected to approximate (mentally and with calculators) the value of irrational numbers as they arise from problem situations (such as π, $\sqrt{2}$).

1 The diameter of the Texas state seal in the diagram below is approximately 2 inches. What is the approximate circumference of the seal?
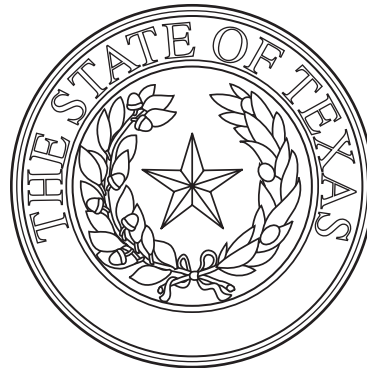
A 3.14 in.

B 6.28 in.

C 12.56 in.

D 14 in.

2 Between which two whole numbers is $\sqrt{95}$?

F 10 and 11

G 9 and 10

H 8 and 9

J 7 and 8

TAKS Practice (continued)

3 Alec uses the Pythagorean Theorem to calculate the distance from the front left corner of his yard to the back right corner. He calculates the distance to be $\sqrt{924}$ yards. What is the approximate distance from the front left corner to the back right corner?

A 3 yards
B 13 yards
C 23 yards
D 30 yards

4 Mr. McMillan writes four irrational numbers on the board and asks one of his eighth grade students to choose the number that is closest to her age. Which of these irrational numbers did the student most likely choose?

F π
G $\sqrt{13}$
H $\sqrt{195}$
J $\sqrt{1623}$

5 Which point on the number line best represents $\sqrt{8}$?
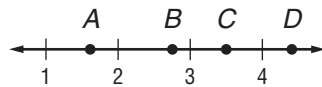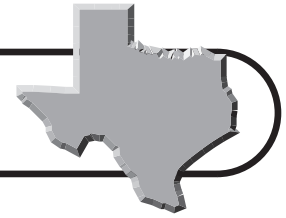

A Point A
B Point B
C Point C
D Point D

(8.1)(D) **Number, operation, and quantitative reasoning** The student understands that different forms of numbers are appropriate for different situations. The student is expected to express numbers in scientific notation, including negative exponents, in appropriate problem situations.

1 A hydrogen molecule is 1.5×10^{-10} meters in length. What is this number in standard notation?

A 0.000000015
B 0.0000000015
C 0.00000000015
D 0.000000000015

2 People have about 25,000,000,000,000 red blood cells in their bodies at any one time. What is this number in scientific notation?

F 2.5×10^{10}
G 2.5×10^{11}
H 2.5×10^{12}
J 2.5×10^{13}

3 The diameter of Mercury is 4,879 kilometers. What is this number in scientific notation?

A 4.879×10^{-4}
B 4.879×10^{-3}
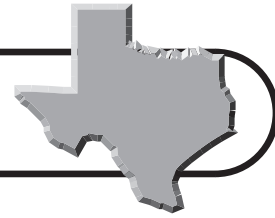**C** 4.879×10^{3}
D 4.879×10^{4}

4 Light travels at approximately 1.225×10^{6} meters per hour. What is this speed in kilometers per hour?

F 1,225 kph
G 12,250 kph
H 122,500 kph
J 1,225,000 kph

5 One light year is approximately 5.879×10^{12} miles. What is this number in standard notation?

A 5.879 million miles
B 5,879,000 miles
C 5,879,000,000 miles
D 5,879,000,000,000 miles

(8.2)(A) **Number, operation, and quantitative reasoning** The student selects and uses appropriate operations to solve problems and justify solutions. The student is expected to select appropriate operations to solve problems involving rational numbers and justify the selections.

1 Paul bought a pair of pants at 25% off the regular price of $45. What was the sale price of the pants?
A $30.50
B $33.75
C $35.00
D $40.25

2 Cora bought 3 oranges priced at $0.29 each and 2 loaves of bread priced at $1.09 each. There was no sales tax on these items. She gave the cashier $4.00. How much change did she receive?
F $3.05
G $1.85
H $0.95
J $0.15

3 Julia is twice as old as her sister Megan. If 4 is subtracted from Julia's age and 4 is added to Megan's age, the numbers will equal. What are the actual ages of Julia and Megan?
A 16 and 8
B 14 and 7
C 18 and 9
D 6 and 3

4 If $5^{-1} = \frac{1}{5}$ and $5^{-2} = \frac{1}{25}$, what is the value of 5^{-4}?
F $\frac{1}{625}$
G $\frac{1}{125}$
H $\frac{1}{75}$
J 625

5 Jose had an average score on 75.5 on his first three math tests. He earned an 85 on his fourth test. Which equation can be used to find x, Jose's average math test score for the four tests?
A $x = \dfrac{75.5 + 85}{4}$
B $x = \dfrac{(75.5 \div 3) + 85}{4}$
C $x = \dfrac{(75.5 \times 3) + 85}{4}$
D $x = \dfrac{75.5}{4} \times 3$

(8.2)(B) **Number, operation, and quantitative reasoning** The student selects and uses appropriate operations to solve problems and justify solutions. The student is expected to use appropriate operations to solve problems involving rational numbers in problem situations.

1 What is the value of $\dfrac{n^2}{5} + n^2 - 12$ if $n = 5$?
A -6 **C** 16
B -2 **D** 18

2 When 11 is added to the product of 6 and another number, the result is 53. What is the other number?
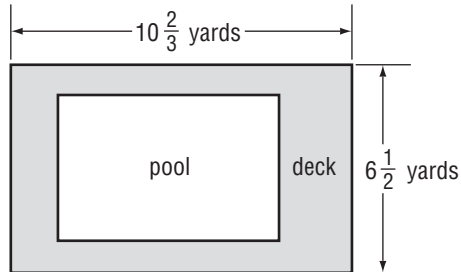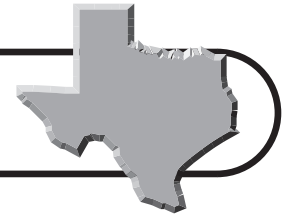**F** -13 **H** 10.6
G 7   **J** 12

TAKS Practice (continued)

3 The diagram below shows the pool and deck area in Tyler's backyard. The dimensions of the deck are shown on the diagram.

$10\frac{2}{3}$ yards

pool   deck $6\frac{1}{2}$ yards

What is the perimeter of the deck in Tyler's backyard?

A $32\frac{1}{6}$ yards

B $34\frac{1}{6}$ yards

C $34\frac{1}{3}$ yards

D $69\frac{1}{3}$ yards

4 Georgia has a plastic container that is a rectangular prism. Its dimensions are shown on the diagram below.

7 in.

7 in. $4\frac{1}{2}$ in.
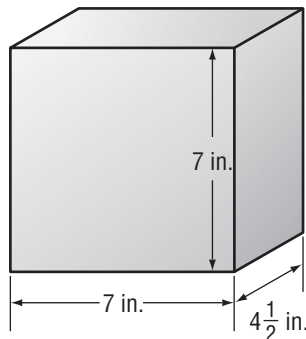
She will fill the container half way with water. How many cubic inches of water will she put into the container?

F $220\frac{1}{2}$ in³   **H** $50\frac{1}{8}$ in³

G $110\frac{1}{4}$ in³   **J** $9\frac{1}{4}$ in³

(8.2)(C) **Number, operation, and quantitative reasoning** The student selects and uses appropriate operations to solve problems and justify solutions. The student is expected to evaluate a solution for reasonableness.
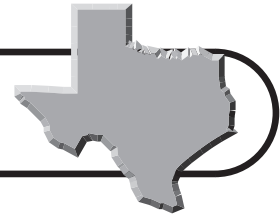
1 Ellen and Terri are shopping at the grocery store and buy the items on their shopping list shown in the table.

Item	Cost
bananas	$1.49
milk	$2.29
bread	$1.29
soda	$3.49
apples	$1.40
rice	$1.39

Ellen used her shopper savings card and they received a 5% discount from the total cost. If Ellen and Terri each pay half of the grocery bill, what is a reasonable amount for each one to pay?

A $3.98

B $4.82

C $5.05

D $5.40

2 Jamal's parents bought a new clothes washer for $799 and a new clothes dryer for $499, including tax. Jamal's parents plan to pay for the total amount of the washer and dryer in 12 monthly payments. What is a reasonable amount for each payment?

F $142

G $122

H $108

J $89

TAKS Practice (continued)

3 Jill's family rented a condominium at the beach for one week. The condominium rental fee varies, depending on the time of the year, as shown in the table below.

Season	Winter	Spring	Summer	Fall
Daily Cost	$100	$125	$155	$120

Which of the following could not be the total amount they paid for the rental?

A $675

B $840

C $875

D $1,085

(8.2)(D) **Number, operation, and quantitative reasoning** The student selects and uses appropriate operations to solve problems and justify solutions. The student is expected to use multiplication by a constant factor (unit rate) to represent proportional relationships.

1 Workers at the River Valley Animal Shelter feed the dogs in the shelter about 58 pounds of dog food each day. At that rate, how many 100-pound bags of dog food does the shelter use in one month?

A 8 bags

B 18 bags

C 28 bags

D 180 bags

2 At an auto parts factory, Audrey can press an average of 16 gears in 30 minutes. At this rate, how long will it take for her to press 400 gears?

F 8 hours

G 11 hours

H 12.5 hours

J 14.5 hours

3 One inch is equal to approximately 2.54 centimeters. Which equation can be used to approximate c, the number of centimeters in i inches?

A $c = 2.54i$

B $c = \dfrac{i}{2.54}$

C $c = 2.54 - i$

D $c = \dfrac{2.54}{i}$

4 For a history project, Marcus built a replica of the Texas State Capitol building. His model has a scale factor of $\dfrac{1}{100}$. If the height of the Capitol's dome is 310 feet, how high is the dome on Marcus' replica?
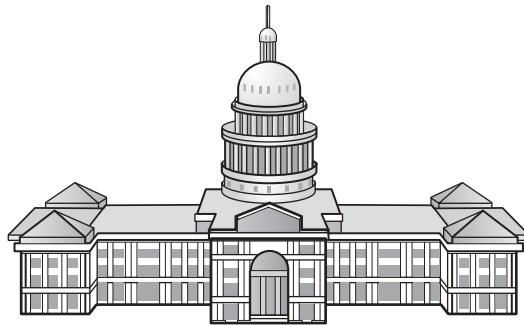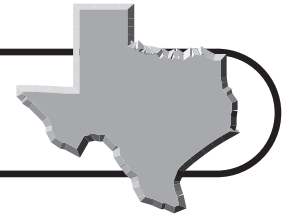

F 310,000 mm

G 31 ft

H 31 in.

J 3.1 ft

5 The table below shows how much Jillian charges for babysitting.

Number of Children	Babysitting Hourly Rate
1	$8
2	$14
3	$20
4	$25

Which proportion could be used to determine whether the amount Jillian charges per hour is proportional to the number of children she watches?

A $\dfrac{2}{\$14} = \dfrac{\$20}{3}$

B $\dfrac{\$7}{1} = \dfrac{\$14}{2}$

C $\dfrac{1}{\$8} = \dfrac{4}{\$23}$

D $\dfrac{\$20}{3} = \dfrac{1}{\$8}$

TAKS Practice

OBJECTIVE 2

Read each question and choose the correct answer.

(8.3)(A) **Patterns, relationships, and algebraic thinking** The student identifies proportional or non-proportional linear relationships in problem situations and solves problems. The student is expected to compare and contrast proportional and non-proportional linear relationships.

1 Marty's Grocers sells 7 mangos for $5. Which of these represents mangos being sold at the same unit price?

   A 1 mango for $1.25

   B 5 mangos for $4

   C 10 mangos for $14

   D 21 mangos for $15

2 Which of these graphs shows a constant rate of change?
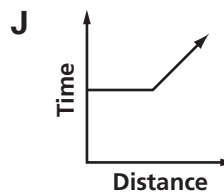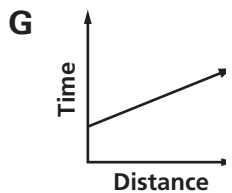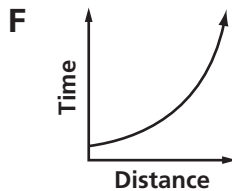
3 The ordered pairs created by an arithmetic sequence are graphed on the coordinate axis below. What is the constant difference in the sequence?
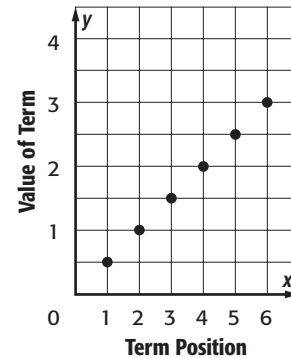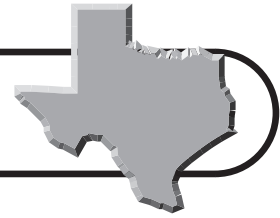

   A 2

   B 1

   C $\frac{1}{2}$

   D $\frac{1}{4}$

4 Abigail is heating water to make some tea. The temperature of the water increases from 22° C to 35° C in 20 seconds. If the water continues to heat up at the same rate, how long will it take for the water temperature to increase from 35° C to 100° C?

   F 120 seconds   **H** 90 seconds

   G 100 seconds   **J** 60 seconds

5 At the video rental store, 5 movies can be rented for $6.99. Each additional movie rental is $1.99. Which of the following statements best describes this relationship?

   A The price per movie is a proportional relationship.

   B The price per movie depends on the number of movies rented.

   C The price per movie is best if only one movie is rented.

   D The price per movie decreases as the number of movies increases.

TAKS Practice (continued)

6 Steve compared prices for pruning trees of four lawn service companies. Which company's price table is based on a constant unit price?

F

Plants	Cost
1	$15
2	$20
3	$25
10	$30

H

Plants	Cost
1	$15
2	$30
3	$45
10	$150

G

Plants	Cost
1	$15
2	$25
3	$35
10	$45

J

Plants	Cost
1	$15
2	$30
3	$60
10	$120

7 Ashley's mother bought some bottles of juice for her family. The juice was on sale for 3 bottles for $4.50. How much did Ashley's mother spend for 8 bottles of juice?

A $9

B $10

C $12

D $13.50

8 Which of the following represents a proportion?

F $\dfrac{1}{2} = \dfrac{0.5}{1.5}$

G $\dfrac{3}{7} = \dfrac{7}{3}$

H $\dfrac{3}{4} = \dfrac{0.75}{1}$

J $\dfrac{6}{8} = \dfrac{2}{3}$

(8.3)(B) **Patterns, relationships, and algebraic thinking** The student identifies proportional or non-proportional linear relationships in problem situations and solves problems. The student is expected to estimate and find solutions to application problems involving percents and other proportional relationships such as similarity and rates.

1 The legend on a map indicates that $\dfrac{1}{2}$ inch = 16 miles. If two towns are 88 miles apart, how far apart are they on the map?

A $2\dfrac{3}{4}$ in.

B 3 in.

C $3\dfrac{1}{2}$ in.

D $4\dfrac{1}{4}$ in.

2 A bag of jellybeans contains 14% green apple, 35% strawberry, 18% banana, 24% coconut, and 9% grape jellybeans. Greg put 400 jellybeans in a jar. Which proportion can be used to find b, the total number of banana jellybeans that you would expect to find in the jar?

F $\dfrac{400}{b} = \dfrac{18}{100}$

G $\dfrac{b}{400} = \dfrac{18}{100}$

H $\dfrac{18}{400} = \dfrac{b}{100}$

J $\dfrac{b}{18} = \dfrac{100}{400}$

3 Max has driven 155 miles and used 5 gallons of gasoline. If he has 12 gallons of gasoline remaining in the tank, how many more miles can he drive on that tank of gasoline?
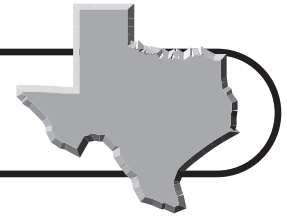
A 2.6   **C** 286
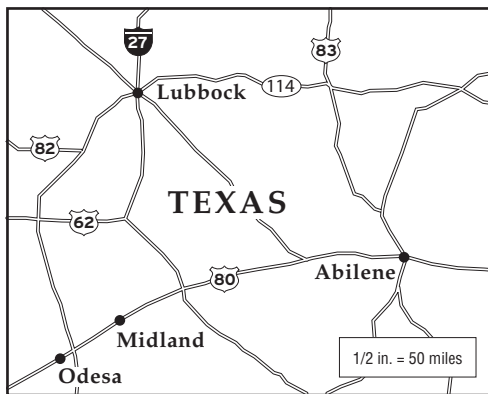
B 66   **D** 372

4 A person who weighs 174 pounds on Earth would weigh 29 pounds on the Moon. How much would a 12-pound infant weigh on the Moon?

F 2 lb   **H** 4 lb

G 3 lb   **J** 5 lb

5 The map shows a portion of Texas. Use the ruler on the Mathematics Chart on pages xi–xii to measure the distance from Lubbock to Abilene on the map.

What is the approximate distance between Lubbock and Abilene?

A 82 miles   **C** 194 miles

B 162 miles   **D** 220 miles

6 A supermarket surveillance camera counted 524 customers coming into the store over a 6-hour period. If customers continue coming into the store at the same rate, which proportion can be used to find x, the number of people who came into the store over a 9-hour period?

F $\dfrac{6}{524} = \dfrac{9}{x}$

G $\dfrac{524}{6} = \dfrac{9}{x}$

H $\dfrac{x}{524} = \dfrac{6}{9}$

J $\dfrac{6}{x} = \dfrac{9}{524}$

7 Kevin can estimate the distance between himself and a lightning strike by counting the number of seconds that pass between when he sees the lightning and when he hears the thunder it makes. If Kevin counts 15 seconds between the lightning flash and the sound of the thunder, he knows the lightning is 3 miles away. How far away is the lightning if Kevin counts 5 seconds between the lightning and thunder?

A 2 miles

B 1 mile

C 0.5 mile

D 0.25 mile

(8.4) **Patterns, relationships, and algebraic thinking** The student makes connections among various representations of a numerical relationship. The student is expected to generate a different representation given another representation of data (such as a table, graph, equation, or verbal description).

1 Which equation matches the following statement?

Six less than four times a number is two more than three times that number.

A $4n - 6 = 3n + 2$

B $4(n - 6) = 3(n + 2)$

C $6 - 4n + 2 = 3$

D $6 - n = 2n + 3$

2 Working together, Sam and Bev collected 54 pounds of newspapers for recycling. If Sam collected s pounds, which of the following shows the number of pounds of newspaper that Bev collected?

F $s + 54$ **H** $\dfrac{54 - s}{2}$

G $s - 54$ **J** $54 - s$

TAKS Practice (continued)

3 Chris and Shannon are selling magazines to help raise money for their school. For each subscription Chris sells, Shannon sells two. Which of the following function tables matches this situation?

A

Chris	Shannon
6	4
3	1
4	2

B

Chris	Shannon
6	12
3	6
4	8

C

Chris	Shannon
6	8
3	5
4	6

D

Chris	Shannon
6	12
3	9
4	10

4 Rafael walks 2 miles and burns 300 Calories every day. Which graph best represents the relationship shown in the table?

Miles Walked	Calories Burned
2	300
4	600
6	900
8	1,200

F

G

H

J
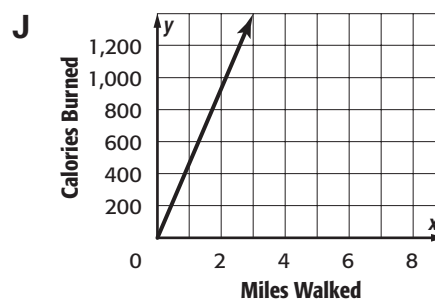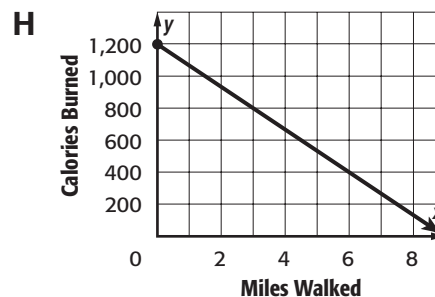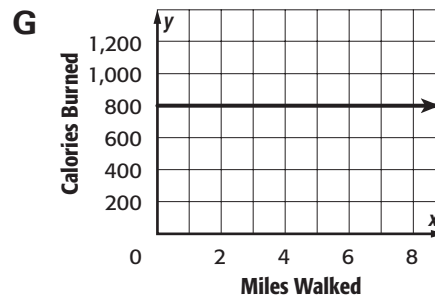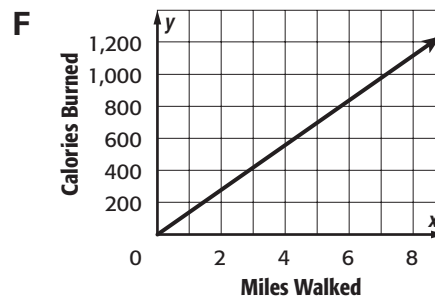
TAKS Practice (continued)

5 A sequence of numbers was generated using the rule $4n - 1$, where n represents a number's position in the sequence. Which sequence fits this rule?

A 3, 5, 7, 9, 11, …
B 1, 4, 7, 10, 13, …
C 3, 7, 11, 15, 19, …
D 2, 4, 6, 8, 10, 12, …

6 In 2006, a first-class letter costs $0.39 for the first ounce and $0.24 for each additional ounce. If x equals number of ounces and y equals cost, which of the following best represents this relationship?

F

x	y
1	$0.39
2	$0.63
3	$0.87
4	$1.11
5	$1.35

H

x	y
1	$0.39
1.1	$0.39
1.2	$0.39
1.3	$0.39
1.4	$0.39

G

x	y
1	$0.39
1.5	$0.51
2	$0.63
2.5	$0.75
3	$0.87

J

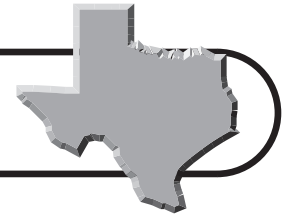| x	y
$0.39	1
$0.63	1.8
$0.87	2.3
$1.11	4.2

(8.5)(A) **Patterns, relationships, and algebraic thinking** The student uses graphs, tables, and algebraic representations to make predictions and solve problems. The student is expected to predict, find, and justify solutions to application problems using appropriate tables, graphs, and algebraic equations.

1 Olivia's grandfather is 6 years more than 3 times as old as Olivia. Her grandfather is 63 years old. How old is Olivia?

A 14   **C** 23
B 19   **D** 27

2 The table shows the relationship between the number of days a library book is overdue d, and the fine f, when the book is overdue.

d (days)	1	2	3	4	5
f (cents)	10	20	30	40	50

Which of the following equations represents the relationship?

F $d = 10f$
G $f = d + 10$
H $f = 10d$
J $f = 10(d + 1)$

3 Mr. Crystal divides his science class of 27 students into two groups for an experiment. The first group has 5 fewer students than the second group. How many students are in each group?

A 4 and 23
B 8 and 19
C 11 and 16
D 12 and 15
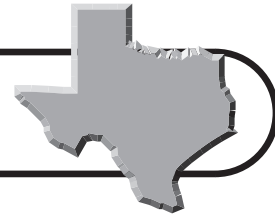
4 Rosa recorded the outside temperature during one summer when she was a life guard. At the same time, her friend Maddy kept track of the number of ice creams sold at the snack bar. They put their data together in the table below.

x	y
70	3
75	11
80	19
85	27
90	35
95	43

Based on the data, how many ice cream cones would likely be sold if the temperature were 100 degrees?

F 48   **H** 53
G 51   **J** 59

5 Hannah's older sister is buying a used car. She borrowed $3,600 from a local bank with a simple interest rate of 10.5%. Hannah's sister will pay the loan back over 3 years. Use the simple interest formula on the Mathematics Chart on pages xi–xii to find I, the amount Hannah will pay in interest over the life of the loan. Let p be the principal amount invested, r is the simple interest rate, and t is the time.

A $126

B $1,134

C $11,428

D $113,400

6 At a theme park in Texas, a log ride releases water in cycles. The cycles and the accumulative total gallons of water released are shown in the table.

Cycle Number	Accumulative Gallons of Water Released
1	50,000
2	100,000
3	150,000
4	200,000
5	250,000
x	$y = 50,000x$

Following this pattern, how many accumulative gallons of water will be released with the sixth cycle?

F 300,000

G 350,000

H 400,000

J 450,000

7 Dawn's older brother is a car salesperson. He earns $900 per month plus a commission of 3% on his sales. How much must Dawn's brother sell to have a monthly income of $2,400?

A $2,373

B $3,300

C $5,000

D $50,000

8 Lora needs at least 360 total points on four tests combined to earn an A in Texas History. The scores for her first three tests are shown in the table below. What is the lowest score Lora can earn on Test 4 and still earn an A?

Lora's Test Scores	
Test 1	86
Test 2	88
Test 3	90
Test 4	

F 94

G 96

H 98

J 100

(8.5)(B) **Patterns, relationships, and algebraic thinking** The student uses graphs, tables, and algebraic representations to make predictions and solve problems. The student is expected to find and evaluate an algebraic expression to determine any term in an arithmetic sequence (with a constant state of change).

1 Which value is missing in the table?

n	0	4	6
$2(n + 3)$	6	14	?

A 15

B 18

C 24

D 36

TAKS Practice (continued)

2 Mr. Washington showed his class a pattern of equilateral triangles.

The table shows the data that the students were asked to find.

Number of Triangles	1	2	3	4	n
Outer Perimeter (units)	3	4	5	6	p

Which of the following is a function rule for the sequence shown in the table?

F $p = 2n$ **H** $p = n + 2$
G $p = 3n - 1$ **J** $p = n + 1$

3 Which expression can be used to find the nth term in the following arithmetic sequence, where n represents a number's position in the sequence?

Position	1	2	3	4	n
Term	5	9	13	17	?

A $3n + 4$ **C** $4n + 1$
B $5n$ **D** $n + 4$

4 Matthew test drove a new pace car for four laps at the Texas Motor Speedway. The lap numbers and his speeds are shown in the table below. If the sequence were to continue in the same pattern, which expression can be used to find the speed during the 6th lap where n represents the lap number?

Lap Number	Speed (mph)
1	96
2	104
3	112
4	120

F $8n + 88$ **H** $2n + 96$
G $8n + 96$ **J** $96(n - 1)$

5 In the Dunbar Middle School Auditorium, each row has 2 more seats than the row in front of it.
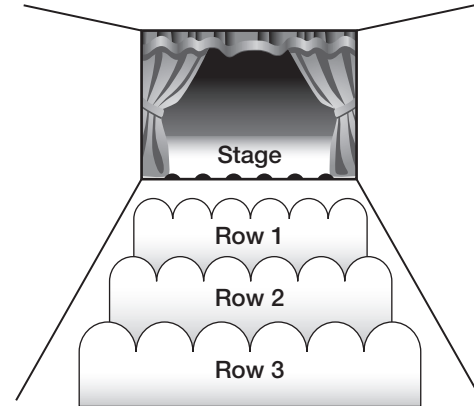
The front row contains 30 seats. How many seats are in the 11th row from the stage?

A 32
B 41
C 50
D 68

6 The table shows the first four terms of a sequence. What is the 10th term of this sequence?

n	1	2	3	4
$\dfrac{n+2}{2}$	$\dfrac{3}{2}$	$\dfrac{4}{2}$	$\dfrac{5}{2}$	$\dfrac{6}{2}$

F $\dfrac{6}{2}$ **H** $\dfrac{10}{2}$
G $\dfrac{8}{2}$ **J** $\dfrac{12}{2}$

7 What is the 7th term of the following sequence?

$$-4, -6, -8, \ldots, -2n - 2, \ldots$$

A -16
B -14
C -12
D -10
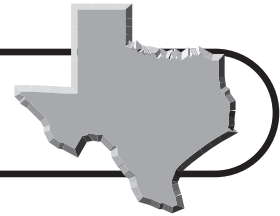
TAKS Practice

OBJECTIVE 3

Read each question and choose the correct answer.

(8.6)(A) **Geometry and spatial reasoning**
The student uses transformational geometry to develop spatial sense. The student is expected to generate similar figures using dilations including enlargements and reductions.

1 Which of these figures below shows a dilation of figure *A*?

A

B

C

D
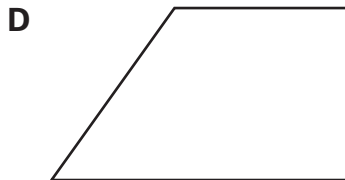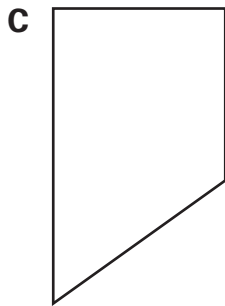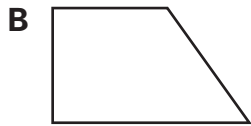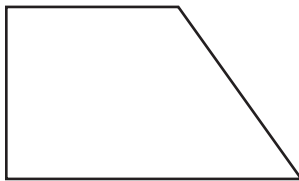
2 Quadrilateral *JKLM* was dilated to form quadrilateral *WXYZ*.
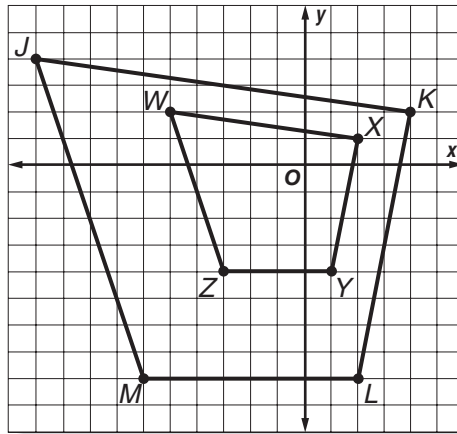
What is the scale factor used to change quadrilateral *JKLM* into quadrilateral *WXYZ*?

F $\frac{1}{4}$ **H** $\frac{2}{1}$

G $\frac{1}{2}$ **J** $\frac{4}{1}$

3 Which fraction represents the scale factor used to change *ABC* into *A'B'C'*?
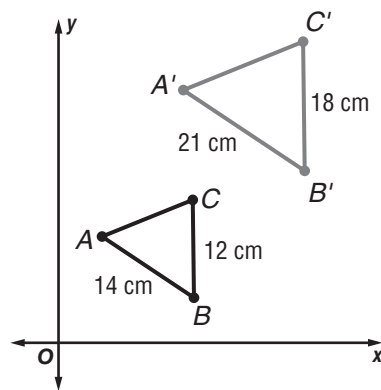
A $\frac{1}{2}$ **C** $\frac{3}{4}$

B $\frac{5}{8}$ **D** $\frac{3}{2}$
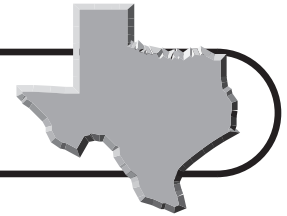
TAKS Practice (continued)

4 *ABC* is shown on the coordinate grid.
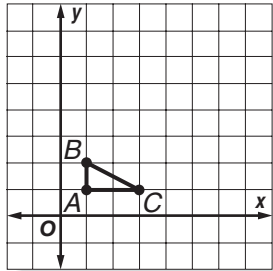
Which represents a dilation of *ABC* by a scale factor of 2 using the origin as the center of dilation?

F

G

H

J
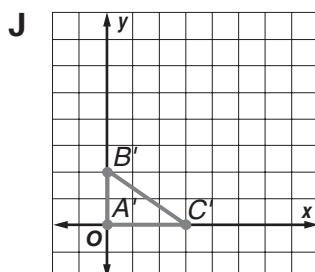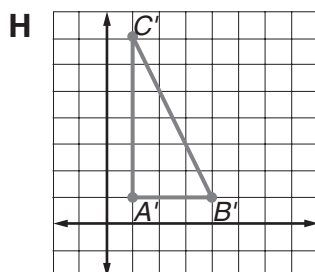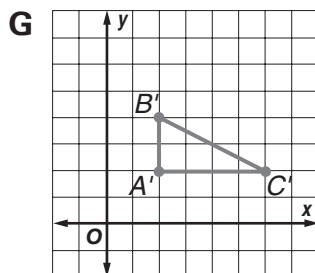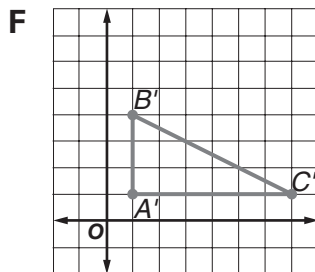
(8.6)(B) **Geometry and spatial reasoning**
The student uses transformational geometry to develop spatial sense. The student is expected to graph dilations, reflections, and translations on a coordinate plane.

1 Trapezoids *LMNO* and *PQRS* are shown on the coordinate grid.
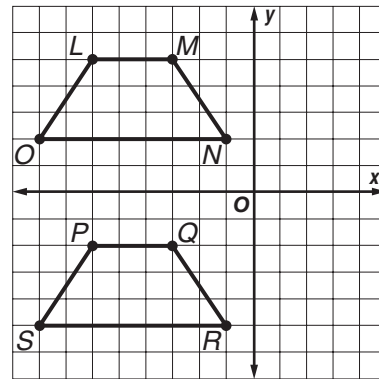
Which of the following transformations is shown?

A dilation   **C** translation
B reflection   **D** rotation

2 Which triangle shows a reflection of △*XYZ* across the *x*-axis?
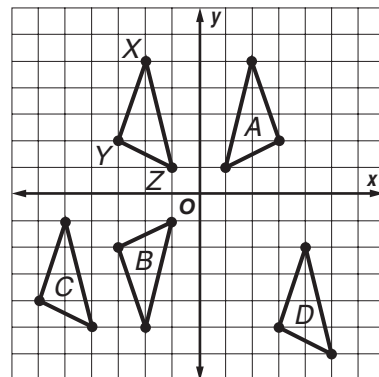

F *A*   **H** *C*
G *B*   **J** *D*
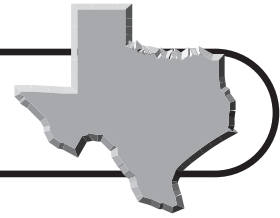
TAKS Practice (continued)

3 In which graph is the unshaded figure a reflection of the shaded figure over the *y*-axis?

A

B

C

D
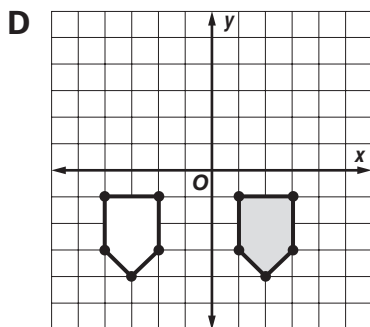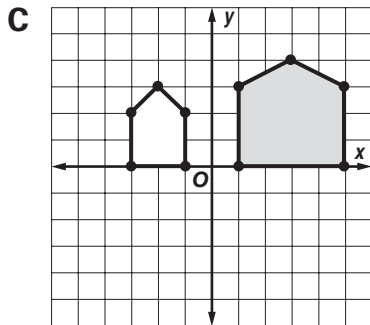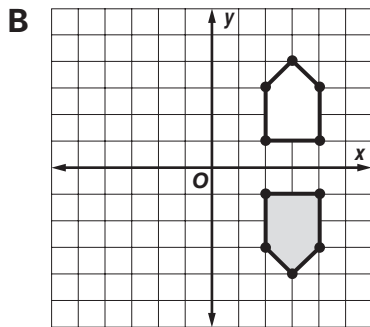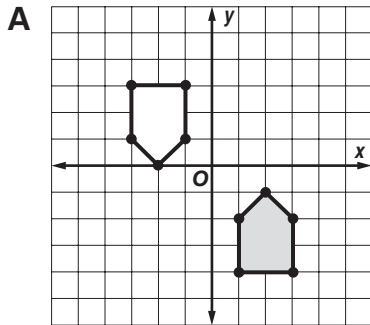
(8.7)(A) **Geometry and spatial reasoning**
The student uses geometry to model and describe the physical world. The student is expected to draw three-dimensional figures from different perspectives.

1 The drawing shows the top, side, and front views of a three-dimensional figure.

Top View   Side View   Front View
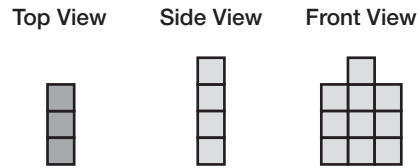
Which solid is shown above?

A

C

B

D
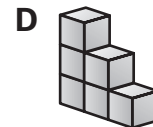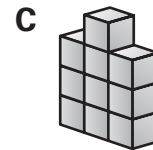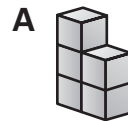
2 The drawing shows a three-dimensional figure made of stacked cubes. The numbers in the squares identify the number of cubes in each stack.

2	0	0
3	1	3

Which drawing shows a three-dimensional view of this solid figure?

F

H

G

J
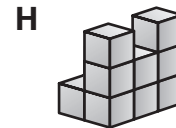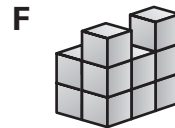
TAKS Practice (continued)

3 Which of the following figures would represent the top view of a triangular prism?

A

B

C

D
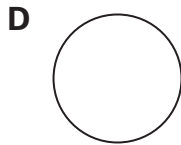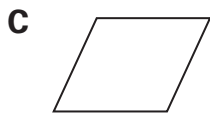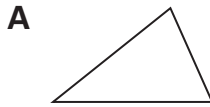
4 The drawing below shows a three-dimensional figure built with cubes.
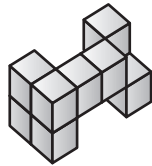
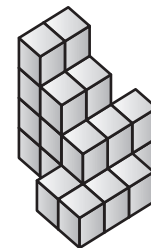Which drawing shows a front view of the three-dimensional figure shown above?

F

G

H

J
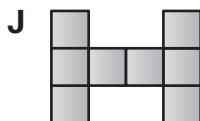
(8.7)(B) **Geometry and spatial reasoning**
The student uses geometry to model and describe the physical world. The student is expected to use geometric concepts and properties to solve problems in fields such as art and architecture.

1 The Texas Star, at Fair Park in Dallas, is the largest Ferris wheel in the western hemisphere. It has a diameter of 65 meters. What is the approximate distance traveled by a person who rides this wheel for one complete revolution?

A 3,316 m   **C** 204 m
B 408 m   **D** 162 m

2 Julia made a building with blocks. The block all measure 1 inch on each side. What is the area of the floor that is covered by the block building?
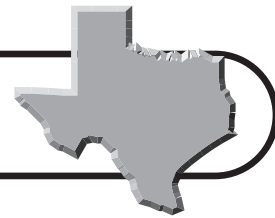
F 8 in^2 **H** 14 in^2
G 11 in^2 **J** 24 in^2

3 Mr. Van Dyke made a circular stained-glass window for the entryway of his house.

24 in.
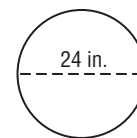
What is the approximate area of the stained-glass window?

A 520 in^2 **C** 344 in^2
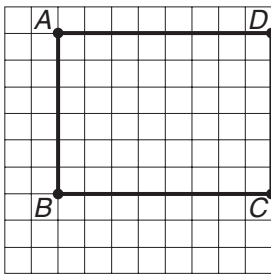**B** 452 in^2 **D** 240 in^2

TAKS Practice (continued)
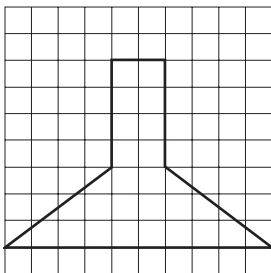
(8.7)(C) **Geometry and spatial reasoning**
The student uses geometry to model and
describe the physical world. The student
is expected to use pictures or models to
demonstrate the Pythagorean Theorem.

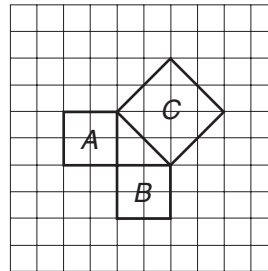**1** What is the length of segment *BD* in the
diagram?

A 6 units
B 8 units
C 10 units
D 12 units

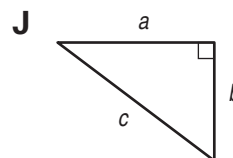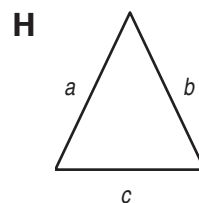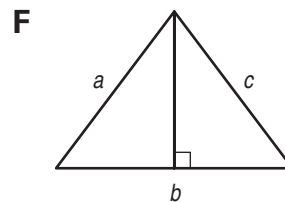**2** What is the perimeter of the figure in the
diagram?

F 28 units
G 30 units
H 48 units
J 96 units

3 What is the area of square *C* in the
diagram below?

A 4 units^2
B 8 units^2
C 16 units^2
D 24 units^2

4 For which triangle is the relationship
$a^2 + b^2 = c^2$ true?
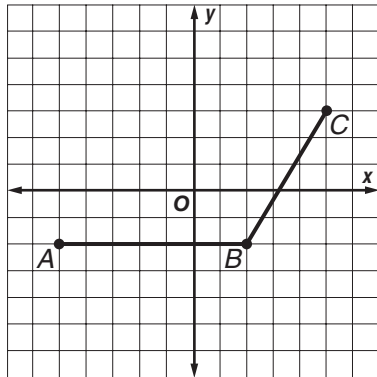
F

G

H

J
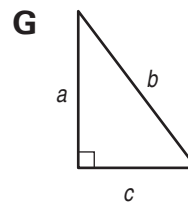
TAKS Practice (continued)

(8.7)(D) **Geometry and spatial reasoning**
The student uses geometry to model and
describe the physical world. The student
is expected to locate and name points on a
coordinate plane using ordered pairs of rational
numbers.

1 Points *A*, *B*, and *C* are vertices of a
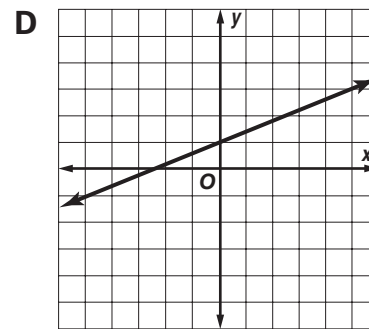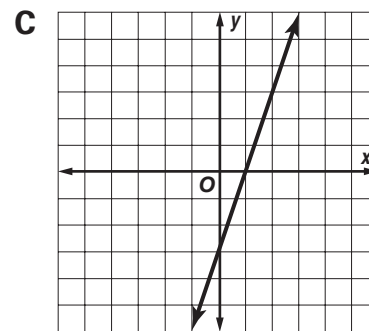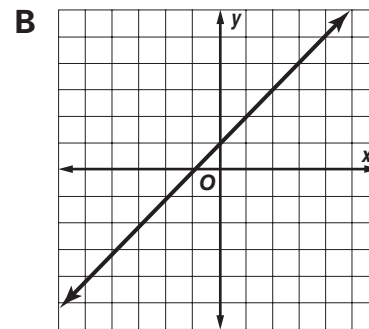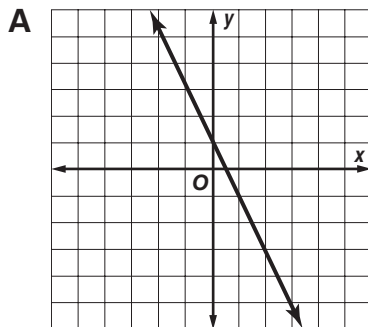parallelogram. What are the coordinates
of the fourth vertex?

A (−2, 3)   **C** (−4, 3)
B (3, 2)   **D** (0, 3)

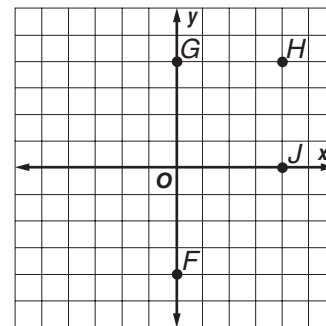**2** Which of the following ordered pairs
represents a point in the quadrant III?
F (−6, 4)   **H** (−6, −4)
G (6, −4)   **J** (0, −4)

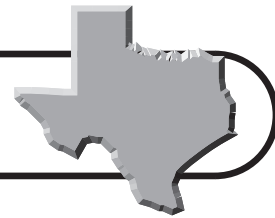**3** Which graph shows a line that contains the
points (2, 3), (4, 5), and (0, 1)?

A

B

C

D

4 Which point on the coordinate grid below
represents the ordered pair (4, 0)?

**F** *F*   **H** *H*
G *G*   **J** *J*

TAKS Practice

OBJECTIVE 4

Read each question and choose the correct answer.

(8.8)(A) **Measurement** The student uses procedures to determine measures of three-dimensional figures. The student is expected to find lateral and total surface area of prisms, pyramids, and cylinders using concrete models and nets (two-dimensional models).
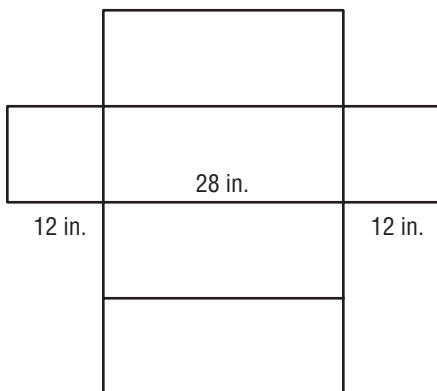
1 Sean is making a cylindrical kaleidoscope from the tube shown. He needs to cover the top, the bottom, and the side with clear contact paper.

2 in.

10 in.
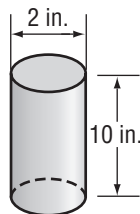
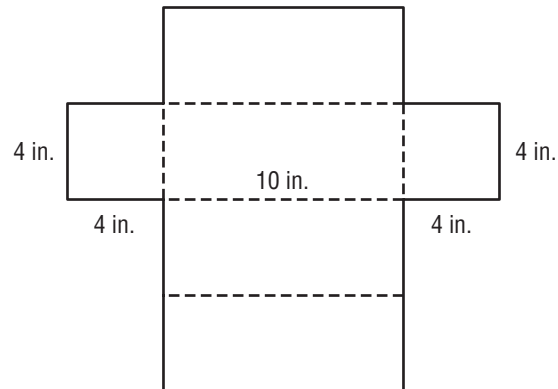Approximately how many square inches of paper will he need if there is no overlap?

A 63 in^2
B 70 in^2
C 98 in^2
D 150 in^2

2 The diagram below shows a net for a rectangular prism. What is the surface area of the prism?

28 in.

12 in.   12 in.

F 850 in^2
G 1,268 in^2
H 1,580 in^2
J 1,632 in^2

3 Tony cut and unfolded a cardboard pasta box. The diagram below shows the unfolded box.

4 in.   4 in.

10 in.

4 in.   4 in.

What is the surface area of this box?

A 80 in^2
B 160 in^2
C 192 in^2
D 220 in^2

4 Ms. Bennett has a 12-ounce can of juice.

6 cm

12 cm
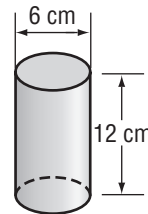
What is the approximate surface area of the can?

F 188 cm^2
G 240 cm^2
H 282 cm^2
J 300 cm^2

TAKS Practice (continued)

5 Mason is planning to add shingles to the roof of his shed as shown.
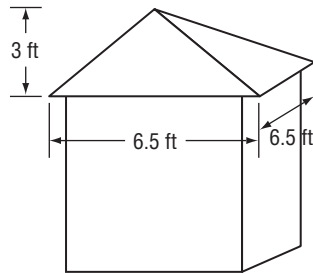
What is the area of the roof that he needs to shingle?

A 39 ft²

B $42\frac{1}{4}$ ft²

C 52 ft²

D $81\frac{1}{4}$ ft²

(8.8)(C) **Measurement** The student uses procedures to determine measures of three-dimensional figures. The student is expected to estimate measurements and use formulas to solve application problems involving lateral and total surface area and volume.

1 Mr. Thome ordered a shirt and a jacket from an online website. His order arrived in a cardboard box. What is the surface area of the box?
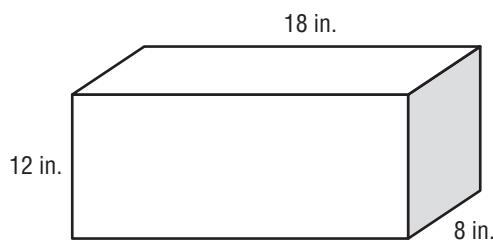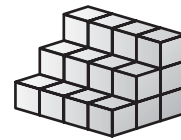

A 750 in²   **C** 912 in²

B 825 in²   **D** 1,020 in²

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2 What is the volume of the square pyramid shown below?
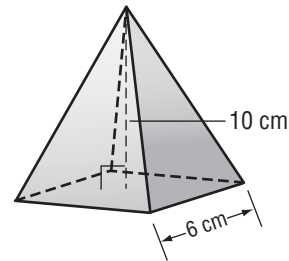
F 30 cm³   **H** 120 cm³

G 60 cm³   **J** 360 cm³

3 The three-dimensional figure is made of stacked cubes. Each side of the cube is 1 inch. What is the volume of the figure?

A 12 in³   **C** 30 in³

B 24 in³   **D** 36 in³

4 The basketball booster club is selling boxes of candy for a fund-raiser. The dimensions of a candy box are shown in the figure below. What is the volume of the box of candy?
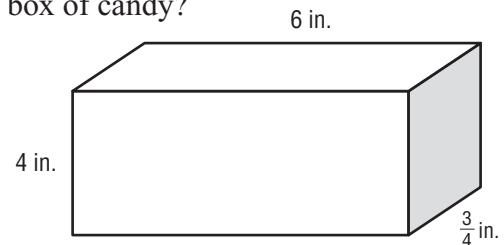
F 18 in³   **H** 28 in³

G 24 in³   **J** 32 in³

5 The floor of a room measures 12 feet by 10 feet. The room has 9-foot ceilings. The walls of the room are to be painted. What is the approximate area to be painted?

A 198 ft²   **C** 516 ft²

B 396 ft²   **D** 1,080 ft²

(8.9)(A) **Measurement** The student uses indirect measurement to solve problems. The student is expected to use the Pythagorean Theorem to solve real-life problems.

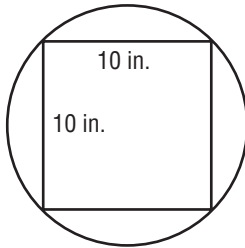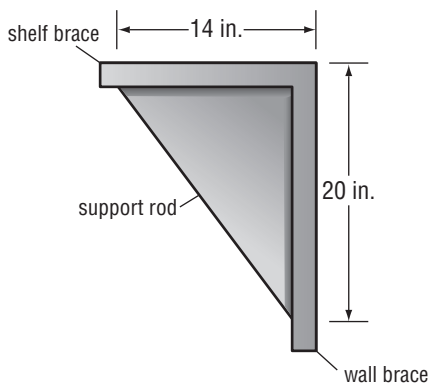**1** Lucas is cutting a 10-inch by 10-inch square pizza from a circular pizza as shown in the diagram. About what size is the smallest diameter of circular pizza from which Lucas can cut a square pizza?

10 in.

10 in.

A 10 in.
B 12 in.
C 14 in.
D 18 in.

2 The diagram shows the side view of a support bracket used with a bookshelf.

shelf brace — 14 in.—

support rod

20 in.

wall brace

What is the approximate length of the support rod?
F 6 in.
G 18 in.
H 24 in.
J 28 in.

3 A 26-foot rope is used to brace a tent pole at the county fair. The rope is anchored 10 feet from the base of the pole.

tent pole

26 ft

— 10 ft —
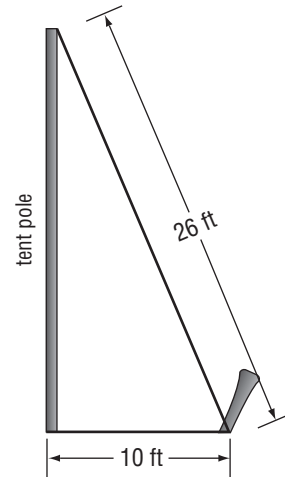
How tall is the tent pole?
A 21.8 ft
B 24 ft
C 28 ft
D 30 ft

4 Abdul is putting a fence around his garden to keep rabbits away from the vegetables. The diagram below shows the perimeter of the garden.

14 ft

13 ft

12 ft

?
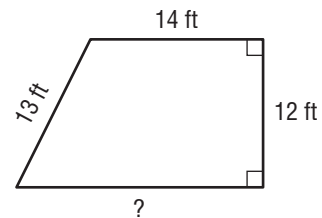
Abdul measured three sides of the garden, but his measuring tape was not long enough to measure the fourth side. What is the garden's perimeter?
F 19 ft
G 39 ft
H 48 ft
J 58 ft

TAKS Practice (continued)

(8.9)(B) **Measurement** The student uses indirect measurement to solve problems. The student is expected to use proportional relationships in similar two-dimensional figures or similar three-dimensional figures to find missing measurements.

1 The dimensions of two cubes are shown below.

n cm   3*n* cm
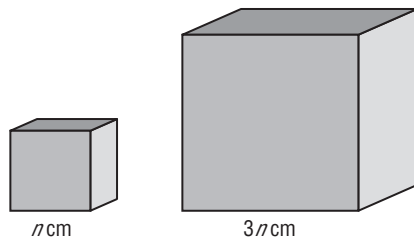
The volume of the smaller cube is 125 cubic centimeters. Find the volume of the larger cube.

A 375 cm^3 **C** 3,375 cm^3
B 1,125 cm^3 **D** 15,625 cm^3

2 These two triangles are similar.
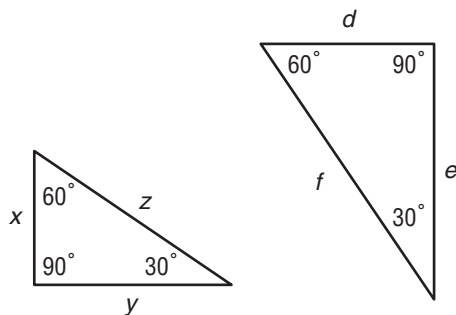
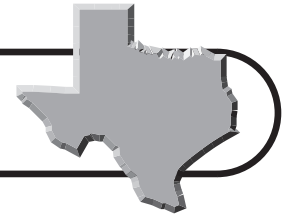Which of these proportions is true for these triangles?

F $\dfrac{x}{f} = \dfrac{y}{e}$ **H** $\dfrac{z}{f} = \dfrac{x}{d}$

G $\dfrac{e}{f} = \dfrac{y}{x}$ **J** $\dfrac{x}{z} = \dfrac{e}{f}$

3 What value of *x* would make the two trapezoids shown similar?
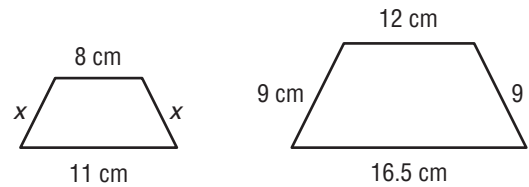
A 4 cm   **C** 7 cm
B 6 cm   **D** 8 cm

4 Which triangle is similar to the one shown?
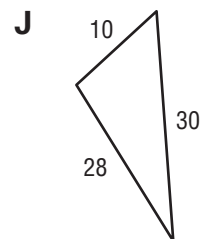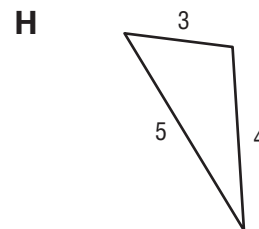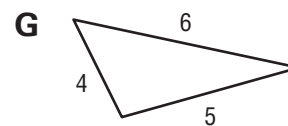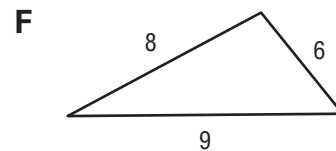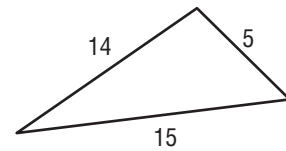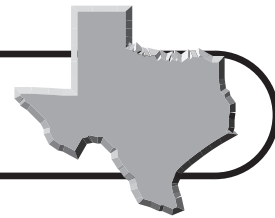
5 What value of *x* would make △*ABC* similar to △*XYZ*?
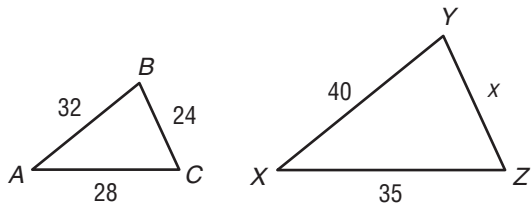
A 26
B 28
C 30
D 48

(8.10)(A) **Measurement** The student describes how changes in dimensions affect linear, area, and volume measures. The student is expected to describe the resulting effects on perimeter and area when dimensions of a shape are changed proportionally.

1 The area of square *ABCD* is 400 square centimeters. What is the area of a square that has a side length that is one-half of the side length of square *ABCD*?
A 100 cm²
B 150 cm²
C 200 cm²
D 250 cm²

2 Matt's father has a computer desk in his study. The desktop is 60 inches long and 24 inches wide. Matt's father wants to build a proportionately smaller replica of his desk for Matt to use in his bedroom. If the length of Matt's desktop will be 45 inches, what will its perimeter be?
F 98 in.
G 112 in.
H 126 in.
J 130 in.

3 Triangle *ABC* is similar to triangle *DEF*.
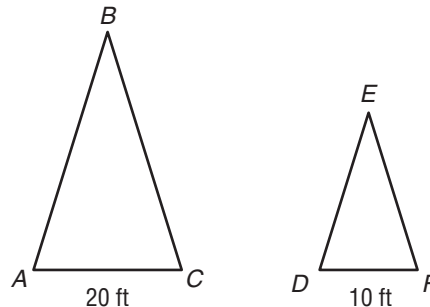
The area of triangle *ABC* is 400 square feet. What is area of triangle *DEF*?
**A** 250 ft²
B 200 ft²
C 150 ft²
D 100 ft²

4 Rectangle *ABCD* is similar to rectangle *WXYZ*.
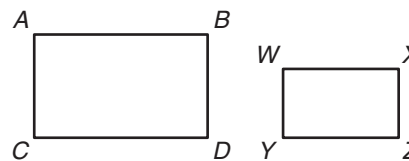
If the scale factor used to dilate *WXYZ* to *ABCD* is 2, what is the relationship of the perimeters of the two rectangles?
F The perimeter of *ABCD* is half the perimeter of *WXYZ*.
G The perimeter of *ABCD* is equal to the perimeter of *WXYZ*.
H The perimeter of *ABCD* is double the perimeter of *WXYZ*.
J The perimeter of *ABCD* is four times the perimeter of *WXYZ*.

TAKS Practice (continued)

(8.10)(B) **Measurement** The student describes how changes in dimensions affect linear, area, and volume measures. The student is expected to describe the resulting effect on volume when dimensions of a solid are changed proportionally.

1 A plastics company makes two sizes of recycling bins in the shape of rectangular prisms. The smaller bin has a volume of 500 cubic inches. The length, width, and height dimensions of the larger bin are twice those of the smaller bin. What is the volume of the larger recycling bin?

A 1,000 in³
B 2,000 in³
C 4,000 in³
D 8,000 in³

2 The dimensions of two cylinders are shown below.

$r = 2$ ft
$h = 4$ ft

$r = 4$ ft
$h = 8$ ft
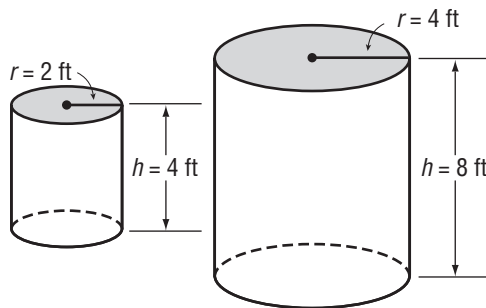
The volume of the smaller cylinder is 16π cubic feet. What is the volume of the larger cylinder?

F 32π ft³
G 64π ft³
H 96π ft³
J 128π ft³

3 A candy company offers two sizes of its best-selling chocolates.

16 cm
8 cm
3 cm
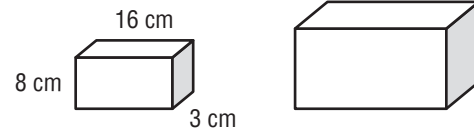
The large box is twice the size of the small box. What is the volume of the large box?

A 1,768 in³
B 2,310 in³
C 3,072 in³
D 4,316 in³

4 The dimensions of two cubes are shown below.

x in.
$\frac{x}{3}$ in.
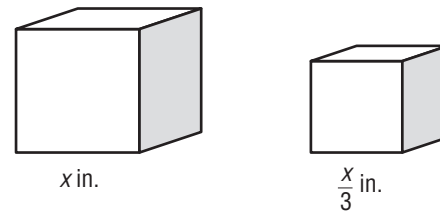
The volume of the larger cube is 729 inches. What is the volume of the smaller cube?

F 18 in³
G 27 in³
H 36 in³
J 81 in³

TAKS Practice

OBJECTIVE 5

Read each question and choose the correct answer.

(8.11)(A) **Probability and statistics** The student applies concepts of theoretical and experimental probability to make predictions. The student is expected to find the probabilities of dependent and independent events.

1 Hannah and James are playing a game using a fair spinner and a fair number cube. The spinner has 8 sections numbered 1 through 8. The faces of the cube are labeled A, B, C, D, E, and F. Hannah will roll the number cube and spin the spinner. What is the probability of rolling a vowel and spinning an even number?

A $\frac{1}{2}$ C $\frac{1}{4}$

B $\frac{1}{3}$ D $\frac{1}{6}$

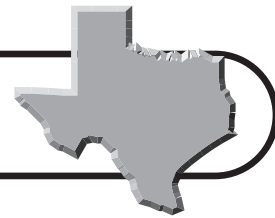**2** Mandy has a bag with 2 red marbles, 4 blue marbles, and 6 green marbles. Jamie will draw two marbles from the bag without looking. What is the probability that Jamie will draw 2 red marbles?

F $\frac{1}{36}$ H $\frac{1}{120}$

G $\frac{1}{66}$ J $\frac{1}{144}$

3 At the Grand Lakes Basketball Tournament, 4 basketball games are played in 4 different gymnasiums at the same time. If all 4 games begin with a coin toss, what is the probability that all 4 coins will be heads?

A $\frac{1}{16}$ C $\frac{1}{4}$

B $\frac{1}{8}$ D $\frac{4}{4}$

(8.11)(B) **Probability and statistics** The student applies concepts of theoretical and experimental probability to make predictions. The student is expected to use theoretical probabilities and experimental results to make predictions and decisions.

1 A spinner is divided into six equal sections. Debbie spun the spinner 30 times and recorded the outcome of each spin. Her results are in the table below.
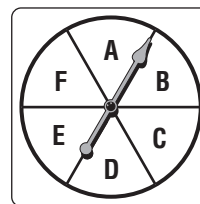
Letter	Frequency
A	7
B	0
C	2
D	8
E	7
F	6

How do the results of Debbie's experiment compare to the theoretical probability of the pointer landing on B?

A Her results are less than the theoretical probability.

B Her results are greater than the theoretical probability.

C Her results match the theoretical probability.

D Her results cannot be compared to the theoretical probability.

TAKS Practice (continued)

2 Mr. Williams bought three raffle tickets at a marching band fund-raiser. He finds out how many tickets were sold and calculates that his theoretical probability of winning is 1 in 150. How many tickets were sold?

F 50

G 150

H 300

J 450

3 A penny is tossed onto a 4×4 grid 100 times. The grid is made up of 6 red squares and 10 green squares. The results are shown in the table below.

Outcome	Number of Outcomes
Penny lands on a red square	32
Penny lands on a green square	48
Penny lands on both	20
Total	100

Use the results in the table above to find the experimental probability of the penny landing on both colors.

A 0.20   **C** 0.48

B 0.32   **D** 0.80

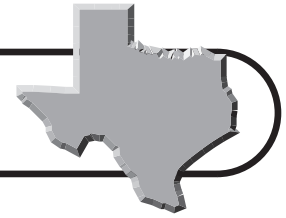**4** Shirley is making a spinner for a game she is designing. She will divide the spinner into 8 equal sections as shown below.
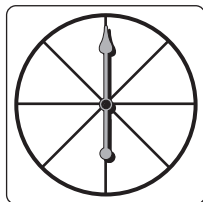
Shirley wants to make the probability of the pointer landing on a red section equal to 0.625. How many sections of the spinner should Shirley color red?

F 1   **H** 5

G 3   **J** 7

5 The Venn diagram shows how many of the 500 students at Central Middle School walk to school only, ride the bus to school only, or walk sometimes and ride other times.

Students at Central M.S.

Bus Rides Only 260   40   Walk Only 100
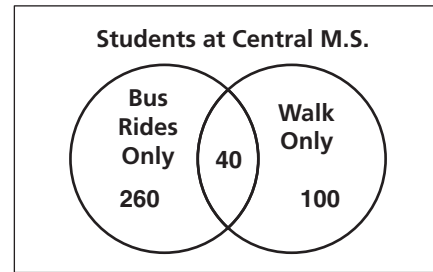
What is the probability that a student chosen at random neither rides the bus to school nor walks to school?

A $\frac{1}{40}$

B $\frac{1}{5}$

C $\frac{2}{5}$

D $\frac{4}{5}$

6 There are 36 students in the first lunch period at school. Each day, the lunch monitor randomly chooses one student to be the first in line at the cafeteria. Josh knows that there is a 1 in 36 chance that he could be selected on any given day. If Josh wanted to conduct a probability experiment to simulate the event, which of the following items could he use?

F Four coins

G A three-section spinner and a six-sided cube

H Two four-section spinners

J Two six-sided cubes

TAKS Practice (continued)

(8.12)(A) **Probability and statistics** The student uses statistical procedures to describe data. The student is expected to select the appropriate measure of central tendency to describe a set of data for a particular purpose.

1 A local newspaper plans to print the average salary of the mayor and the members of the city council. The editor takes into consideration that the mayor's salary is considerably higher than the salaries of the city council members. In this case, which measure of central tendency best represents the average city council salary?

A Mean
B Median
C Mode
D Range

2 During the past winter, the Bender family had monthly heating bills of $79, $146, $212, $149, and $212. Which measure of central tendency makes the bills appear highest?

F Mean
G Median
H Mode
J Range

3 A skier competes in a slalom event. She makes 5 runs down the slope. The skier's times for the first four runs are shown in the table.

Run	Time (sec.)
Run 1	38.2
Run 2	40.3
Run 3	38.2
Run 4	41.5
Run 5	?

If the skier's time on the fifth run is the exact mean time of the first four runs, what is the mean time for all five runs together?
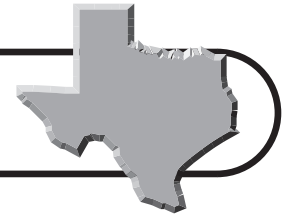
A 38.2 seconds
B 39.28 seconds
C 39.55 seconds
D 40.3 seconds

4 For the first grading period, Chelsea earned the following scores on her math tests.

62, 76, 76, 80, 84, 100

For this set of data, which measure is the greatest?

F Mean
G Median
H Mode
**J** Range

TAKS Practice (continued)

(8.12)(B) **Probability and statistics** The student uses statistical procedures to describe data. The student is expected to draw conclusions and make predictions by analyzing trends in scatterplots.

1 The scatterplot shows the relationship between a person's height and the amount of time that person spends reading books. Which conclusion can be drawn from the scatterplot?


inches

hours
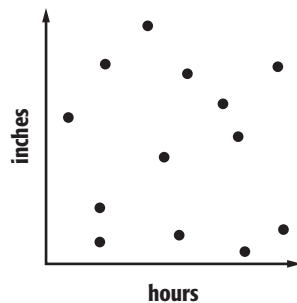
A As a person's height increases, the amount of time that person spends reading books increases.

B A person's height and the amount of time that person spends reading books are not related.

C As a person's height decreases, the amount of time that person spends reading books increases.

D As a person's height increases, the amount of time that person spends reading books decreases.

2 The graph shows the mean temperature in Amarillo for each month. These temperatures are 30-year averages. Which conclusion can be drawn from the graph?
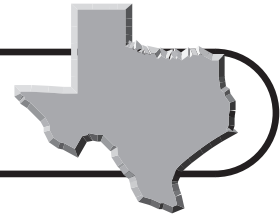
30 year Mean Monthly Temperatures for Amarillo

Temperature (°F)

J F M A M J J A S O N D
Month
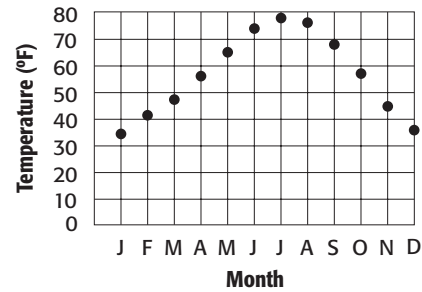
F The average temperatures tend to decrease from January to June.

G The average monthly temperature is warmest in August.

H The average temperature tends to increase from July to September.

J The average temperatures in December and January are about the same.

3 The scatterplot below shows the high school and college grade point averages of 7 students who attend Texas Tech University. Which of the following describes the data presented?

College GPA
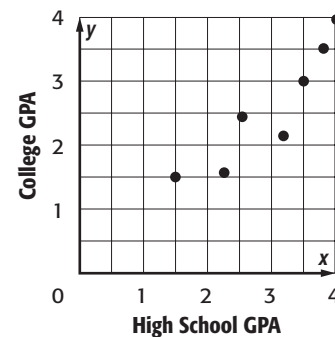
High School GPA

A A student's high school GPA is usually similar to their college GPA.

B A student's high school GPA is usually equal to their college GPA.

C A student's high school GPA does not usually affect their college GPA.

D A student's high school GPA is usually much higher than their college GPA.

TAKS Practice (continued)

(8.12)(C) **Probability and statistics** The student uses statistical procedures to describe data. The student is expected to select and use appropriate representation for presenting and displaying relationships among collected data, including line plots, line graphs, stem and leaf plots, circle graphs, bar graphs, box and whisker plots, histograms, and Venn diagrams, with and without the use of technology.

1 Greenhouse gas emissions are blamed for excess pollution and potential long-term global warming. Greenhouse gases come from four main sources. The table shows the breakdown.

Source	Greenhouse Emissions (in %)
Nitrous Oxide	6.0%
Methane	8.6%
Carbon Dioxide	83.4%
HFC's, PFC's, Sulfur	2.0%

Which circle graph best represents the same information?

A
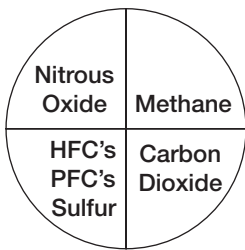
B

C

D

TAKS Practice (continued)

2 The science test scores for 20 students are listed below.

48, 49, 50, 46, 47, 47, 35, 38, 40, 42, 45, 47, 48, 44, 43, 46, 45, 42, 43, 47

Which of these diplays matches these data?

F

G

H

J

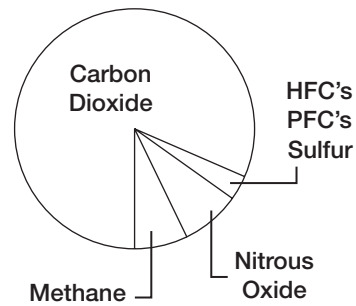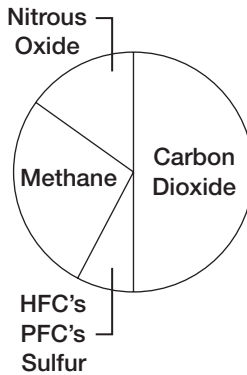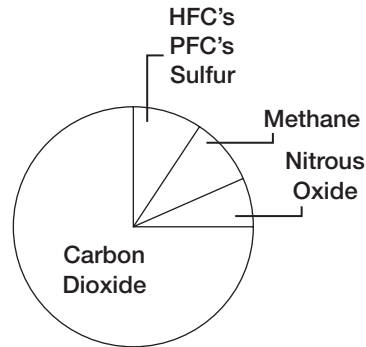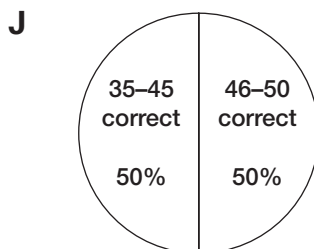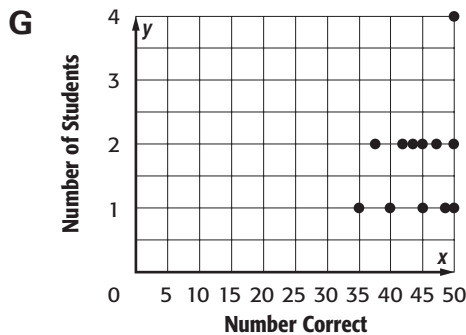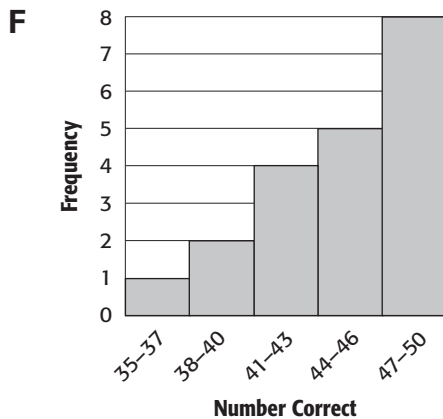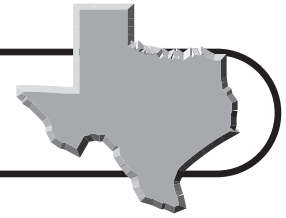**3** A shoe store recorded the number of each type of shoes sold during the past month. The data are presented in the table shown. What type of graph would best represent the number of shoes sold by type?

Type of Shoe	Pairs Sold
loafers	38
tennis shoes	42
sandals	55
high heels	20
work boots	12
winter boots	3
walking shoes	28

A Histogram
B Bar graph
C Circle graph
D Scatterplot

(8.13)(A) **Probability and statistics** The student evaluates predictions and conclusions based on statistical data. The student is expected to evaluate methods of sampling to determine validity of an inference made from a set of data.

1 Students in Mr. Simpson's math class wanted to find out which restaurant people in the town liked best. Students took turns standing outside Cazadores Restaurant to survey customers as they were leaving the restaurant. Of the 300 people surveyed, 223 said that Cazadores was their favorite place to eat. From the survey results, the class concluded that Cazadores was the favorite restaurant among all people of their town. Which is the best explanation for why this conclusion might NOT be valid?

A The sample was biased.
B The sample was not random.
C The sample size was too small.
D The sample size was too large.
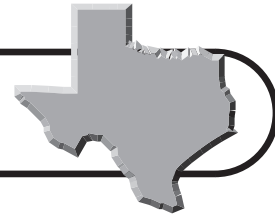
TAKS Practice (continued)

2 A local newspaper wants to find out the opinions of city residents regarding a new senior center. To do this, the newspaper's editor plans to survey a random sample of adults residents. From which of these listings should the editor draw the names of people to survey?

F city and county workers

G small business association

H members of the senior health clinic

J the local telephone directory

3 Jonas surveyed people leaving a recycling center to determine the attitudes of Americans toward ground and water pollution. Which is the best explanation of why the results of this survey might NOT be valid?

A The survey did not consider attitudes of people in other countries.

B Participants were not surveyed by mail or on the phone.

C The sample was not representative of the population to which he generalized.

D The survey was carried out by a student.

4 The members of the Watts Middle School Student Council passed out a questionnaire to all 900 students, asking about the students' lunch preferences. Of the 28 students who returned the survey, 18 said that they would like to have outside restaurants sell food in the cafeteria. Based on the results, the student council concluded that most of the students want restaurant food available in the cafeteria. Why might the conclusion NOT be valid?

F The sample was not random.

G The sample group did not represent the whole population.

H The sample size was too small.

J The sample size was too large.

(8.13)(B) **Probability and statistics** The student evaluates predictions and conclusions based on statistical data. The student is expected to recognize misuses of graphical or numerical information and evaluate predictions and conclusions based on data analysis.

1 The bar graph shows the average number of hours that people in different age groups spend watching television each week.
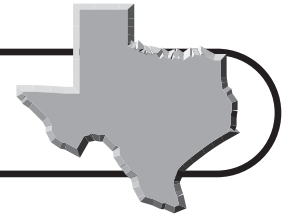
T.V. Viewing by Age
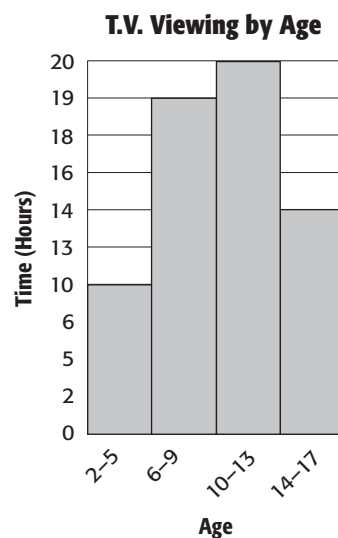
Which statement best explains why the graph could be misleading?

A The age intervals are too broad.

B The title of the graph is misleading.

C The intervals on the vertical scale are not uniform.

D The bar lengths do not correctly reflect the data.

2 Josie's older sister works at a computer store. She wants to ask her boss for a raise, so she makes a graph to show how her computer sales have increased over the past six months.

Josie's Computer Sales
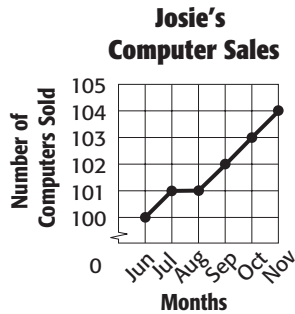
The boss thinks that Josie's graph is misleading. Which of the following best explains why the graph is misleading?

F The intervals are not uniform on the *y*-axis.

G The data set is too small.

H The intervals on the *y*-axis make the increase in sales appear significant.

J The data should be displayed as a circle graph rather than a line graph.

3 Bob's father is a manager. He is comparing the salaries of the workers in his department to the industry's average salary of $30,000. The table shows the information he collected.

Employee	Salary
Bob's father (boss)	$109,000
Christine	$24,000
Sam	$23,000
Mike	$26,000
Lynn	$28,000

Bob's father determines that the average salary in the department is $42,000, well above the industry average. Why is Bob's conclusion misleading?

A $42,000 is the mean, which is misleading since Bob's father's salary is so much higher than the other employees.

B $42,000 is the range of the salaries rather than an average salary. He calculated incorrectly.

C $42,000 is the median salary rather than the mean salary. He calculated incorrectly.

D He did not verify the industry average, and so cannot claim that the salaries of his employees are well above the industry average.
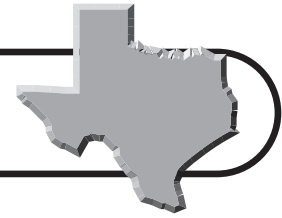
TAKS Practice

OBJECTIVE 6

Read each question and choose the correct answer.

(8.14)(A) **Underlying processes and mathematical tools** The student applies Grade 8 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics.

1 Republic Center Tower I is one of the tallest buildings in Dallas. The drawing of the building including its spire is shown.
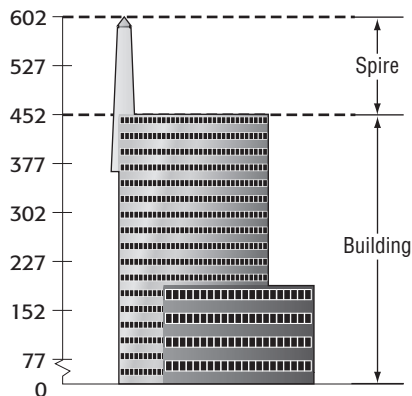
What fraction of the building's height is the spire (approximately)?

A $\dfrac{1}{4}$ **C** $\dfrac{5}{8}$

B $\dfrac{1}{2}$ **D** $\dfrac{3}{4}$

2 Makya saved $24 when she bought a bathing suit on sale. The sale price was 60% off the regular price. What was the regular price of the bathing suit?

F $80   **H** $40

G $60   **J** $30

3 An ice cream shop sells 8 flavors of ice cream, 2 types of cones, and 3 types of toppings. Which of the following shows the total number of combinations of one flavor of ice cream, one cone, and one topping that a customer can choose from?
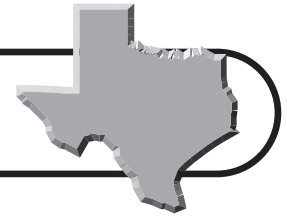
A $8 + 2 + 3$

B $8(2 + 3)$

C $(8 \times 3) + (8 \times 2)$

D $8 \times 2 \times 3$

4 Mrs. Guillermo's dog is kept on a 10-foot chain attached to a stake in the center of the backyard. The backyard property is a 30-foot by 50-foot rectangle. Approximately how much of the backyard is NOT accessible by the dog when it is attached to the chain?

F 314 ft^2 **H** 1500 ft^2

G 1186 ft^2 **J** 1814 ft^2

(8.14)(B) **Underlying processes and mathematical tools** The student applies Grade 8 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness.

1 Isabelle's father paid $4,028 for a used car. The ticket price of the car was $4000, but Isabelle's father received a 5% discount. Isabella wanted to find out how much her father paid in sales tax. First, she calculated 95% of $4,000 to find the sale price of the car. What is the next step she needs to do in order to find the sales tax rate in decimal form?

A Divide $4,028 by $3,800; then subtract 1.

B Divide $4,000 by $4,028.

C Divide $3,800 by $4,028; then multiply by 100.

D Divide $3,800 by $4,000; then add 0.05.

2 A cotton milling company employs 550 workers. It plans to increase its workforce by 15 employees per week until it has tripled the size of its workforce. Which equation can be used to determine w, the number of weeks it will take for the company's workforce to triple in size?

F $15w = 1,650 + 550$

G $15 + 550w = 1,650$

H $15w + 550 = 1,650$

J $3(15w + 550) = 550$

3 Tara has five books with a different cover on each book. How many different ways can she order the books next to one another on a shelf? Use a visual problem solving strategy to help you solve the problem.

A 5

B 10

C 25

D 120

4 In a number game, Troy was supposed to find the square root of a number. Instead, he squared the number and wrote 16. What number should Troy have written?

F 16

G 8

H 4

J 2

5 Mrs. Kohn is attending a sales meeting and is staying in a hotel near the Abilene Civic Center for eight nights. She can spend no more than $1,000 for lodging. What is the most Mrs. Kohn can pay for each night's lodging?
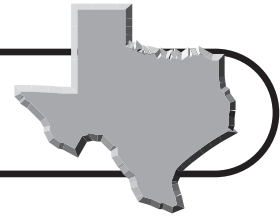
A $125   **C** $350

B $145   **D** $992

(8.14)(C) **Underlying processes and mathematical tools** The student applies Grade 8 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to select or develop an appropriate problem-solving strategy from a variety of different types, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem.

1 Sherry is filling in numbers in the Venn diagram. She can enter no number more than one time. What is the smallest number that can be correctly placed in the shaded area?

Multiples of 25

25

50

3   75   100   4

6   12   8

9   16

Multiples of 3   Multiples of 4
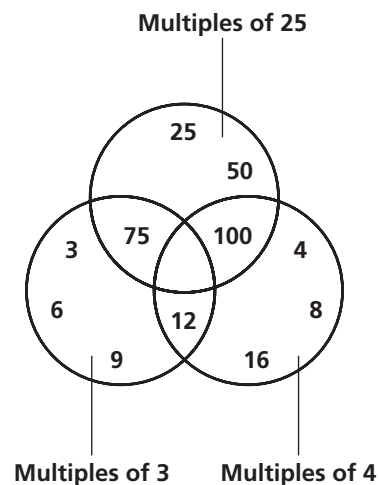
A 600

B 450

C 300

D 150

TAKS Practice (continued)

2 Consider the following sets where x is a real number.

$$\text{Set A: } x \geq -4$$

$$\text{Set B: } x < -4$$

Which of the following is true of the relationship between Set A and Set B?

F Set A is a subset of Set B.

G Set A is the complement of Set B.

H The intersection of the sets contains real numbers between –4 and 0.

J The union of the sets has no elements.

3 At a certain time of day, a maple tree casts a shadow that is 20 feet long. The angle of the Sun from the horizon is 66°. At the same time, a nearby pine tree casts a shadow of equal length. What is the relationship of the heights of the trees?

A The trees are the same height.

B The maple tree is taller.

C The pine tree is taller.

D It cannot be determined.

4 What is the perimeter of a square dog pen with an area of 9 square yards?

F 28 yards

G 12 yards

H 9 yards

J 4 yards

5 Horatio used wooden cubes to make the pyramid-shaped structure shown in the picture at the right. Which layer contains 121 cubes?

First Layer
Second Layer
Third Layer
Fourth Layer
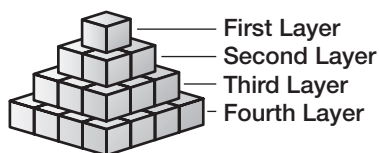
A 6th layer   **C** 11th layer

B 7th layer   **D** 13th layer

6 At a ski shop, Marvin saw a snowboard on sale, with a regular cost of $24.75. The snowboard is now on sale at a 12% discount. The amount of the discount (not including tax) is closest to which of the following dollar amounts?
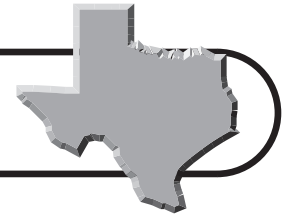
F $2.00

G $3.00

H $4.00

J $5.00

7 Marybeth drives between 12,000 to 15,000 miles per year. Her car averages approximately 25 miles per gallon of gasoline, and she estimates that the cost of gasoline is $2.50 per gallon. Which of the following is a reasonable estimate of Marybeth's monthly gasoline expense?

A $110

B $140

C $150

D $200

8 Wayne is planning to make toolboxes to sell at a trade show. He will use 3 sheets of plywood to make 12 toolboxes. If Wayne were to decrease the size of the toolbox he is making, what would happen to the number of toolboxes he could make per sheet of plywood?

F The number of toolboxes would increase.

G The number of toolboxes would decrease.

H The number of toolboxes would remain the same.

J The number of toolboxes does not depend on the size of the toolbox.

TAKS Practice (continued)

(8.15)(A) **Underlying processes and mathematical tools** The student communicates about Grade 8 mathematics through informal and mathematical language, representations, and models. The student is expected to communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.

1 Erica swam 100 meters in 2 minutes 30 seconds. Kathleen swam 300 meters in 3 minutes. Based on these rates, which statement is true?

  A Erica's average speed was 6 meters per minute faster than Kathleen's average speed.

  B Kathleen's average speed was 60 meters per minute faster than Erica's average speed.

  C Kathleen's average speed was 10 meters per second faster than Erica's average speed.

  D Erica's average speed was equal to Kathleen's average speed.

2 Margo plotted part of downtown Dallas on a coordinate grid so that each intersection was an ordered pair. Margo started at the center of town, which she plotted at the origin. Then she moved two blocks north, two blocks east, and two blocks south. Which ordered pair shows her location on the grid?

  F $(2, -2)$

  G $(0, 2)$

  H $(2, 0)$

  J $(2, 4)$

3 Which of the following is not true?

  A $3x + 2 = 5$ is an expression.

  B $2x - 5$ is an expression with two terms.

  C In the expression $2x - 5$, the coefficient of x is 2.

 **D** $5c + 4d$ is an expression with two variables.

4 Which subset of the real numbers contains $\sqrt{3}$?

  F Irrational numbers

  G Rational numbers

  H Integers

  J Whole numbers

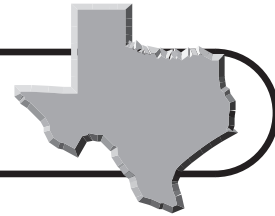**5** The formula used for converting the temperature from Fahrenheit (F) to Celsius (C) is $°C = \frac{5}{9}(°F - 32)$. If the temperature in Waco is 80°F, what is the approximate temperature in degrees Celsius?

  A 176° C

  B 140° C

  C 41° C

  D 27° C

6 The manufacturer of Ali's car recommends that the tire pressure be at least 26 pounds per square inch (psi) and no more than 35 psi. Which number line represents the recommended tire pressure?
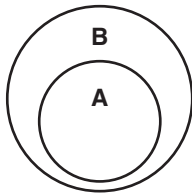
  F

  G

  H

  J
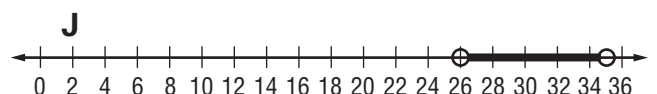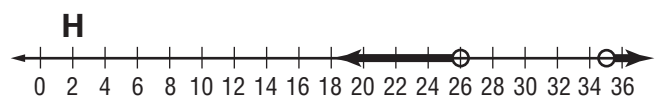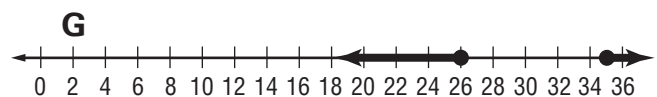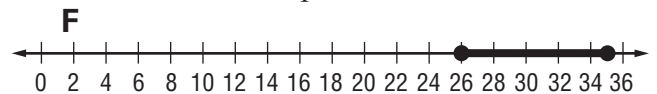
TAKS Practice (continued)

7 Which number line shows $x = \sqrt{4}$?

A

−2 −1 0 1 2

B

−2 −1 0 1 2

C

−4 −3 −2 −1 0 1 2 3 4

D

−2 −1 0 1 2

8 Which of the following sets is represented by the Venn diagram below?

F Set A = odd integers
Set B = even integers
G Set A = rational numbers
Set B = irrational numbers
H Set A = integers
Set B = rational numbers
J Set A = rational numbers
Set B = fractions

9 Which of these displays is the best to represent a set of ordered pairs?
A Bar graph
B Frequency table
C Coordinate axes
D Circle graph

(8.16)(A) **Underlying processes and mathematical tools** The student uses logical reasoning to make conjectures and verify conclusions. The student is expected to make conjectures from patterns or sets of examples and nonexamples.

1 Ms. Williams receives commission for selling home security systems. Her commission doubles with each system she sells. How much will her commission be if she sells 7 security systems?

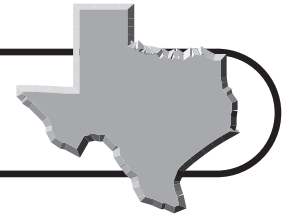| Security Systems Sold	Dollars of Commission
1	$10
2	$20
3	$40
4	$80

A $360
B $480
C $640
D $720

2 The figures below show a repeating pattern.

1 2 3 4 5 6 7 8 9
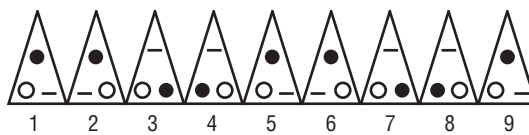
Which shows the 17th figure in the pattern?

F

17

H

17

G

17

J

17

TAKS Practice (continued)

3 Which pattern rule describes
$\frac{1}{8}, \frac{3}{32}, \frac{9}{128}, \frac{27}{512}, \frac{81}{2,048}, \ldots$?

A Add $-\frac{3}{32}$ to the previous term.

B Add $\frac{3}{8}$ to the previous term.

C Multiply the previous term by $\frac{3}{4}$.

D Multiply the previous term by $\frac{3}{8}$.

4 The sum of the interior angles of a triangle is 180°. The sum of the interior angles of a rectangle is 360°. The sum of the interior angles of a pentagon is 540°. What is the sum of the interior angles of an octagon?

F 630°

G 720°

H 900°

J 1,080°

5 Which of the following triangles does not belong in the set?
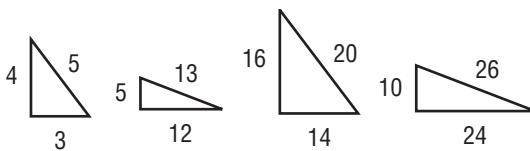
Triangle W   Triangle X   Triangle Y   Triangle Z

A Triangle W
B Triangle X
C Triangle Y
D Triangle Z

6 The following is a list of the first 12 prime numbers.

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37

What is the first prime number greater than 50?

F 51

G 53

H 59

J 61

7 The figure at the right shows a pattern made of equilateral triangles.
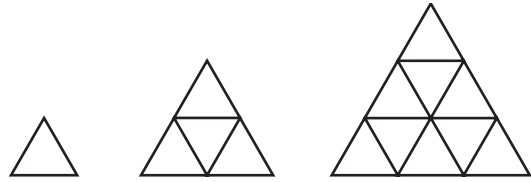
Figure 1   Figure 2   Figure 3

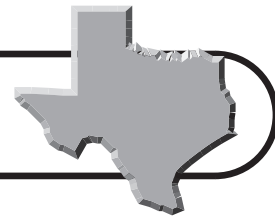How many of the smallest triangles make up the 6th figure of the pattern?

A 25

B 36

C 49

D 50

8 Peggy wrote the following sequence of numbers.

3, 3, 6, 9, 15, 24, 39, 63, …

What is the next number in the pattern?

F 72

G 94

H 102

J 126

TAKS Practice (continued)

(8.16)(B) **Underlying processes and mathematical tools** The student uses logical reasoning to make conjectures and verify conclusions. The student is expected to validate his/her conclusions using mathematical properties and relationships.

1 Timothy's hiking club takes a long walk every Saturday. If the club members hike at a constant speed, which graph shows the relationship between the distance they walk and the time it takes them to hike the distance?

A

B

C

D
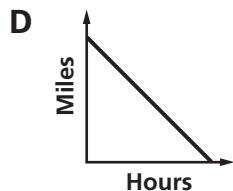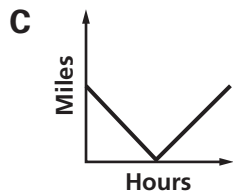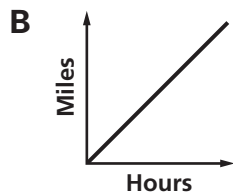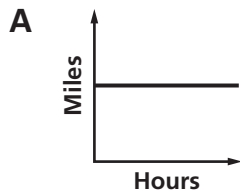
2 Kate, Malcolm, and Guillermo had a competition to see who could do balance on a beam for the longest amount of time. Malcolm balanced on the beam 2 times as long as Kate. Guillermo balanced on the beam for 30 seconds, which was $\frac{1}{3}$ as long as Kate. How long did Malcolm balance on the beam?

F 1 minute
G 2 minutes
H 3 minutes
J 4 minutes

3 What is the minimum number of congruent equilateral triangles needed to construct a three-dimensional figure so that no other shapes are used?

A 3   **C** 5
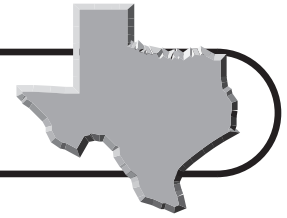**B** 4   **D** 6

4 A square flag is folded in half to form a right triangle.
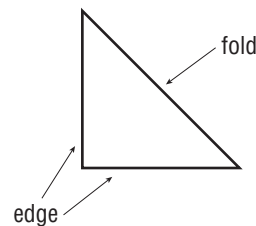
Which statement about the triangle is true?

F The longest side of the triangle is the longer edge of the flag.
G The square of the height of the triangle is equal to the sum of the squares of the edge lengths of the flag.
H The sum of the edge lengths is equal to the length of the fold.
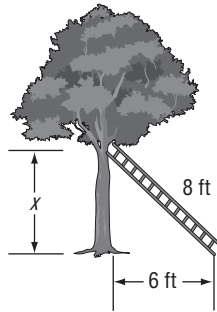**J** The sum of the squares of the edge lengths is equal to the square of the length of the fold.

Practice Test

Read the question and choose the correct answer.

1 Jake is hanging a bird feeder on a tree in his backyard. He leans an eight-foot ladder against the tree as shown. The distance between the tree and the bottom of the ladder is 6 feet.

About how high above the ground is the top of the ladder?

A 3 ft   **C** 12 ft

B 5 ft   **D** 13 ft

2 If $0.2 < x < 30\%$, which could be the value of x?

F $\frac{1}{4}$ **H** $\frac{1}{2}$

G $\frac{1}{3}$ **J** 3

3 John determines that he needs a piece of rope $\sqrt{58}$ feet long in order to connect the top of a tent pole to a stake in the ground. Between which two numbers is this length?

A 5 and 6

B 6 and 7

C 7 and 8

D 8 and 9

4 A circle with a radius of 5 units has its center point at (1, 3) on a coordinate grid.

If the center point is translated 2 units down and 4 units to the left, what will be the coordinates of the new center point?

F (3, −1)   **H** (5, 1)

G (−1, −1)   **J** (−3, 1)

5 The graph of an equation is drawn on the coordinate grid.
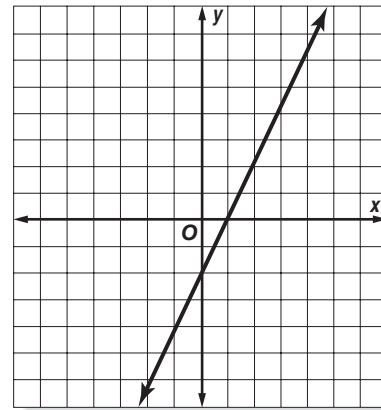
Which table of ordered pairs contains only points on the line?

A

x	y
−1	−2
0	2
1	4
2	6

C

x	y
0	−2
1	−4
2	2
3	6

B

x	y
−2	2
0	−2
1	2
3	1

D

x	y
−2	−6
0	−2
2	2
3	4

Go on

6 A bicycle courier in downtown New York City records the distance she travels and the time for each delivery she makes in a day. Which scatter plot is most likely to represent the recorded data?

F

G

H

J
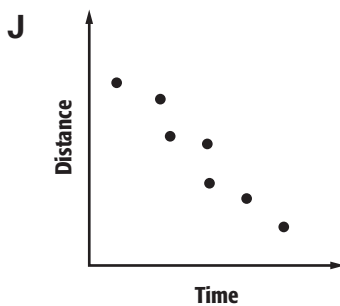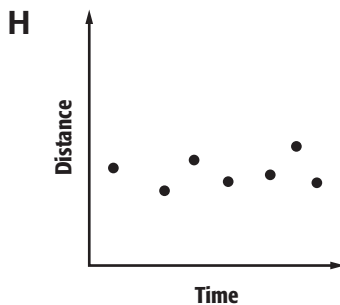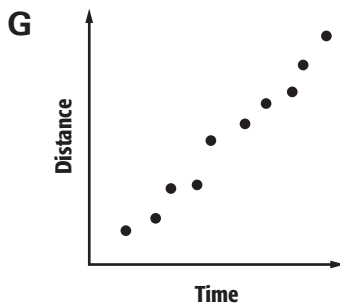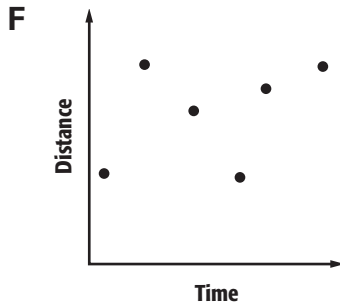
7 Tara's fruit punch recipe calls for 3 quarts of ginger ale and 2 quarts of fruit juice to serve 16 people. Which expression represents the number of quarts of ginger ale she will need for a party of 100 people?

A $\dfrac{100}{5 \cdot 16}$

B $\dfrac{5}{16} \cdot 100$

C $\dfrac{100}{3 \cdot 16}$

D $\dfrac{3}{16} \cdot 100$

8 A 7-inch pizza costs \$3.90. If the cost of the pizza is based on its area, what is the cost of a 14-inch pizza?

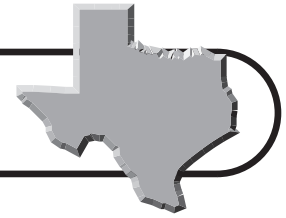**F** \$7.80

G \$12.20

H \$15.60

J \$31.20

9 Which is the next term in the pattern below?

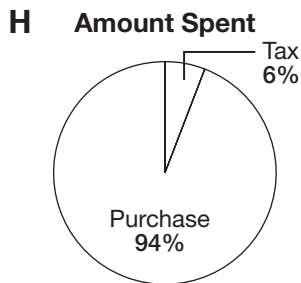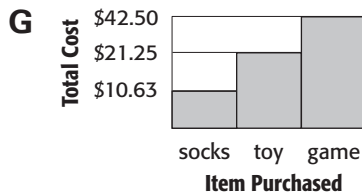$$1, -2, 4, -7, 11, -16, \ldots$$

A -21

B -22

C 21

D 22

Go on

10 The State of Texas collects a sales tax of 6.25% on all retail purchases. Which of the following representations best shows the relationship between the price of any item and the amount of sales tax?

F

Purchase	Sales Tax
$10	$0.63
$20	$1.25
$30	$1.88

G

Total Cost: $42.50, $21.25, $10.63
Item Purchased: socks, toy, game

H Amount Spent

Tax 6%
Purchase 94%

J (10, 63)
(20, 125)
(30, 188)

11 The side lengths of Cube D are one-third the side lengths of Cube C. Which correctly describes the volume of Cube D compared to the volume of Cube C?

A The volume of Cube D is $\frac{1}{27}$ the volume of Cube C.

B The volume of Cube D is $\frac{1}{18}$ the volume of Cube C.

C The volume of Cube D is $\frac{1}{9}$ the volume of Cube C.

D The volume of Cube D is $\frac{1}{3}$ the volume of Cube C.

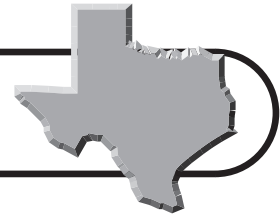**12** If $\triangle ABC$ is dilated by a factor of 3, what are the coordinates of point B'?
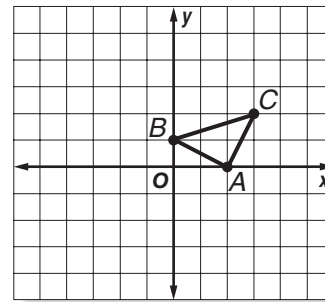
F (3, 0)
G (−3, 0)
H (0, 3)
J (0, −3)

13 Val ordered flowers to be delivered to her grandmother. The flowers cost $25. She gave the delivery person a 15% tip. How much was the tip?

A $2.50
B $2.75
C $3.75
D $7.50

Go on

14 Which table contains only values that satisfy the equation $y = 3x + 4$?

F

x	y
−2	4
0	8
2	4

H

x	y
−1	−4
0	4
2	8

G

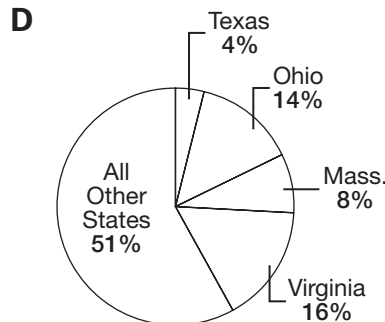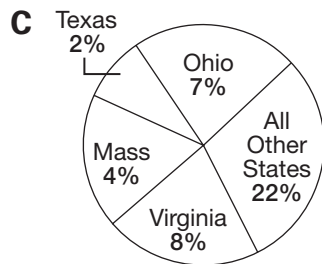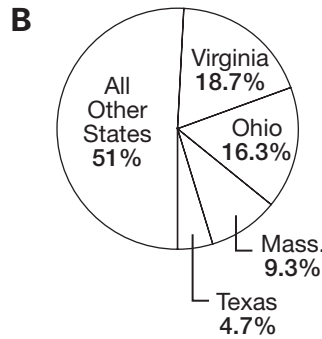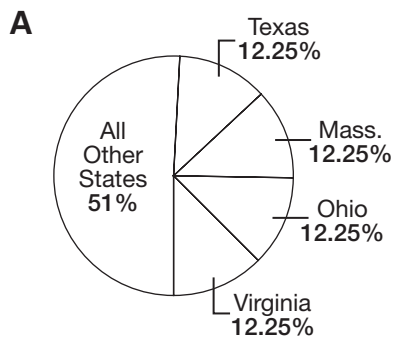| x	y
1	7
3	8
5	12

J

x	y
0	4
1	7
3	13

15 The table shows the number of U.S. presidents that have been born in Texas, Ohio, Virginia, Massachusetts, and all other states combined.

State	TX	OH	MA	VA	All Other States
Number of Presidents	2	7	4	8	22

Which circle graph best represents these data?

A

Texas 12.25%
All Other States 51%
Mass. 12.25%
Ohio 12.25%
Virginia 12.25%

B

Virginia 18.7%
All Other States 51%
Ohio 16.3%
Mass. 9.3%
Texas 4.7%

C

Texas 2%
Ohio 7%
All Other States 22%
Mass 4%
Virginia 8%

D

Texas 4%
Ohio 14%
All Other States 51%
Mass. 8%
Virginia 16%

16 The speed of light is about 299,800,000 meters per second. What is this number in scientific notation?

F 2.998×10^8

G 2.998×10^9

**H** 29.98×10^9

J 29.98×10^{10}

Go on

17 Jamal is baking a cake for his mother's birthday. He pours the cake batter into a pan having the dimensions shown. The height of the batter is 2 inches, which is 1 inch below the top of the pan. If he covers the cake pan with a flat lid, what will be the volume of air remaining between the batter and the lid?
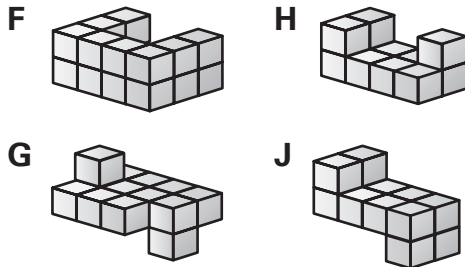
3 in. 9 in. 6 in.
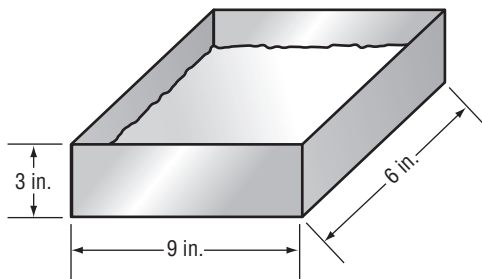
A 9 in³
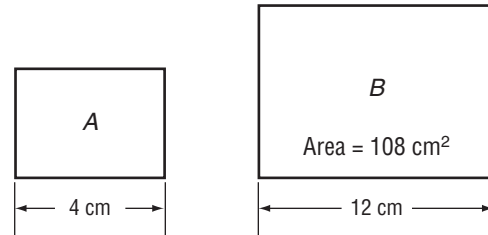**B** 54 in³
C 108 in³
D 162 in³

18 The drawings show the top view and the front view of a solid figure built with cubes.

top   front
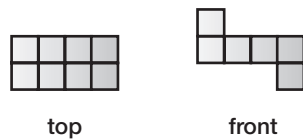
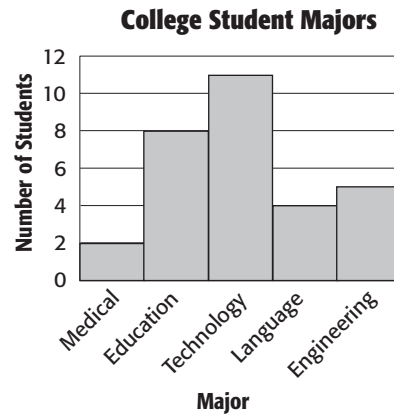Which shows a three-dimensional view of the solid figure?

F   **H**
G   **J**

19 Rectangle *A* is similar to Rectangle *B*.

A   *B* Area = 108 cm²
4 cm   12 cm

The area of Rectangle *B* is 108 square centimeters. Find the height of Rectangle *A*.
A 4 cm   **C** 2 cm
B 3 cm   **D** 1 cm

20 Lauren took a survey to find out students' majors at a local college. The results are shown in the bar graph below.
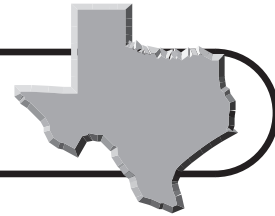
College Student Majors

Number of Students: 12, 10, 8, 6, 4, 2, 0
Medical, Education, Technology, Language, Engineering
Major

The number of students majoring in engineering is associated with which measure of central tendency?
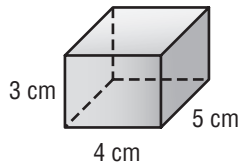**F** Mean   **H** Median
G Mode   **J** Range

Go on

Practice Test (continued)

21 What is the surface area of the rectangular prism below?

3 cm

5 cm

4 cm

⓪	⓪	⓪	⓪	.	⓪	⓪
①	①	①	①		①	①
②	②	②	②		②	②
③	③	③	③		③	③
④	④	④	④		④	④
⑤	⑤	⑤	⑤		⑤	⑤
⑥	⑥	⑥	⑥		⑥	⑥
⑦	⑦	⑦	⑦		⑦	⑦
⑧	⑧	⑧	⑧		⑧	⑧
⑨	⑨	⑨	⑨		⑨	⑨

22 Mr. Wells compared prices for petunias from several nurseries. Which table shows constant unit price?

A

Number of Plants	Total Cost
5	$7.50
10	$12.50
15	$17.50
20	$22.50

B

Number of Plants	Total Cost
5	$10
10	$14
15	$17
20	$20

C

Number of Plants	Total Cost
5	$2.50
10	$5
15	$7
20	$9

D

Number of Plants	Total Cost
5	$7.50
10	$15
15	$22.50
20	$30

23 The table below shows the first four terms in a sequence.

Position	Term
1	6
2	9
3	14
4	21
n	

Which rule could be used to identify the nth term of the sequence?

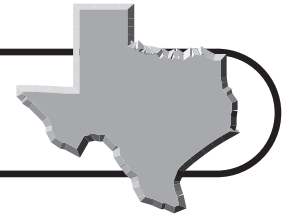**F** $2^n + 5$ **H** $6n$

G $n^2 + 5$ **J** $3n + 5$

24 The circumference of a circle and the perimeter of a square are equal. How do the diameter of the circle and the length of a side of the square compare?

F The diameter of the circle is greater than the side length of the square.

G The side length of the square is greater than the diameter of the circle.

H The diameter of the circle equals the side length of the square.

J The diameter of the circle may be greater or less than the side length of the square.

25 Maria measures the length of all four sides of the Texas state flag that hangs in her classroom. If she finds the sum of these numbers, what measurement will she have?
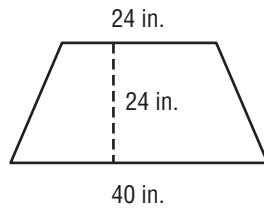
A Area

B Diameter

C Perimeter

D Volume

Go on

Practice Test (continued)

**26** Randy made a large wall hanging in art class.

24 in.

24 in.

40 in.

What is the area of the wall hanging to the nearest square inch?

F 880 in² **H** 678 in²

G 768 in² **J** 524 in²

27 Before the last hour of the bake sale fund-raiser, the Student Council had sold a total of 82 cakes. They sold 13 in the last hour, so they sold an average of 9.5 cakes per hour for the day. To find how long the bake sale lasted, the first step is to find the sum of 82 and 13. Which of the following is the second step?

A Multiply the sum by 9.5.

B Subtract 9.5 from the sum.

C Add the sum to 9.5.

D Divide the sum by 9.5.

28 As an electrician, Sarah charges a service call fee of $65 and $45 per hour for every hour she spends on the job. How much will she charge for a 5-hour job?
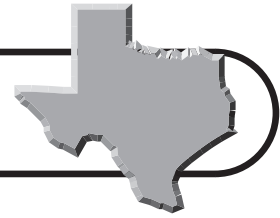
F $290

G $225

H $160

J $155

29 At Sam Houston Middle School, there are 700 boys. The ratio of boys to girls is 5 to 4. How many girls are there in the school?

A 875

B 560

C 480

D 240

30 Which triangle shows the relationship $a^2 + b^2 = c^2$?

F

b c a

G

c b a
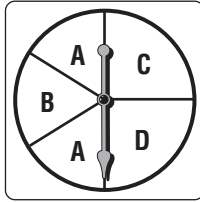
H

c a b

J

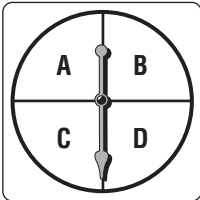c a b

Go on
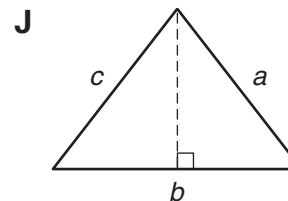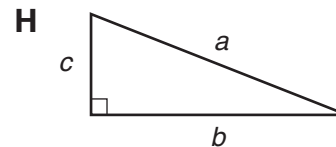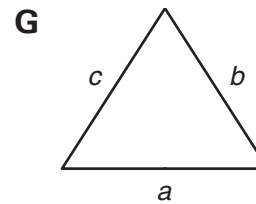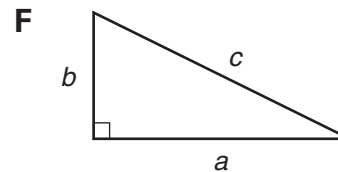
Practice Test (continued)

31 On which spinner is the probability of the pointer landing on A $\frac{1}{3}$?
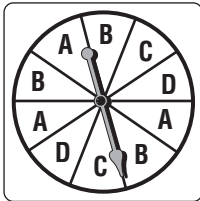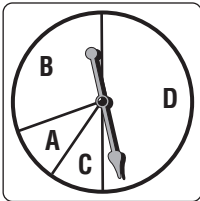
A Spinner Q

B Spinner R

C Spinner S

D Spinner T

32 The equation $2x + 3y = 23$ represents the total number of points Greg scored in a basketball game. The variable x represents the number of 2-point field goals Greg made, and y represents the number of 3-point goals. If Greg scored one 2-point field goal, how many 3-point goals did he make?

F 3

G 5

H 7

J 9

33 Wendy tosses three fair coins. What is the probability that all three coins will land tails up?

A $\frac{1}{2}$

C $\frac{1}{8}$

B $\frac{1}{4}$

D $\frac{1}{16}$

34 Mortar Brick Company sells bricks for $0.25 each, or for $0.20 each if the order is 1000 or more. Mr. Gunder wants to figure out what size order should be rounded up to 1000 in order to save money. Which of the following methods would give the least number of bricks that should be rounded up in order to save money on the total order?

F Multiply 1000 by $0.25, then divide by $0.20.

G Subtract $0.20 from $0.25, then multiply by 1000.

H Multiply 1000 by $0.20, then divide by $0.25.

J Add $0.20 and $0.25, then multiply by 1000.

35 Dominic has five athletic T-shirts that have the numbers 2, 3, 46, 77, and 89 on the back. Kim has four athletic T-shirts that have the numbers 3, 11, 46, and 50 on the back. If they both select a T-shirt at random to wear to school, what is the probability that Dominic and Kim will wear T-shirts with the same number on the back?
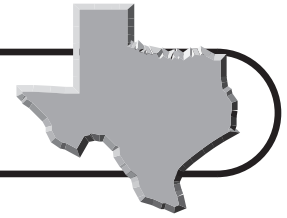
A $\frac{1}{10}$

C $\frac{2}{5}$

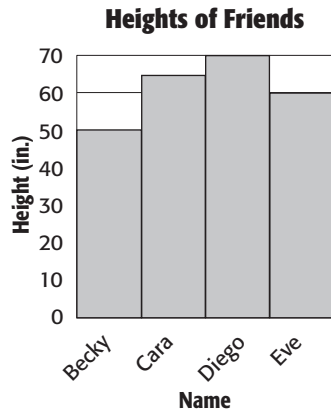**B** $\frac{1}{5}$

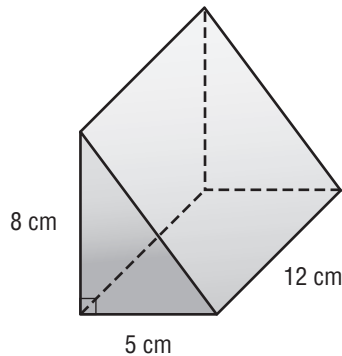**D** $\frac{9}{20}$

Go on

Practice Test (continued)

36 The graph shows the heights of four friends.

Heights of Friends

Which statement is not supported by the data in the graph?

F Eve is 5 feet tall.

G Cara is taller than Eve.

H Becky is growing the slowest.

J Diego is almost 6 feet tall.

**37** Below is a right triangular prism.

8 cm

12 cm

5 cm

What is the volume of the prism?

A 180 cm³

B 220 cm³

C 240 cm³

D Not Here

38 On a map of Texas, $\frac{5}{8}$ inch represents 100 miles. If the distance between Midland and Laredo on the map is $2\frac{1}{4}$ inches, what is the actual distance between the two cities?

F 28 miles   **H** 360 miles

G 225 miles   **J** 540 miles

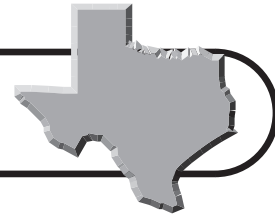**39** Which figure below is a reflection of $\triangle Z$ across the *x*-axis?
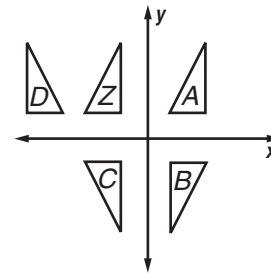
A Figure *A*

B Figure *B*

C Figure *C*

D Figure *D*

40 Paul surveyed people eating at a restaurant. The questions he asked were related to people's attitudes concerning the health effects of eating fast food. Which is the best explanation for why the results of this survey might not be valid?

F The survey is biased because it should have been conducted only with people who do not eat out.

G The survey is biased because it was not conducted over the telephone.

H The survey is biased because it did not have a questionnaire.

J The survey is biased because the sample consisted only of people who were eating at a restaurant.

Go on

Practice Test (continued)

41 At the time of the 1990 Census, the population of the state of Georgia was about 6,500,000. Which of the following represents this number in scientific notation?

A 6.5×10^{-6} **C** 6.5×10^{6}

B 6.5^{6} **D** 6.5×10^{5}

42 Kyle has four different colored vases on a shelf in his apartment. If he places the vases in a single row, which expression could Kyle use to find the number of possible arrangements?

F $1 + 1 + 1 + 1$

G $2 \cdot (1 + 1 + 1 + 1)$

H $4 + 3 + 2 + 1$

J $4 \cdot 3 \cdot 2 \cdot 1$

**43** Naomi drew a triangle and then wrote four true statements about her triangle.
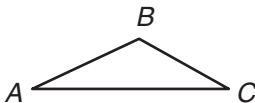
- The measure of each angle is divisible by 10.
- The measure of $\angle C$ is greater than the measure of $\angle A$.
- The measure of $\angle B$ is greater than the measure of $\angle C$.
- The measure of $\angle A$ is less than 40°.

Which of the following fits all 4 statements that Naomi wrote?

A $\angle A = 40°$ **C** $\angle A = 20°$
  $\angle B = 110°$ $\angle B = 130°$
  $\angle C = 30°$ $\angle C = 30°$

B $\angle A = 25°$ **D** $\angle A = 40°$
  $\angle B = 120°$ $\angle B = 110°$
  $\angle C = 35°$ $\angle C = 30°$

44 Which of the following is closest to the volume of the cone below?

F 31 cm^3

G 94 cm^3

H 283 cm^3

J 377 cm^3
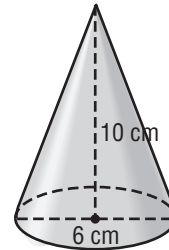
45 The table shows the cost c of t theater tickets.

Cost of Theater Tickets

t	1	2	3	4
c	$8.50	$17.00	$25.50	$34.00

Which equation matches the information in the table?

A $t = c - 7.5$

B $c = 8.5t$

C $c = 7.5t + 1$

D $c = 30 + t$

46 The table shows the number of cans of orange juice purchased from the cafeteria during 5 months of the school year.
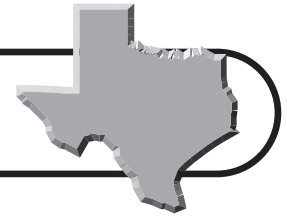
Cans of Orange Juice Purchased

Month	Sept.	Oct.	Nov.	Dec.	Jan.
Cans	420	350	300	450	250

If 175 cans of orange juice were purchased in February, which statement is true?

F The mean decreased more than the median.

G The median decreased by about 30.

H The mode decreased by about 25.

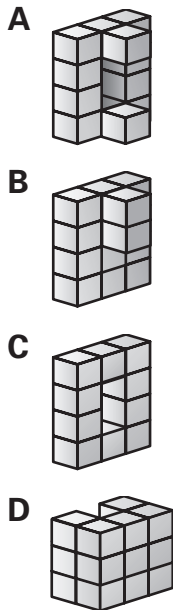**J** The median decreased more than the mean.

Go on

Practice Test (continued)

47 Below are the top, front, and side views of a three-dimensional figure constructed from cubes.

top   front   side
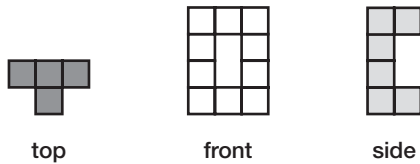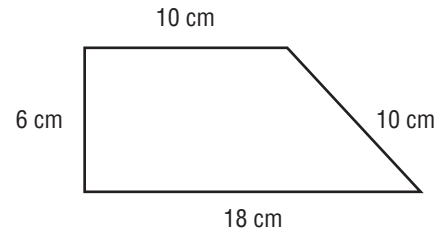
Which could be the figure?

A

B

C

D

48 The Art to Go Shop ships posters in cylindrical mailing tubes.

36 in.

4 in.

Which is closest to the surface area of the tube?

F 452 square inches

G 478 square inches

H 553 square inches

J 1810 square inches

49 A landscape architect designs a park in the shape of the trapezoid below.

10 cm

6 cm   10 cm

18 cm

Which procedure can be used to find the area of the park?

A Add 10 and 18, and then multiply the result by 6.

B Add 10 and 18, multiply by 6, and then divide the result by 2.

C Add 6 and 10, and then multiply the result by 18.

D Add 6 and 10, multiply by 18, and then divide the result by 2.

50 Corinne is playing a game with cards. If she draws two cards at random, what is the probability of selecting two stars?
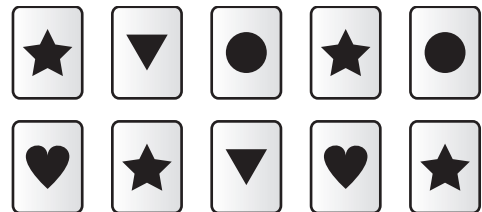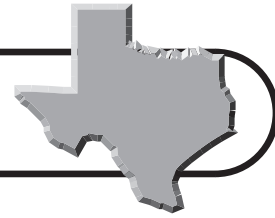
F $\frac{1}{10}$

G $\frac{2}{15}$

H $\frac{4}{10}$

J $\frac{4}{25}$

Stop

Countdown to TAKS
25 Weeks to TAKS

Monday

1 The number of absent students during the first four months at Hillsboro Middle School are shown in the table. Estimate the total number of absent students for the year so far. **8.5(A)**

Month	Absent Students
Sep.	12
Oct.	18
Nov.	18
Dec.	21

A About 60 students
B About 70 students
C About 80 students
D About 90 students

Tuesday

2 The highest point in Texas is Guadalupe Peak at an elevation of 8,749 feet. If a helicopter is flying at an elevation 6,122 feet below this elevation, what is the elevation of the helicopter? **8.2(B)**

F 2,627 ft
G 3,877 ft
H 11,239 ft
J 14,871 ft

Wednesday

3 A scuba diver dives to a depth of 88 feet below the surface. Later he rises 21 feet. What is the depth of the diver relative to the surface of the water? **8.2(A)**

A 109 ft
B 67 ft
C −67 ft
D −109 ft

Thursday

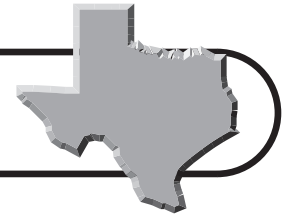**4** The deepest points of each of the Great Lakes are shown in the table. Which lake is the shallowest? **8.1(A)**

Great Lake	Deepest Point (m)
Erie	−64
Huron	−229
Michigan	−281
Ontario	−244
Superior	−406

F Lake Erie
G Lake Huron
H Lake Ontario
J Lake Superior

Friday

5 A weather forecaster says that the temperature is changing at a rate of −3°F per hour. At this rate, how long will it take for the temperature change to be −12°F? **8.1(B)**

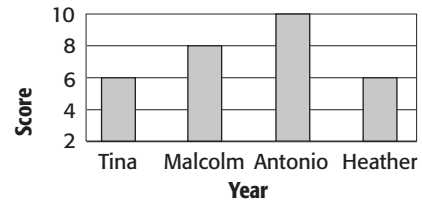**A** 2 h
B 3 h
C 4 h
D 5 h

Countdown to TAKS
24 Weeks to TAKS

Monday

1 Use the table to find the mean quiz score for the four students. **8.2(B)**

A 6.5 points
B 7 points
C 7.5 points
D 8 points

Quiz Scores

Tuesday

2 When you multiply a number by -4, the result is 60. What is the number? **8.5(A)**

F -15
G -12
H 12
J 15

Wednesday

3 Which of the following expressions represents the verbal phrase *$5 tip added to a lunch bill*? **8.14(A)**

A $b \div 5$
B $b \times 5$
C $b - 5$
D $b + 5$

Thursday

4 Which expression represents the relationship in the table below? **8.4**

Regular Price	Discounted Price
$10	$5
$15	$10
$20	$15
$25	$20
$30	$25

F $p + 5$
G $p - 5$
H $5p$
J $p \div 5$

Friday

5 The population of Abilene increased by 9,070 is equal to 125,000. Which equation can be used to solve for the population, p, of Abilene? **8.5(A)**

A $p - 9{,}070 = 125{,}000$
B $p + 9{,}070 = 125{,}000$
C $p + 125{,}000 = 9{,}070$
D $p - 125{,}000 = 9{,}070$

Countdown to TAKS
23 Weeks to TAKS

Monday

1 The table shows what portion of each class attended volunteer day. Which of the following shows the fractions in order from least to greatest? **8.1(A)**

A $\frac{5}{8}, \frac{4}{5}, \frac{2}{3}$

B $\frac{2}{3}, \frac{5}{8}, \frac{4}{5}$

C $\frac{4}{5}, \frac{2}{3}, \frac{5}{8}$

D $\frac{5}{8}, \frac{2}{3}, \frac{4}{5}$

Grade	Portion in Attendance
6th	$\frac{2}{3}$
7th	$\frac{5}{8}$
8th	$\frac{4}{5}$

Tuesday

2 The weight of a baseball is 0.3125 pound. How can you write this as a fraction? **8.1(B)**

F $\frac{1}{6}$ lb

G $\frac{3}{10}$ lb

H $\frac{5}{16}$ lb

J $\frac{3}{8}$ lb

Wednesday

3 The equation $0.025 = \frac{w}{696,000}$ can be solved to approximate the number of square kilometers of inland water in the state of Texas. About how much inland water is there in the state? **8.5(A)**

A 17,400 km²

B 20,500 km²

C 28,180 km²

D 35,150 km²

Thursday

4 Which symbol will make a true number sentence when placed in the blank below? **8.1(A)**

$$-4.\overline{58} \underline{\hspace{1cm}} -4.5\overline{8}$$

F $<$

G $>$

H $=$

J $+$

Friday

5 Elephants can run at speeds up to 11.2 meters per second. At this rate, how far can an elephant run in 5.5 seconds? **8.3(B)**

A 40.5 m

B 48.3 m

C 61.6 m

D 68.2 m

Countdown to TAKS
22 Weeks to TAKS

Monday

1 The table shows the portion of Texas' manufacturing economy that is made up of different industries. Which of the following shows these portions in order from least to greatest? **8.1(A)**

Industry	Portion
Food	$\frac{12}{125}$
Machinery	0.124
Chemicals	$\frac{11}{65}$

A $\frac{12}{125}, \frac{11}{65}, 0.124$

B $\frac{12}{125}, 0.124, \frac{11}{65}$

C $0.124, \frac{12}{125}, \frac{11}{65}$

D $0.124, \frac{11}{65}, \frac{12}{125}$

Tuesday

2 How can you write $3\frac{4}{9}$ as a decimal? **8.4**

F 3.4

G 3.4444…

H 3.5

J 3.5555…

Wednesday

3 If a train is traveling at a rate of 140 miles per hour, how many miles will it travel in $2\frac{1}{4}$ hours? **8.3(B)**

Thursday

4 Simplify $4\frac{2}{9} - 1\frac{5}{9}$. **8.2(A)**

A $1\frac{7}{9}$

B $2\frac{1}{9}$

C $2\frac{2}{3}$

D $2\frac{7}{9}$
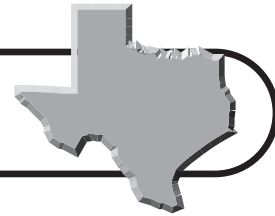
Friday

5 Mars takes about 1.9 years to make one revolution around the sun. How many times would the planet revolve around the sun in 22.8 years? **8.2(D)**

F 9 revolutions

G 10 revolutions

H 11 revolutions

J 12 revolutions

Countdown to TAKS
21 Weeks to TAKS

Monday

1 The Venn diagram shows how many students in Andy's class own dogs and cats. How many students own both a dog and a cat? **8.12(C)**

   A 3 students
   B 4 students
   C 7 students
   D 11 students

Dog   **Cat**

11   4   7

3
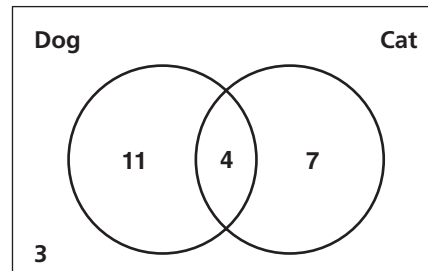
Tuesday

2 The population of Texas is about 22,490,000 people. How can you write this number using scientific notation? **8.1(D)**

   F 2.249×10^5
   G 2.249×10^6
   H 2.249×10^7
   J 22.49×10^8

Wednesday

3 A carpenter determines the length of a beam to be $\sqrt{45}$ feet. Between which two integers does this length lie on a number line? **8.1(C)**

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

Thursday

4 How high up the wall does the ladder reach? **8.9(A)**

   F 6.5 ft
   G 7 ft
   H 7.5 ft
   J 8 ft

10 ft

6 ft
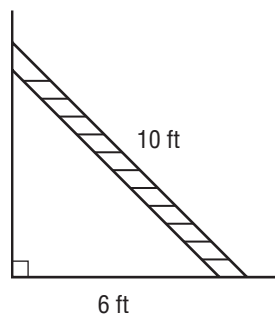
Friday

5 What are the side lengths of the square shown below? **8.1(B)**

256 in^2
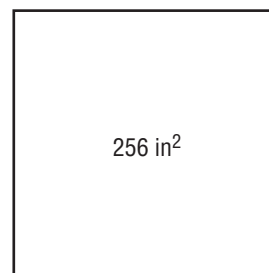
   A 14 in.
   B 15 in.
   C 16 in.
   D 18 in.

Countdown to TAKS
20 Weeks to TAKS

Monday

1 Tien's family room is shaped like a square and has the area shown at the right. If she wants to install new baseboard around the perimeter of the room, how many linear feet of baseboard will she need? **8.1(B)**

A 28 ft
B 36 ft
C 52 ft
D 56 ft

$A = 196 \text{ ft}^2$
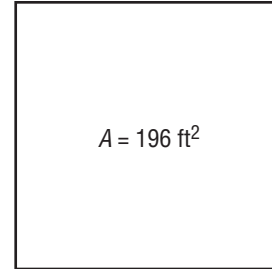
Tuesday

2 The formula $t = \dfrac{\sqrt{h}}{4}$ can be used to find the time t in seconds that it takes an object to fall from a height of h feet. If a ball is dropped from a height of 145 feet, about how long will it take the ball to reach the ground? **8.2(C)**

F About 3 sec
G About 3.5 sec
H About 4 sec
J About 4.5 sec

Wednesday

3 Suppose a chemical reaction takes 5^{-2} second to occur. How can you rewrite this expression as a fraction? **8.1(D)**

A $\dfrac{1}{7}$ sec
B $\dfrac{1}{10}$ sec
C $\dfrac{1}{25}$ sec
D $\dfrac{1}{50}$ sec

Thursday

4 Dakota is making a map of some Texas cities on a coordinate grid. He plots Houston at $(7, -4)$ and Dallas at $(4, 5)$. If each unit on the map represents 25 miles, what is the approximate distance from Houston to Dallas? **8.7(B)**

F About 144 mi
G About 189 mi
H About 221 mi
J About 237 mi
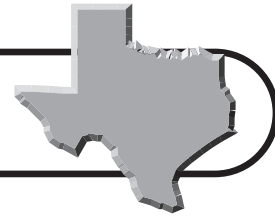
Friday

5 How can you write 0.0000075 in scientific notation? **8.1(D)**

A 7.5×10^{-5}
B 7.5×10^{-6}
C 7.5×10^{-7}
D 7.5×10^{-8}

Countdown to TAKS
19 Weeks to TAKS

Monday

1 The distance from San Antonio to Houston along I-10 is about 200 miles. If you drive from San Antonio to Houston at an average rate of 65 miles per hour, about how long will the trip take? **8.3(B)**

A About 3 h

B About 3.3 h

C About 3.5 h

D About 4 h

Tuesday

2 Which of the following represents the best buy for cereal? **8.2(D)**

F 12 ounces for $2.49

G 16 ounces for $2.99

H 21 ounces for $4.49

J 24 ounces for $4.79

Wednesday

3 The table shows how many times a student's heart beats while at rest. How many times will the student's heart beat in 1.5 minutes? **8.3(A)**

Seconds	Beats
15	19
30	38
45	57

A 76 times

B 95 times

C 108 times

D 114 times

Thursday

4 The perimeter of a rectangle is 44 units. If the dimensions of the rectangle are scaled by a factor of 1.5, what will the perimeter of the resulting similar figure be?
8.10(A)

F 55 units

G 64 units

H 66 units

J 88 units

Friday

5 Maya filled a 60-gallon aquarium in 14 minutes. What was the approximate fill rate? **8.2(C)**

A About 4.1 gal/min

B About 4.3 gal/min

C About 4.6 gal/min

D About 4.9 gal/min

Countdown to TAKS
18 Weeks to TAKS

Monday

1 The two triangles shown at the right are similar. What is the value of *x*?
8.9(B)

- **A** 7.2 units
- **B** 7.5 units
- **C** 7.8 units
- **D** 8 units
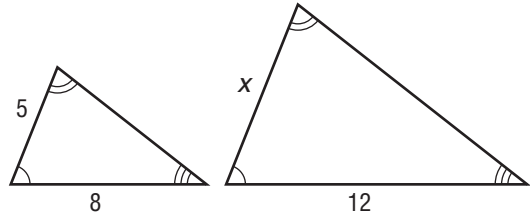
Tuesday	Wednesday

2 In 2000, the population of Texas was about 20,852,000. If the state had 32 representatives in Congress, what was the unit rate of citizens per representative?
8.2(D)

- **F** 554,320 citizens per representative
- **G** 608,755 citizens per representative
- **H** 651,625 citizens per representative
- **J** 721,120 citizens per representative

3 If Alonso earns $74 for working an 8-hour shift, what is his unit pay rate? **8.2(D)**

- **A** $7.50 per hour
- **B** $8.25 per hour
- **C** $8.75 per hour
- **D** $9.25 per hour

Thursday	Friday

4 Approximately 1 out of every 5 people are left-handed. If there are 60 students at a school assembly, how many of them would you expect to be left-handed? **8.3(B)**

- **F** 12 students
- **G** 13 students
- **H** 14 students
- **J** 15 students

5 Suppose the right triangle is dilated by a scale factor of 1.8. What will the length of the hypotenuse be in the dilated figure? **8.6(A)**
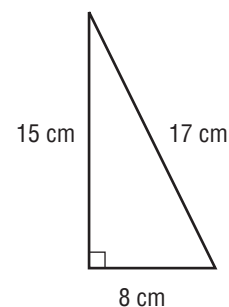
- **A** 30.6 cm
- **B** 27 cm
- **C** 14.4 cm
- **D** 9.4 cm

Countdown to TAKS
17 Weeks to TAKS

Monday

1 The results of a survey on students' favorite ice cream flavor are shown in the bar graph. What percent of the students surveyed prefer a flavor other than chocolate chip, chocolate, or vanilla? **8.3(B)**

A 20%

B 25%

C 28%

D 40%

Bar graph — Votes (vertical axis, 1–10) vs Flavors (horizontal axis): Chocolate Chip = 9, Chocolate = 5, Vanilla = 7, Other = 7.
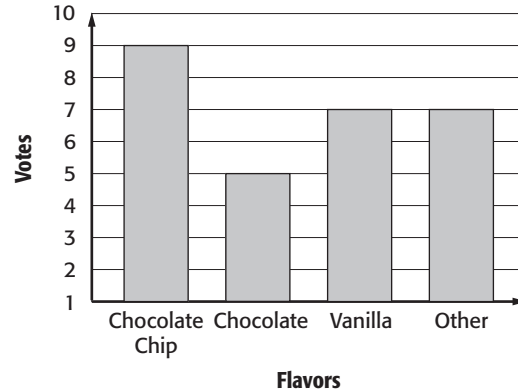
Tuesday

2 About 7 out of 20 Texas citizens are Hispanic or Latino. How can you express this as a percent? **8.3(B)**

F 20%

G 25%

H 30%

J 35%

Wednesday

3 According to a recent survey, $\frac{16}{25}$ downtown workers use some form of public transportation to get to work each day. How can you express this fraction as a percent? **8.3(B)**

A 16%

B 32%

C 64%

D 75%

Thursday

4 The Hornets basketball team has made 15 out of 24 free throws this game. Which of the following is the best estimate for the team's successful completion rate? **8.2(C)**

F About 60%

G About 70%

H About 75%

J About 80%

Friday

5 Last year there were 16 students in the math club. This year there are 20 members. What was the percent increase in the size of the math club? **8.14(B)**

A 20%

B 25%

C 30%

D 35%
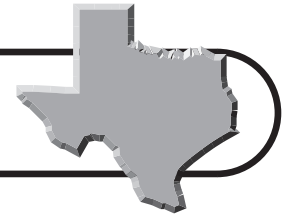
Countdown to TAKS
16 Weeks to TAKS

Monday

1 About what portion of the grid is shaded in the figure at the right? **8.14(D)**

  A About 50%

  B About 40%

  C About 25%

  D About 10%
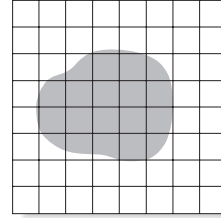
Tuesday

2 How much simple interest is earned on a deposit of $800 at an annual rate of 5% after 2 years? **8.14(A)**

  F $40

  G $60

  H $75

  J $80

Wednesday

3 Colleen wants to purchase a jacket that regularly sells for $42. If the jacket is on sale for 20% off, what is the sale price before tax? **8.3(B)**

  A $33.60

  B $34.00

  C $35.25

  D $35.80

Thursday

4 In El Paso, the average high temperature during January is 56°F. Suppose the high temperature reaches 49°F one January afternoon. How does this compare to the average high temperature? **8.3(B)**

  F 25% below normal

  G 12.5% below normal

  H 7.5% below normal

  J 5% below normal

Friday

5 The table below shows how many different pieces each player has at the start of a chess game. What percent of the pieces are either bishops or rooks? **8.3(B)**

Piece	Number
Pawn	8
Knight	2
Bishop	2
Rook	2
Queen	1
King	1

  A 10%

  B 12.5%

  C 17.5%

  D 25%

Countdown to TAKS
15 Weeks to TAKS

Monday

1 Kyle used hexagon tiles to create a pattern. The perimeter of the first figure is 6 units, the perimeter of the second figure is 10 units, and the perimeter of the third figure is 14 units. If he continues the pattern, what will the perimeter of the sixth figure be? **8.14(C)**

A 22 units   **C** 28 units

B 26 units   **D** 30 units
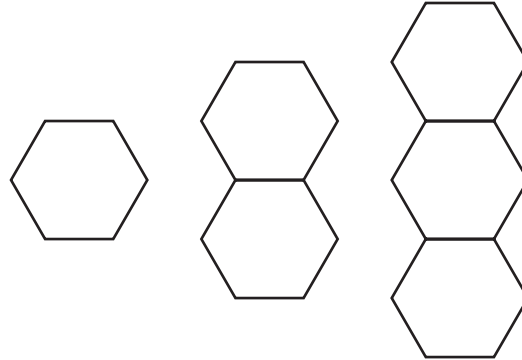
Tuesday

2 The figure below shows a right triangle with three adjacent squares on each side. Which of the following statements is true of the areas of the squares? **8.7(C)**

F I + II = III

G III + II = I

H I + III = II

J I + II + III = 1
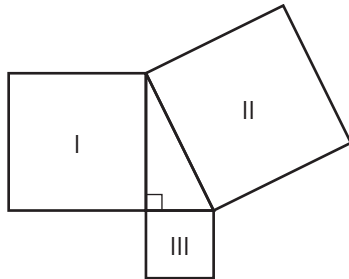
Wednesday

3 If point $P(1, 3)$ is reflected across the x-axis, what will the coordinates of the resulting point be? **8.6(B)**

A $P'(-1, -3)$

B $P'(1, -3)$

C $P'(-1, 3)$

D $P'(-3, 1)$

Thursday

4 How many lines of symmetry does the Texas state flag have? **8.7(B)**
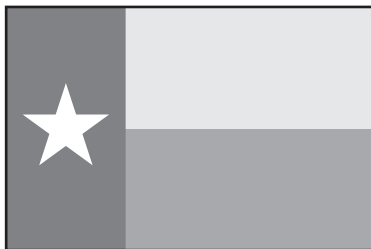
F 0   **H** 2

G 1   **J** 4

Friday

5 What are the coordinates of the point that is 5 units to the right and 3 units below the origin? **8.7(D)**

A $(3, -5)$

B $(-3, 5)$

C $(5, -3)$

D $(-5, 3)$

Countdown to TAKS
14 Weeks to TAKS

Monday

1 The table shows the sum of the interior angles for a triangle, a quadrilateral, and a pentagon. Which expression can be used to find the sum of the interior angles of a polygon with n sides? **8.14(C)**

A $(n + 1)180°$

B $n \times 180°$

C $(n - 1)180°$

D $(n - 2)180°$

Sides	Sketch	Angle Sum
3	△	1(180°) = 180°
4	□	2(180°) = 360°
5	⬠	3(180°) = 540°

Tuesday

2 What is the sum of the interior angles of a stop sign? **8.7(B)**

F 720°

G 900°

H 1,080°

J 1,260°

Wednesday

3 What will the coordinates of point L' be if the triangle is reflected across the y-axis? **8.6(B)**

A $L'(-3, -3)$

B $L'(3, -3)$

C $L'(-3, 3)$

D $L'(3, 3)$
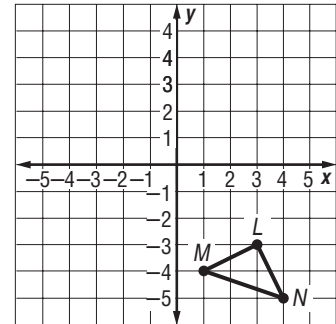
Thursday

4 What scale factor was used to dilate quadrilateral $ABCD$? **8.6(B)**
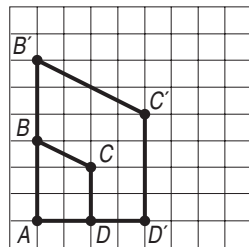
F 0.5   **H** 2

G 1.5   **J** 2.5

Friday

5 According to the 1990 Census, the population of Houston was about 1,600,000 people. By the 2000 Census, this number had grown to about 1,950,000. What was the percent increase in population during the decade? Round to the nearest whole number. **8.3(B)**

A 14%

B 16%

C 20%

D 22%

Countdown to TAKS
13 Weeks to TAKS

Monday

1 The two quadrilaterals shown at the right are similar. What is the value of *x*? **8.9(B)**

A 12.8 units

B 14.2 units

C 14.4 units

D 15.6 units

8

12

X

21.6
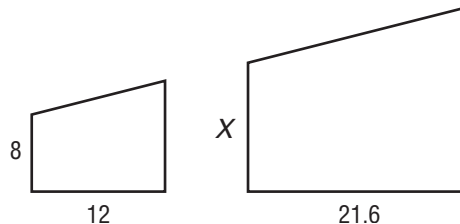
Tuesday

2 Which of the following shows the top view of the stack of cubes? **8.7(A)**

F

G

H

J
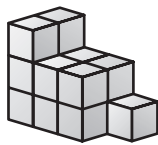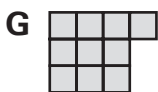
Wednesday

3 The Texas quarter was the 28th state quarter released. It first appeared in 2004. If the radius of the coin is about 12 millimeters, what is the area? Round to the nearest whole number. **8.7(B)**

A 370 mm²

B 395 mm²

C 438 mm²

D 452 mm²

Thursday

4 What are the coordinates of the point that is 6 units to the left and 8 units above the origin? **8.7(D)**

F (6, −8)

G (−6, 8)

H (8, −6)

J (−8, 6)

Friday

5 What is the volume of a cube with side lengths of 5 centimeters? **8.8(B)**

A 25 cm³

B 80 cm³

C 100 cm³

D 125 cm³

Countdown to TAKS
12 Weeks to TAKS

Monday

1 Suppose a pizza has a circumference of 43 inches. What is the smallest size box the pizza will fit in? **8.14(C)**

A 12 in.
B 13 in.
C 14 in.
D 15 in.

C = 43 in.
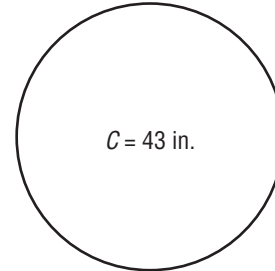
Tuesday	Wednesday

2 What is the surface area of the rectangular prism? **8.8(A)**

4 in.
8 in.
14 in.
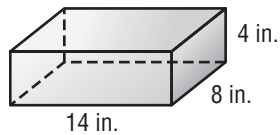
F 252 in^2 **H** 375 in^2
G 348 in^2 **J** 400 in^2

3 The Great Pyramid of Giza originally stood 485 feet tall with a square base measuring about 755 feet on each side. What was the volume of the Great Pyramid? **8.8(C)**

A 75,612,893 ft^3 **C** 105,893,562 ft^3
B 92,154,042 ft^3 **D** 124,589,882 ft^3

Thursday	Friday

4 How many square inches of paper are needed to cover the lateral area of the soup can shown below? **8.8(C)**

2 in.
5 in.
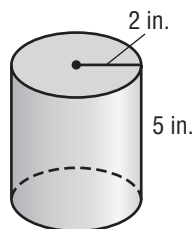
F 62.8 in^2
G 68.5 in^2
H 72.3 in^2
J 76.6 in^2

5 How many square inches of fabric were used to create the state flag of Texas shown below? **8.7(B)**
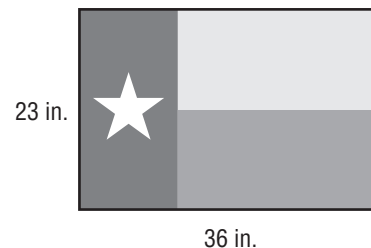
23 in.

36 in.

Countdown to TAKS
11 Weeks to TAKS

Monday

1 A wheelchair ramp rises 1.5 feet over a horizontal distance of 18 feet. What is the length of the ramp, ℓ? Round your answer to the nearest hundredth. **8.9(A)**

1.5 ft ⌐————— ℓ —————
           18 ft
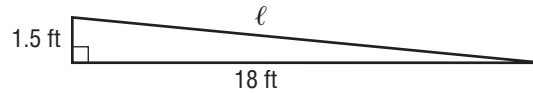
A 18.04 ft

B 18.06 ft

C 18.45 ft

D 18.63 ft

Tuesday

2 Mr. Wilson's desk drawer contains 4 black, 3 blue, and 3 red pens. If he selects one pen at random, what is the probability that it will be either blue or red? **8.11(G)**

F 0.4

G 0.5

H 0.6

J 0.75

Wednesday

3 There are approximately 180,000 people living in Amarillo. Of these, about 50,400 are under 18 years old. If a resident of Amarillo is selected at random, what is the probability that he or she is under 18 years old? **8.11(B)**

A 15%

B 19%

C 24%

D 28%

Thursday

4 A pizza restaurant offers two different kinds of crust and six different toppings. How could you simulate a random selection of a 1-item pizza? **8.11(C)**

F Toss two coins

G Toss a coin and roll a number cube

H Roll two number cubes

J Toss two coins and roll a number cube

Friday

5 What is the probability of flipping both heads with two different coins? **8.11(C)**

A $\frac{1}{8}$

B $\frac{1}{6}$

C $\frac{1}{4}$

D $\frac{1}{2}$

Countdown to TAKS
10 Weeks to TAKS

Monday

1 If the radius and height of a cylinder are scaled by a factor of 2, by what factor does the volume of the solid increase? **8.10(B)**

A 2
B 4
C 6
D 8
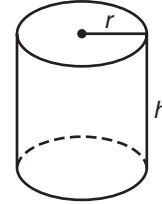
Tuesday	Wednesday

2 To determine what types of specials their customers would like to see, every tenth person to walk into a restaurant is surveyed. What type of sample does this situation represent? **8.13(A)**

F Convenience sample
G Simple random sample
H Systematic random sample
J Voluntary response sample

**3** The probability that it will be a clear day in El Paso, on any given day, is about 53.2%. Based on this number, how many clear days would you expect in a year (365 days)? Round your answer to the nearest whole number. **8.11(B)**

A 194 days
B 198 days
C 203 days
D 211 days

Thursday	Friday

4 The school bookstore randomly surveyed 40 students and found that 25 prefer school sweatshirts and 15 prefer school T-shirts. What percent prefer sweatshirts? **8.13(A)**

F 75%
G 62.5%
H 45%
J 37.5%

5 In Exercise 4, suppose the manager of the bookstore plans to order 320 school shirts. How many sweatshirts should be ordered? **8.16(B)**

A 120
B 160
C 175
D 200

Countdown to TAKS
9 Weeks to TAKS

Monday

1 The table at the right shows the annual revenue generated by different industries in the state of Texas. Which of the following measures of central tendency is most affected by the value $232 billion? **8.12(A)**

A Center
B Mean
C Median
D Mode

Texas Industries

Industry	Annual Revenue (billions)
Farming	$13.4
Livestock	$9.2
Minerals	$38.1
Fishing	$232
Construction	$16

Tuesday

2 Tonya has earned quiz scores of 90, 80, 75, 85, and 90 this quarter. Which of the following measures makes her "average" quiz score appear as high as possible? **8.12(A)**

F Mean
G Median
H Mode
J Range

Wednesday

3 Which of the following types of data displays is most appropriate for showing how data change over time? **8.12(C)**

A Bar graph
B Circle graph
C Line graph
D Line plot

Thursday

4 To determine what types of television shows people like to watch, the customers at a mall are surveyed. What type of sample does this situation represent? **8.13(A)**

F Convenience sample
G Simple random sample
H Systematic random sample
J Voluntary response sample

Friday

5 If the length and width of a field are scaled by a factor of 1.5, by what factor will the area of the field increase? **8.10(A)**
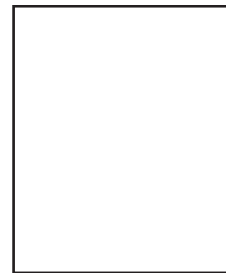
A 1.5
B 2
C 2.25
D 3

Countdown to TAKS
8 Weeks to TAKS
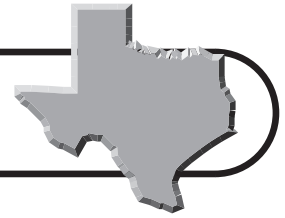
Monday

1 If the dimensions of a rectangular prism are scaled by a factor of $\frac{1}{4}$, by what factor does the volume of the solid decrease? **8.10(B)**

A $\frac{1}{64}$

B $\frac{1}{32}$

C $\frac{1}{16}$

D $\frac{1}{4}$
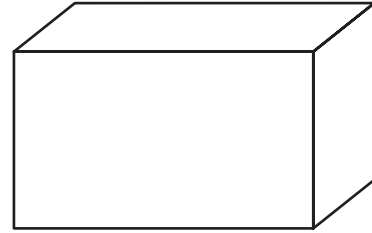
Tuesday

2 Students at a summer camp can choose between boating and fishing in the morning and between hiking and horseback riding in the afternoon. How could you simulate a random selection of activities? **8.11(C)**

F Toss two coins

G Toss a coin and roll a number cube

H Roll two number cubes

J Toss two coins and roll a number cube

Wednesday

3 A cookie jar contains 5 chocolate chip, 7 peanut butter, and 3 sugar cookies. If a cookie is selected at random, what is the probability that it will be a sugar cookie? **8.11(C)**

A 0.35

B 0.3

C 0.2

D 0.15

Thursday

4 The Wells Fargo Bank Plaza in Houston is the second tallest skyscraper in Texas. What is the height of the building? Round your answer to the nearest whole foot. **8.9(A)**

F 733 ft

G 807 ft

H 845 ft

J 970 ft

h 1,061 ft

431 ft
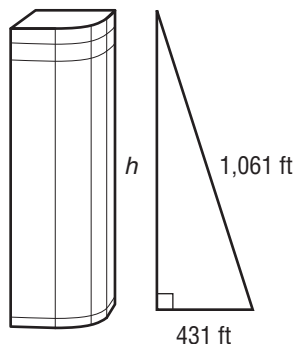
Friday

5 Which of the following types of data displays is most appropriate for comparing parts of a data set to the whole? **8.12(C)**

A Bar graph

B Circle graph

C Histogram

D Line graph
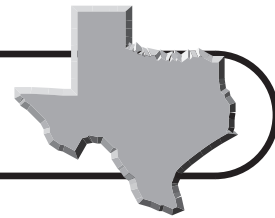
Countdown to TAKS
7 Weeks to TAKS

Monday

1 The net at the right will form a rectangular prism when folded. What is the surface area of the prism? **8.8(A)**

15 cm

4 cm

A 228 cm²

B 240 cm²

C 266 cm²

D 272 cm²
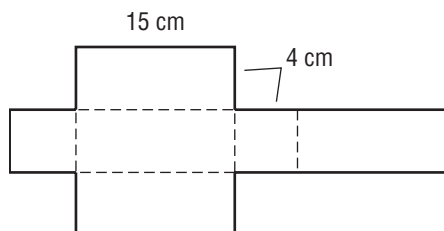
Tuesday

2 If p represents the population of McKinney, then $5(p - 9,000)$ represents the population of Arlington. Simplify this expression. **8.4**

F $5p - 9,000$

G $5p - 45,000$

H $5p - 45,000p$

J $5 + p - 9,000$

Wednesday

3 In Exercise 2, the population of Arlington is 355,000 people. Write and solve an equation to find p, the population of McKinney. **8.2(A)**

A 65,000

B 72,000

C 80,000

D 84,000

Thursday

4 How many cubes were used to build the figure below? **8.7(A)**
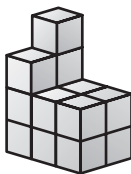
F 15

G 17

H 19

J 21

Friday

5 A paper drinking cup is shaped like a cone with a diameter of 8 centimeters and a height of 10 centimeters. How many cubic centimeters of water does the cup hold? Round to the nearest whole number. **8.8(B)**
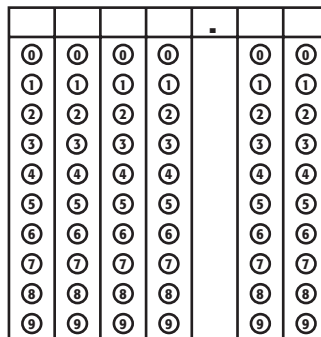
Countdown to TAKS
6 Weeks to TAKS

Monday

1 A block of wood is shaped like a rectangular prism with dimensions ℓ, w, and h. If a hole is drilled out of the middle of the prism with radius r, which expression can be used to find the volume of the remaining wood? **8.8(B)**

A $\ell wh + \pi r^2 h$ **C** $\ell wh - \pi r^2 h$

B $\ell wh + 2\pi rh$ **D** $\ell wh - 2\pi rh$
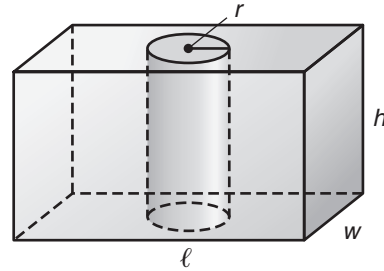
Tuesday

2 Carmen's phone company charges 4 cents per minute plus a monthly fee of $3.95 for long distance. If her long distance bill last month was $6.55, how many minutes did she use? **8.2(B)**

F 40 min

G 50 min

H 55 min

J 65 min

Wednesday

3 Suppose a package must weigh no more than 28 pounds. Which of the following inequalities represents this situation? **8.15(A)**

A $w < 28$

B $w \leq 28$

C $w > 28$

D $w \geq 28$

Thursday

4 In Fort Worth, three times the number of people per square mile increased by 16 is equal to 5,500. How many people are there per square mile in Fort Worth? **8.2(B)**

F 1,643

G 1,792

H 1,828

J 1,905

Friday

5 How many cubes were used to build the figure below? **8.7(A)**
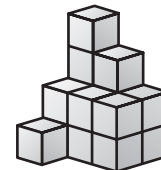
A 13   **C** 15

B 14   **D** 16

Countdown to TAKS
5 Weeks to TAKS

Monday

1 Anthony's lunch box is shaped like a rectangular prism with half of a cylinder on top. What is the total volume of the lunch box? Round your answer to the nearest whole number. **8.8(C)**

A 142 in³   **C** 165 in³
B 153 in³   **D** 178 in³

2 in.
4 in.
8 in.
4 in.
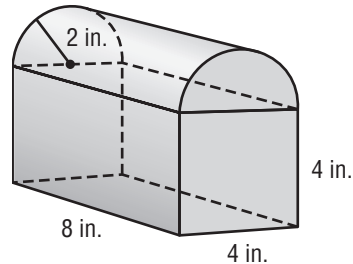
Tuesday

2 What is the common difference of the sequence shown below? **8.5(B)**

14, 21, 28, 35, 42, 49, …

F 4
G 7
H 11
J 14

Wednesday

3 The JP Morgan Chase Tower in Houston is the tallest building in Texas. The table below shows the heights of different floors of the building. If there are 75 floors altogether, how tall is the building? **8.5(B)**

A 974 ft
B 1,002 ft
C 1,015 ft
D 1,120 ft

Floor	Height (ft)
5	66.8
10	133.6
15	200.4
20	267.2
25	334

Thursday

4 Each week, Angela increases the amount of time she spends running. The times for each of the first few weeks are shown in the table. Which expression can be used to find how long she will run during week w? **8.5(B)**

F $2w + 8$
G $3w$
H $3w + 5$
J $2w + 6$

Week	Time Running
1	8 min
2	10 min
3	12 min
4	14 min
5	16 min
6	18 min

Friday

5 In Exercise 4, how many minutes will Angela run during week 10 if she continues increasing her times according to the pattern? **8.5(B)**

A 22 min
B 24 min
C 26 min
D 28 min

Countdown to TAKS
4 Weeks to TAKS

Monday

1 The scatter plot shows several data points and a best-fit line for lemonade sales as a function of the outside temperature. Predict the number of sales when the temperature reaches 90°F. **8.12(B)**

  A About 65 cups
  B About 75 cups
  C About 85 cups
  D About 95 cups

Lemonade Sales
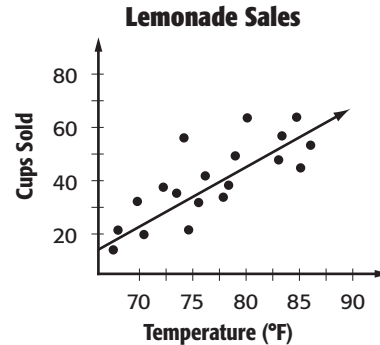
Tuesday

2 A basketball has a radius of 4.5 inches. What is the volume of a basketball? **8.8(B)**
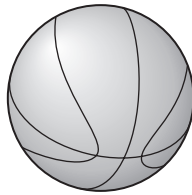
  F 295 in³
  G 324 in³
  H 382 in³
  J 416 in³

Wednesday

3 The best-fit line $y = 250{,}000x + 7{,}200{,}000$ can be used to model the population of Texas. In the equation, y is the population and x is the number of years since 1950. Use the equation to predict the population of Texas in the year 2020 ($x = 70$). **8.12(B)**

  A 17,500,000
  B 20,350,000
  C 22,800,000
  D 24,700,000

Thursday

4 A jar contains 7 red marbles, 4 blue marbles, 6 green marbles, and 3 black marbles. If a marble is selected at random, what is the probability that it will be blue? **8.11(A)**

  F 0.35
  G 0.3
  H 0.2
  J 0.15

Friday

5 In order to be able to ride a rollercoaster, you must be at least 48 inches tall. Which of the following inequalities represents this situation? **8.15(A)**

  A $h < 48$
  B $h \leq 48$
  C $h > 48$
  D $h \geq 48$

Countdown to TAKS
3 Weeks to TAKS

Monday

1 What is the minimum amount of wrapping paper needed to completely cover the gift box shown at the right? **8.8(A)**

4 in.
10 in.
15 in.

   A 500 in^2
   B 540 in^2
   C 550 in^2
   D 600 in^2
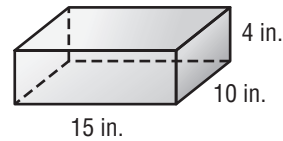
Tuesday

2 Each year, the revenue generated by Texas crops is about \$4.2 billion. Of this, the amount raised by cotton is about \$1 billion. What percent of Texas' annual crop revenue is produced by cotton? **8.3(B)**

   F 17.5%
   G 20.4%
   H 23.8%
   J 25.9%

Wednesday

3 What is the value of the function $f(x) = 3x - 1$ when $x = 2$? **8.14(D)**

   A 3
   B 5
   C 6
   D 8

Thursday

4 What is the equation of the linear function shown below? **8.4**
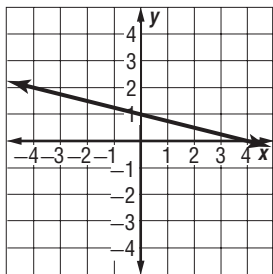
   F $y = x - 1$
   G $y = \frac{1}{4}x + 1$
   H $y = -x - 1$
   J $y = -\frac{1}{4}x + 1$

Friday

5 Rodrigo needs a score higher than 87 on his final math test to earn an A for the quarter. Which of the following inequalities represents this situation? **8.15(A)**

   A $s < 87$
   B $s \leq 87$
   C $s > 87$
   D $s \geq 87$

Countdown to TAKS

2 Weeks to TAKS

Monday

1 The bar graph at the right shows the results of a survey on the favorite type of pet among 8th graders. Which of the following best explains why the graph might be considered misleading? **8.13(B)**

   A The title is misleading

   B The vertical axis doesn't begin at 0

   C The horizontal axis should include more types of pets

   D The scale on the vertical axis is too large

Favorite Pet
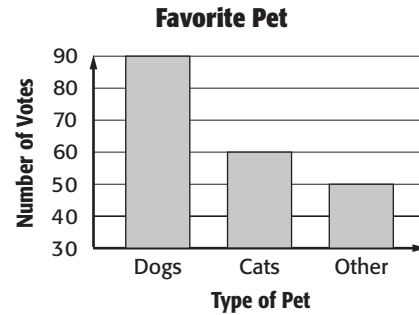
Tuesday

2 The quadratic function $h(t) = -16t^2 + 64t$ gives the height, in feet, of a soccer ball t seconds after it was kicked up into the air. What is the height of the ball after 1 second? **8.14(B)**

   F 16 ft

   G 24 ft

   H 36 ft

   J 48 ft

Wednesday

3 In Exercise 2, how long does it take for the ball to land? (HINT: for what value of t is the height of the ball 0?) **8.14(B)**

   A 2 sec

   B 3 sec

   C 4 sec

   D 5 sec

Thursday

4 The state tree of Texas is the pecan tree. Pecan trees can reach heights up to 100 feet and live to be as old as 300 years. Which of the following inequalities describes the age of a pecan tree?

   8.15(A)

   F $a < 100$

   G $a \leq 100$

   H $a > 300$

   J $a \leq 300$

Friday

5 A design engineer calculates the distance between two bolts to be $\sqrt{18}$ inches. Between which two integers does this length lie on a number line? **8.1(C)**

   A Between 2 and 3 inches

   B Between 3 and 4 inches

   C Between 4 and 5 inches

   D Between 5 and 6 inches

Countdown to TAKS
1 Week to TAKS

Monday

1 What is the measure of ∠S in the figure at the right? (HINT: What is the sum of the angle measures of a triangle?) **8.14(B)**

A 55°
B 59°
C 68°
D 74°

R

$(5x + 2)°$

$(4x + 8)°$ $(2x + 5)°$
S T
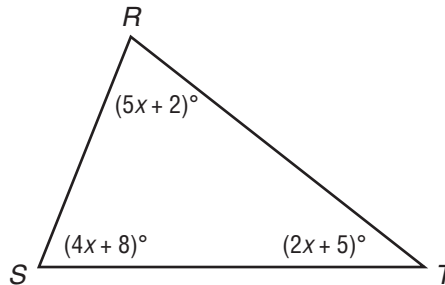
Tuesday

2 A taxi charges $5 plus $0.45 per mile. If the total charge for a cab ride came to $14.90, how far was the ride? **8.2(B)**

F 17 mi
G 20 mi
H 22 mi
J 25 mi

Wednesday

3 The diameter of a table tennis ball is 4 centimeters. How many square centimeters of plastic are needed to make a table tennis ball? **8.8(C)**

4 cm
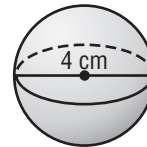
A 42.4 cm²
B 50.3 cm²
C 77.6 cm²
D 201.1 cm²

Thursday

4 The area of the state of Texas is about 6.957×10^5 square kilometers. How can you write this number in standard notation? **8.1(D)**

F 69,570
G 695,700
H 6,957,000
J 69,570,000

Friday

5 What is the value of the function $g(n) = \frac{1}{5}(n - 20)$ when $n = 100$?

8.14(D)

A 4
B 9
C 12
D 16

Benchmark Test 1

Read each question and choose the correct answer.

1 The figure below shows a square inside in a larger square. What is the area of the smaller square?
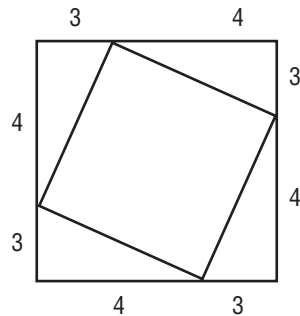
A 9 units²   **C** 36 units²
B 25 units²   **D** 49 units²

2 A survey is conducted to find the favorite food among eighth-grade students at Franklin Middle School. Which of the following sampling methods would give the most accurate results?
   F Survey every eighth-grade student whose name begins with a vowel.
   G Survey every eighth-grade student and his or her parents.
   H Survey every other eighth-grade girl as she comes into the cafeteria.
   J Survey every eighth-grade student who participates in sports.

3 To protect his vegetable garden from a frost, Nate is placing a sheet of plastic over the rectangular garden that measures 4.2 meters by 5.5 meters. How much plastic sheeting will he need?
   A 9.7 m²
   B 20.2 m²
   C 23.1 m²
   D 23.8 m²

4 On a sunny day, a two-foot tall tree casts a shadow six feet long. At the same time, a nearby tree casts a shadow 42 feet long.
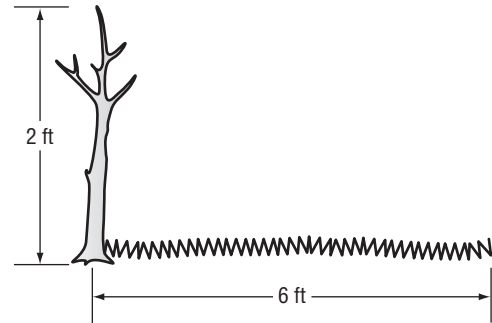
What is the height of the taller tree?
   F 12 ft   **H** 16 ft
   G 14 ft   **J** 18 ft

5 The diagram below shows the path of a ball that is dropped from a height of 27 feet. What is the rebound height after the 4th bounce?
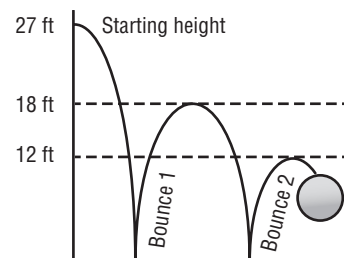
A 18 ft   **C** 8 ft
B 12 ft   **D** $5\frac{1}{3}$ ft

6 Simone's bank charges a $10 checking account fee per month plus a $0.12 fee for every check she writes. The equation below gives c, the total cost of the checking account for a month in which n checks are written.

$$c = 10 + 0.12n$$

How many checks did Simone write during a month in which her total checking account fees were $12.52?
   F 8   **H** 124
   G 21   **J** 188

Go on

Benchmark Test 1 (continued)

7 The list below shows the high temperatures for 8 April days in Fort Worth, Texas.

70°F 80°F 62°F 93°F
68°F 87°F 73°F 87°F

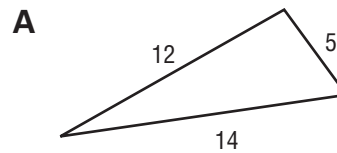Which histogram correctly displays the information?
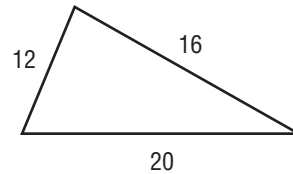
A

B

C

D
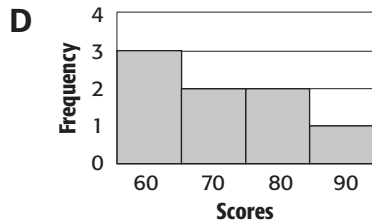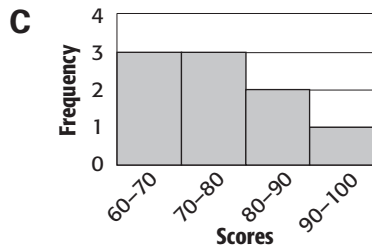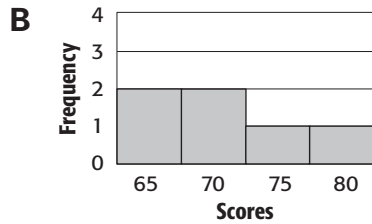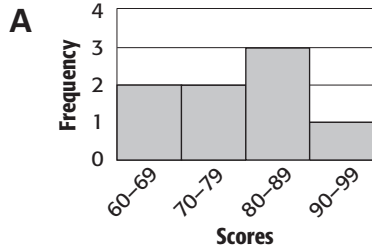
8 The dimensions of two similar desk drawers are shown below.
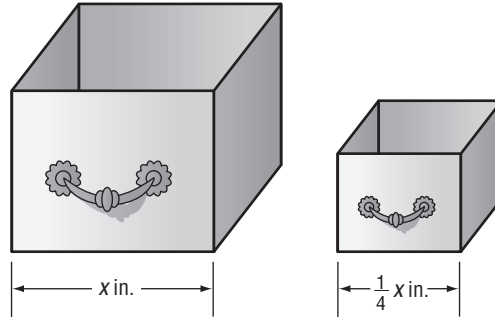
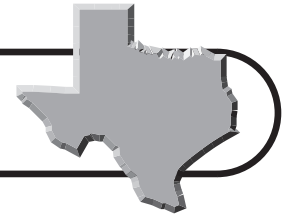The volume of the larger drawer is 4,096 square inches. What is the volume of the smaller drawer?
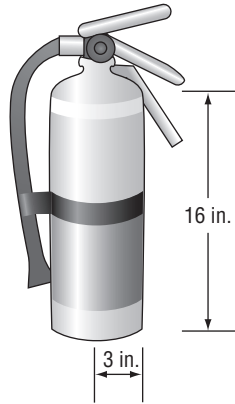
F 2,048 in³   **H** 256 in³
G 1,024 in³   **J** 64 in³

9 Which triangle is similar to triangle *F*?

A

B

C

D

Go on
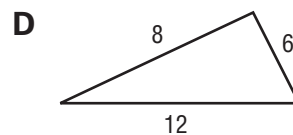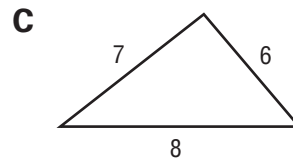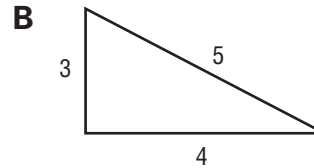
Benchmark Test 1 (continued)

10 A fire extinguisher is 16 inches tall and has a radius of 3 inches.

16 in.

3 in.

What is the approximate volume of the fire extinguisher?

F 28 in³ **H** 452 in³

G 151 in³ **J** 1809 in³

11 Points *A*, *B*, and *C* are vertices of a square.
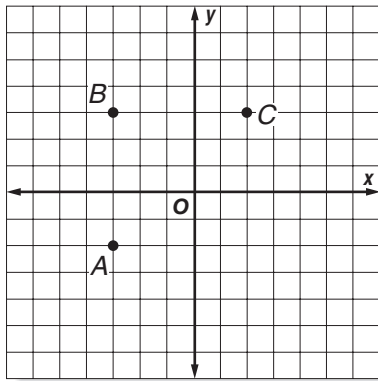
Which are the coordinates of the fourth vertex?

A (2, –2) **C** (–2, –2)

B (–2, 2) **D** (0, –2)

12 The total area of the state of Texas is about 269,000 square miles. What is this number expressed in scientific notation?

F 2.69×10^{-6} **H** 2.69×10^{5}

G 2.69×10^{-5} **J** 2.69×10^{6}

13 A kilometer is about $\frac{6}{10}$ of a mile. If the speed limit along a stretch of highway in Europe is 90 kilometers per hour, what is the approximate speed limit in miles per hour?

A 45 mph **C** 60 mph

B 55 mph **D** 65 mph

14 Diego separated his restaurant coupons into categories. The table at the right shows the number of coupons he has for each type of restaurant.

Type of Restaurant	Coupons
Mexican	15
Chinese	12
Indian	4
Italian	16
German	3

If Diego selects a coupon at random, what is the probability that he will select a Mexican restaurant coupon?

F 0.15 **H** 0.35

G 0.30 **J** 0.75

15 The ratio of boys to girls in Mrs. Maloney's drama class is 3 to 4. If there are 20 girls in drama class, how many boys are there?

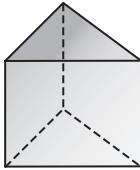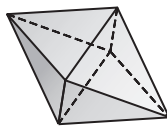**A** 24 **C** 15

B 16 **D** 12

Go on

Benchmark Test 1 (continued)

16 In Ms. Miller's math class, students made geometric riddles. Soren's riddle is the following:

The solid has 8 vertices, 6 faces, and 12 edges.

Which of the following figures matches Soren's riddle?

F
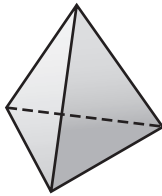
H
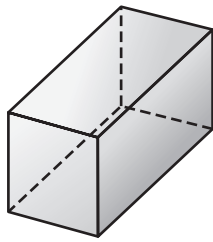
G

J

17 Which steps could be used to solve the equation $\frac{3}{4}x + 8 = 17$?

A Subtract 8 from both sides, then divide both sides by the reciprocal of $\frac{3}{4}$.

B Subtract 8 from both sides, then multiply both sides by the reciprocal of $\frac{3}{4}$.

C Multiply both sides by the reciprocal of $\frac{3}{4}$, then subtract 8 from both sides.

D Divide both sides by 3, then multiply both sides by 4 and subtract 8.

18 Which of the following equations shows the relationship between x and y in the table?

F $y = 3x - 2$
G $y = -4x$
H $y = x^2$
J $y = 3x$

x	y
−4	16
−1	1
0	0
2	4
5	25

19 A dude ranch in Odessa records the number of visitors at the ranch each month. The graph below shows the number of visitors over the last 6 months.

Dude Ranch Visitors
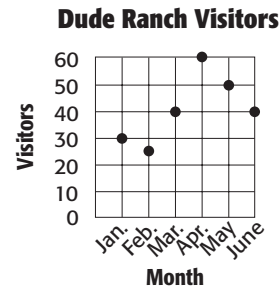
Which measure of central tendency would make the number of visitors appear to be the highest?

A Mean
B Median
C Mode
D Range

20 Keisha conducted a survey at Texas A & M University. The circle graph below shows the percentages of people who have certain majors.

Undecided 10%
Other 20%
Engineering 20%
Education 20%
Communications 30%
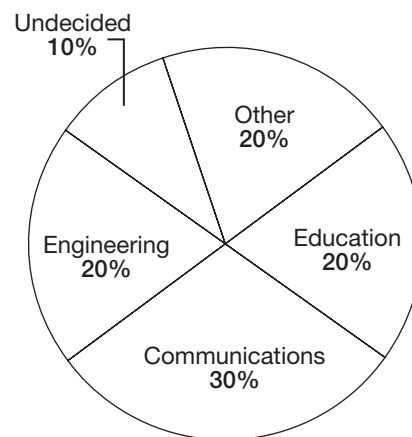
If 24 people are majoring in education, how many people answered the survey in all?

F 5
G 100
H 120
J 360

Benchmark Test 1 (continued)

21 Tyler purchased 12 roses for $30. Which price represents the cost of roses at the same rate?

  A 24 roses for $50

  B 18 roses for $45

  C 6 roses for $12

  D 1 rose for $2

22 Theo and Vic started training for the Big D Texas Marathon. Their training programs include increasing their running distances each week for 8 weeks. The table below shows their progress through Week 5.

Weekly Miles Run

Week	Theo	Vic
1	8	5
2	8.5	6
3	9	7
4	9.5	8
5	10	9
6		
7		
8		

If both Theo and Vic increase the number of miles they run each week at the constant rates shown in the table, which of the following is a true statement about Week 8?

  F Vic will be running more miles than Theo.

  G Vic and Theo will be running the same number of miles.

  H Vic will run a total of 14 miles.

  J Theo and Vic will run a total of 20 miles.

23 The Marysville Metal Supply Company is constructing a goldfish pond for a local park. The pond will be made of stainless steel in the shape of a rectangular prism. The inside surfaces will be coated with cement.
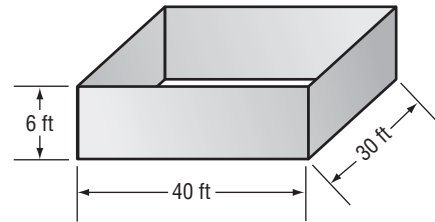
What is the total surface area of the interior sides and bottom of the pond?

  A 7,200 ft^2 **C** 1,200 ft^2

  B 2,040 ft^2 **D** 360 ft^2

24 This net represents the surface area of a solid figure.
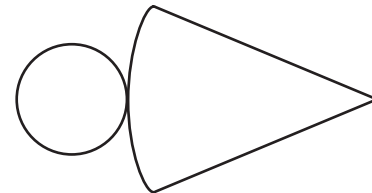
Which of the following is a drawing of the solid figure?

  F   **H**

  G   **J**

Go on
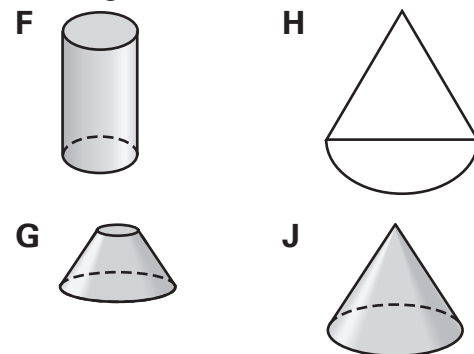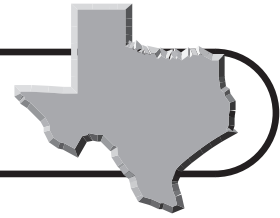
25 The table below shows the average cost per semester for a University of Texas student. Which of the following conclusions is correct based on the data in the table?
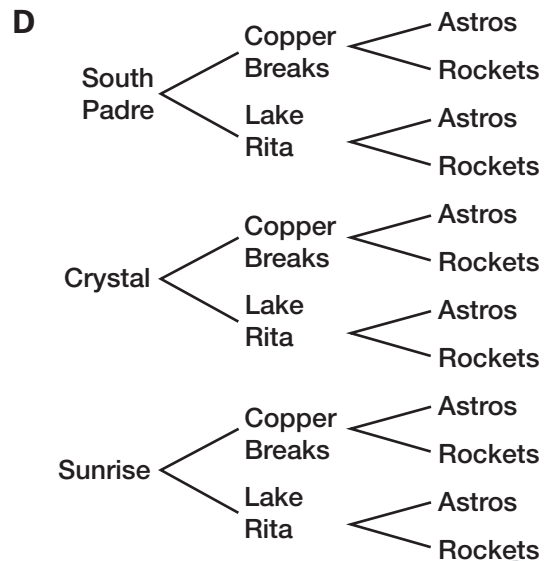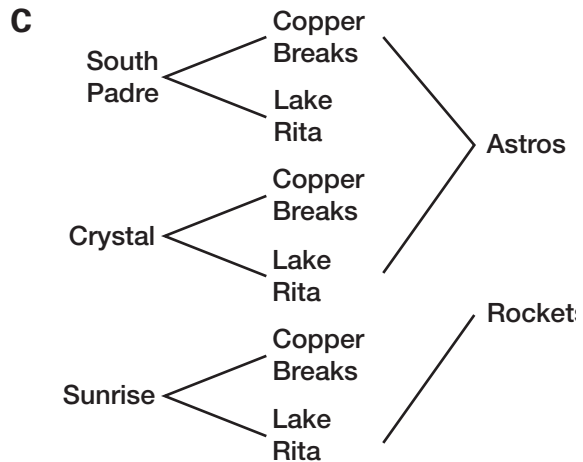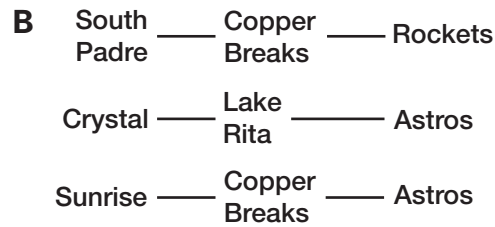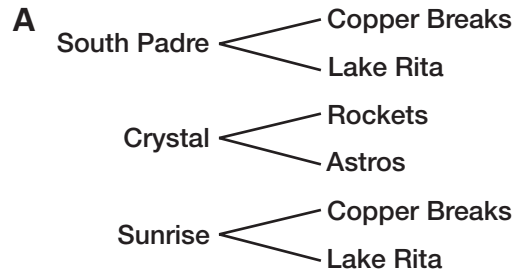
University of Texas Semester Costs	
Tuition	$3,512
Books	$400
Room/board	$3,819
Transportation	$425
Miscellaneous	$1,075
Total	$9,231

A Tuition is more than half of the cost per semester.

B Miscellaneous expenses are less than 10% of the cost per semester.

C Tuition and room and board are more than 75% of the cost per semester.

D The cost of books is included with tuition.

26 Wendy tosses three fair coins. What is the probability that all three coins will land tails up?

F $\frac{1}{2}$ **H** $\frac{1}{8}$

G $\frac{1}{4}$ **J** $\frac{1}{16}$

27 For their spring vacation, Leah's family has decided to go to one Texas beach, one Texas state park, and one professional sporting event in Houston. Their beach choices are South Padre Island, Crystal Beach, or Sunrise Beach. The state park choices are Copper Breaks State Park or Lake Rita Blanca State Park. The sport choices are a Houston Rockets basketball game or a Houston Astros baseball game. Which tree diagram shows all of the possible combinations for the family vacation?

A

South Padre — Copper Breaks, Lake Rita
Crystal — Rockets, Astros
Sunrise — Copper Breaks, Lake Rita

B

South Padre — Copper Breaks — Rockets
Crystal — Lake Rita — Astros
Sunrise — Copper Breaks — Astros

C

South Padre — Copper Breaks, Lake Rita
Crystal — Copper Breaks, Lake Rita → Astros
Sunrise — Copper Breaks, Lake Rita → Rockets

D

South Padre — Copper Breaks (Astros, Rockets), Lake Rita (Astros, Rockets)
Crystal — Copper Breaks (Astros, Rockets), Lake Rita (Astros, Rockets)
Sunrise — Copper Breaks (Astros, Rockets), Lake Rita (Astros, Rockets)

Go on

Benchmark Test 1 (continued)

28 $\sqrt{250}$ is between which two consecutive integers?

F 15 and 16 **H** 17 and 18

G 16 and 17 **J** 18 and 19

29 The equation $c = 0.75t$ represents c, the total cost of t tickets on a bus. Which table represents this equation?

A

t	1	2	3	4
c	$0.75	$1.50	$2.25	$3.00

B

t	1	2	3	4
c	$0.75	$1.00	$1.50	$1.75

C

t	1	2	3	4
c	$0.75	$1.25	$2.00	$2.75

D

t	1	2	3	4
c	$0.75	$0.75	$0.75	$0.75

30 Chloe collected data on the ages and heights of a random sample of 5th, 7th, and 9th grade students at her school. She plotted the data points on a scatterplot. What relationship between age and height is likely seen on the scatterplot?

F Positive correlation

G Negative correlation

H No correlation

J Both positive and negative correlations

31 Mr. Irving divides his science class of 27 students into two groups for an experiment. The first group has 5 fewer students than the second group. How many students are in each group?

A 4 and 23 **C** 11 and 16

B 8 and 19 **D** 12 and 15

32 At Bombeck Middle School, 50 percent of the students eat lunch in the cafeteria. In the same school, 20 percent of the students ride their bikes to school. What is the probability that a student selected at random eats in the cafeteria and rides his or her bike to school?

F $\frac{1}{2}$ **H** $\frac{1}{10}$

G $\frac{1}{5}$ **J** $\frac{1}{20}$

33 The figure below shows the tent that Vicky's scout troop will sleep in when they go camping. How wide is the bottom front of the tent?
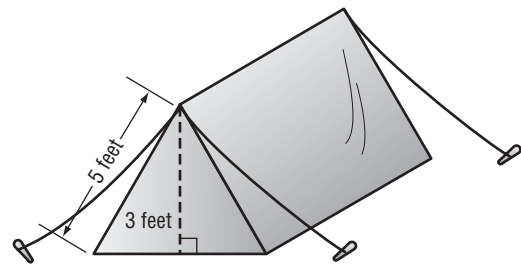
A 4 ft **C** 6 ft

B 5 ft **D** 8 ft

34 Let n represent the position of a number in the following sequence.

$$2, \ 4, \ 6, \ 8, \ \ldots$$

Which expression can be used to find any term in the sequence?

F $2n$ **H** $\frac{3}{2}n$

G $\frac{1}{2}n$ **J** $n + \frac{1}{2}$

35 An airplane flying at an altitude of 40,000 feet descends at a rate of 1,500 feet per minute. If the plane descends for 10 minutes, what will be its altitude?

A 10,000 ft **C** 15,000 ft

B 12,500 ft **D** 25,000 ft Go on

36 The following formula can be used to determine the recommended maximum pulse rate during exercise for people of different ages.

$$P = \frac{4(220 - A)}{5}$$

The person's age in years is A, and the maximum pulse rate in beats per minute is P. If Carrie is 20 years old, what is her recommended maximum exercise pulse rate?

F 140   **H** 162
G 160   **J** 176

37 Javier is the catcher for his school's baseball team. A catcher must be able to throw the baseball from home plate to second base. What is the distance from home plate to second base?
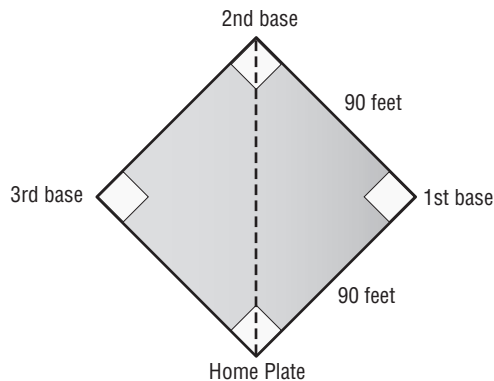
A 90 ft   **C** 150 ft
B $90\sqrt{2}$ ft   **D** 180 ft

38 A cardboard company makes two different sizes of boxes in the shape of rectangular prisms. The smaller box has a volume of 144 cubic inches. The dimensions of the larger box are twice those of the smaller box. What is the volume of the larger box?

F 288 in³   **H** 1152 in³
G 576 in³   **J** 2304 in³

39 Hayden likes 12 different items listed on the menu at his favorite restaurant. He wants to create a probability simulation to help him randomly choose what to order. Which two items can he use to create the appropriate number of random outcomes?

A Three fair coins
B Two spinners each with 6 equal sections
C One coin and one 6-sided cube
D Two six-sided cubes

40 A contractor built a scale replica of a proposed new shopping mall. The replica's parking lot is 13 inches wide by 20 inches long. If the actual mall parking lot will be 100 yards long, what will be its area?

F 65 yd²
G 100 yd²
H 1300 yd²
J 6500 yd²

41 Parallelogram $ABCD$ is a dilation of parallelogram $WXYZ$.
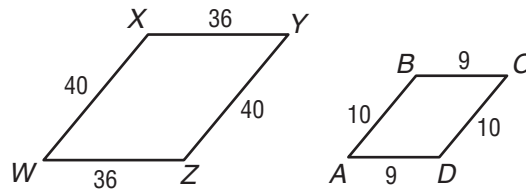

What scale factor was used to reduce $WXYZ$ to $ABCD$?

A 4
B 0.8
C 0.25
D 0.2

Benchmark Test 1 (continued)

42 Ivan needs to earn at least 86% on his final math test in order to have an A average for the semester. Which of the following final math test scores is equivalent to at least 86%?

F $\dfrac{20}{25}$

G $\dfrac{110}{150}$

H $\dfrac{45}{50}$

J $\dfrac{68}{80}$

43 If square $QRST$ is reflected across the line $y = 2$, what will be the coordinates of point Q'?
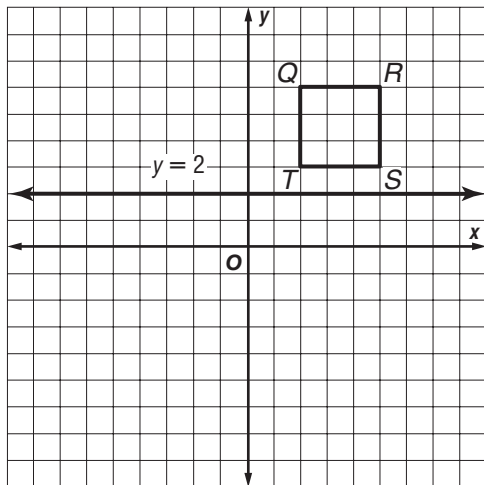
A (2, 1)   **C** (2, –3)
B (2, –2)   **D** (2, –6)

44 For a museum display, Michael ordered a circular tablecloth with a radius of 3 feet. The tablecloth costs $2.00 per square foot. Which of the following is a reasonable estimate for the cost of the tablecloth?

F $28.00   **H** $49.00
G $44.00   **J** $57.00

45 The Kimbell Art Museum in Fort Worth is made up of 16 rectangular rooms. Each room is 100 feet long by 20 feet wide. What is the total ground area covered by the 16 rooms of the building?
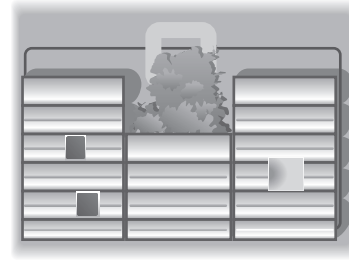
A 32,000 ft²
B 20,000 ft²
C 12,000 ft²
D 8,000 ft²

46 A circular helipad has a circumference of 63 feet. What is the circumference of the circular warning area, whose diameter is twice that of the helipad?
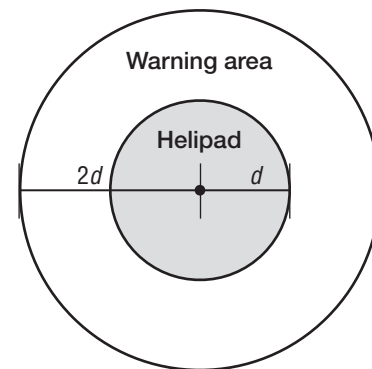
F 110 ft
G 126 ft
H 252 ft
J 504 ft

Go on

Benchmark Test 1 (continued)

47 Which statement is true when 14 is divided by a fraction greater than zero and less than one?

   A The quotient is greater than 14.
   **B** The quotient is less than 14.
   C The quotient is equal to 14.
   D The quotient is undefined.

48 Which of the following graphs shows a linear relationship?

   F

   G

   H

   J
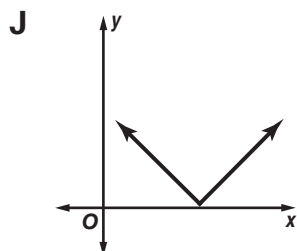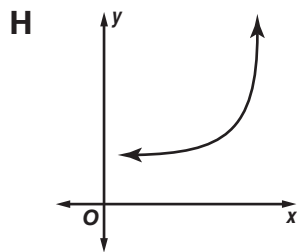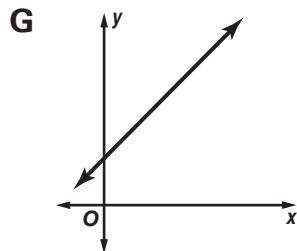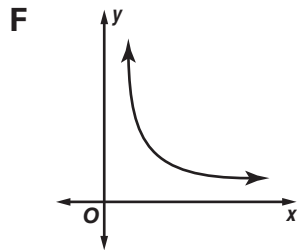
49 Which of the following formulas can be used to find the volume of the figure below, whose base has an area of 8 square inches?
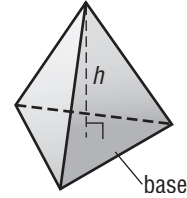
   A $V = \frac{1}{3}8h$

   B $V = 8h$

   C $V = 8lwh$

   D $V = \frac{4}{3}8h$

50 Which point best represents $\sqrt{81}$?
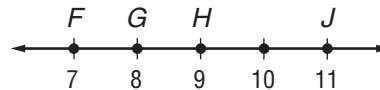
   F F
   G G
   H H
   J J

Benchmark Test 2

Read each question and choose the correct answer.

1 The areas of squares *A* and *B* are shown in the diagram below. What is the area of square *C*?

B
Area = 41 cm²

C

A

Area = 18 cm²
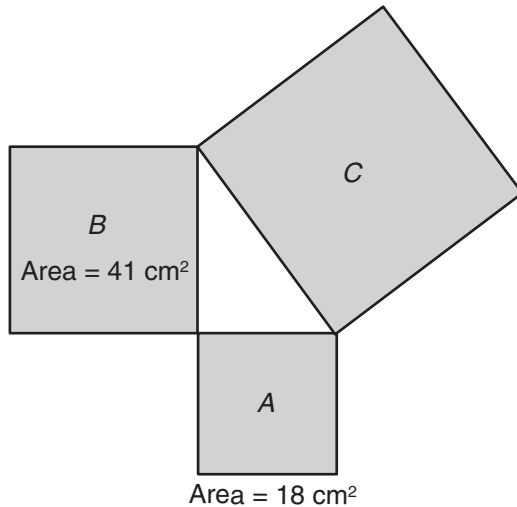
A 10.6 cm²   **C** 59 cm²
B 23 cm²   **D** 2,005 cm²

2 A punch recipe calls for 3.5 ounces of juice concentrate to make 6 glasses of punch. According to this recipe, how many glasses of punch can be made from a 14-ounce can of juice concentrate?

F 24   **H** 28
G 25   **J** 32

3 Geraldo has $12\frac{1}{4}$ pounds of ground sirloin to grill hamburgers for a barbeque. How many quarter-pound hamburgers he can make?

A 13   **C** 40
B 25   **D** 49

4 McKenzie surveyed all of the members of her horse riding club about their favorite after-school activity. The results are shown in the table.

Favorite After-School Activity

Activity	Number of Students
Watching T.V.	2
Eating	3
Playing Video Games	1
Doing Homework	2
Playing Outside	5
Sports	15

From these results, McKenzie concluded that sports were the favorite after-school activity of students in her town. Which is the best explanation for why her conclusion might not be valid?

F The survey was not conducted by an adult.
G The sample was not representative of all of the students in her town.
H The survey was not done by telephone.
J The survey did not involve parents.

5 A worker placed tiles in sample pattern blocks as shown below. According to the pattern shown, how many white tiles are be needed for 5 black tiles?
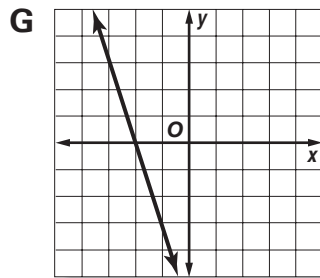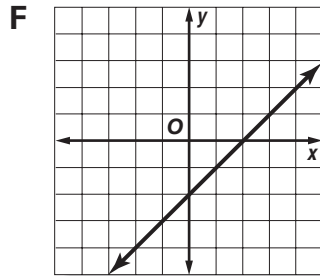

A 14   **C** 16
B 15   **D** 17

Benchmark Test 2 (continued)

6 Which graph shows a line that contains the points in the table of ordered pairs?

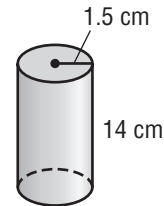| x	y
−1	−3
0	−2
2	0
3	1

F

G

H

J
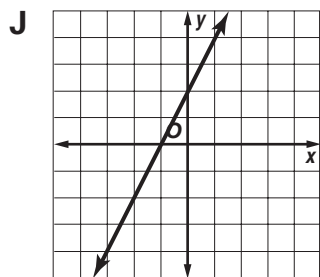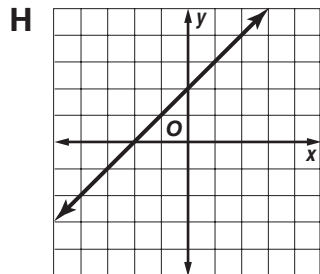
7 The diagram below shows a pair of similar triangles.
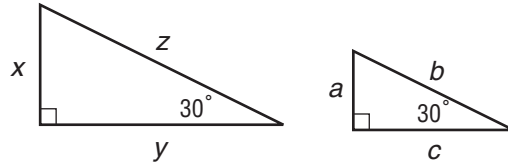
Which of the following proportions is true for these triangles?

A $\frac{x}{a} = \frac{y}{b}$

B $\frac{a}{b} = \frac{y}{x}$

C $\frac{z}{c} = \frac{x}{y}$

D $\frac{x}{z} = \frac{a}{b}$

8 A pasta canister is shaped like a cylinder.

What is the approximate volume of the canister?

F 32 cm³

G 100 cm³

H 130 cm³

J 180 cm³

9 Which of the following ordered pairs lies in the third quadrant?

A (1, 3)   **C** (−5, −2)

B (0, 4)   **D** (5, −4)

10 The sun is about 9.3×10^7 miles from the earth. Which of the following numbers represents this distance?

F 9,300   **H** 9,300,000

G 93,000   **J** 93,000,000

Go on

Benchmark Test 2 (continued)

11 Mrs. Kendall conducted a survey to determine the number of pets that each of her students has. The data appear in the table below.

Number of Pets	Number of Students with This Many Pets
0	12
1	8
2	2
3	2

Which of the following circle graphs best represents the data in the table?
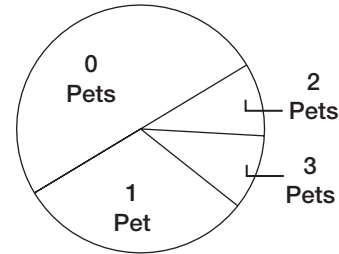
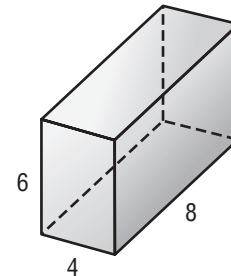**A** Comparison of Students By Number of Pets
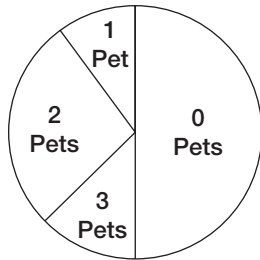
B Comparison of Students By Number of Pets
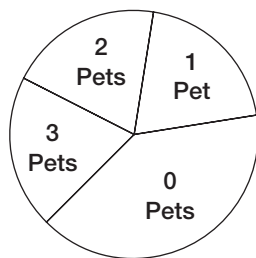
C Comparison of Students By Number of Pets
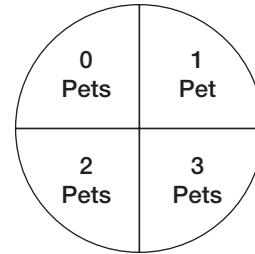
D Comparison of Students By Number of Pets

12 The dimensions of a small granola box are shown in the diagram below. Its volume is 192 cubic inches.

What is the volume of a large granola box whose dimensions are dilated by a scale factor of 1.5?

**F** 384 in^3 **H** 648 in^3

G 576 in^3 **J** 768 in^3

Go on

13 The population density in Texas is 84.5, which means that an average of 84.5 people live in each square mile. According to the average, how many people live in 750 square miles?

A 634   **C** 63,375

B 8,432   **D** 640,000

14 The spinner at the right is divided into six equal sections. The spinner was spun 84 times. The total number of times the spinner landed on each number is shown in the table below.
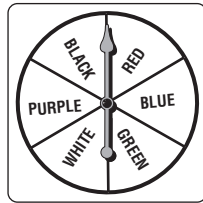
Color	Frequency
Red	15
Blue	20
Green	7
White	8
Purple	15
Black	19

Based on the theoretical probability, how many times should the spinner land on WHITE in 84 spins?

F 4   **H** 8

G 6   **J** 14

15 To buy a used car, Ryan borrowed $4,500 from the credit union. The simple annual interest rate is 7.5%, and the loan will be paid back over 3 years. Find I, the amount Ryan will pay in interest over the life of the loan.

**A** $1,012.50

B $1,279

C $4,050

D $10,125

16 Ninth-grade students are able to select from three elective classes for the year. The choices are Band, Choir, and Art. Students may take 1, 2, or 3 of these electives. The Venn diagram shows the relationship among percentages of students who chose to take these electives.

Class Electives
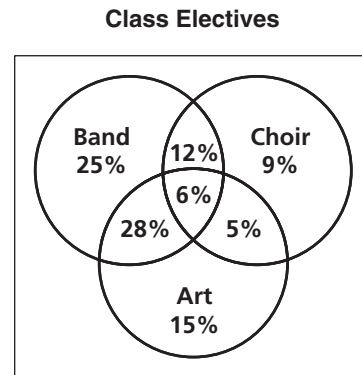
What percentage of ninth-grade students will be taking all three electives?

F 5%   **H** 12%

G 6%   **J** 18%
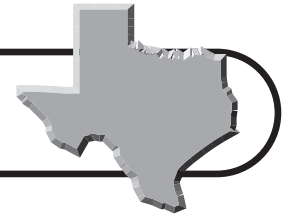
17 Consider the two triangles below.
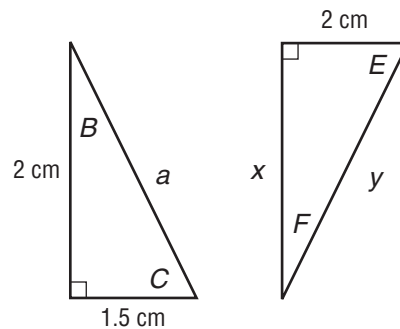
What other information is needed to prove that the triangles are congruent?

A The length of side x

B The measure of angle B

C The length of side a

D The measure of angle F

Go on

18 Carlos sells video games on a web site. The cost for his web site is $75 per year. Carlos sells each video game for $25. Which equation can Carlos use to determine how many video games g, he must sell to make a profit of $50 per year?

F $100g = 50$
G $75g + 25 = 50$
H $25g + 75 = 50$
J $25g - 75 = 50$

19 The table shows the ages of two groups of senior citizens who reside at a nursing care center.

Group 1	65	70	70	71	75	85	88	89	90
Group 2	62	70	70	76	81	84	85	86	87

Which measure of central tendency has a greater value for Group 1 than Group 2?

A Mean   **C** Mode
B Median   **D** Range

20 A digital camera that was originally priced at $349 is on sale for 20% off. There is also a 6.5% sales tax. Which expression can be used to find how much tax is due on the camera?

F $0.065 \times 349 \times 0.08$
G $0.065 \times 349 \times 0.20$
H $0.8 \times 349 \times 0.065$
J $0.2 \times 349 \times 1.065$

21 Haley's average heart rate is 72 beats in 60 seconds. Which of the following represents an equivalent heart rate?

A 32 beats in 30 seconds
B 50 beats in 45 seconds
C 20 beats in 15 seconds
D 12 beats in 10 seconds

22 On a trip from San Angelo to Baton Rouge, Anton drove the first part of his trip in 4 hours without stopping. He averaged 50 miles per hour and used 12 gallons of gasoline. What else does he need to know in order to determine the cost per mile of this part of the trip?
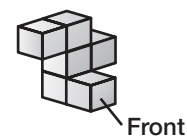
F The amount of gas remaining in the tank
G The cost of gas per gallon
H The number of miles in the entire trip
J How much farther he has to go

23 What is the surface area of the rectangular prism that can be formed from the net shown below?
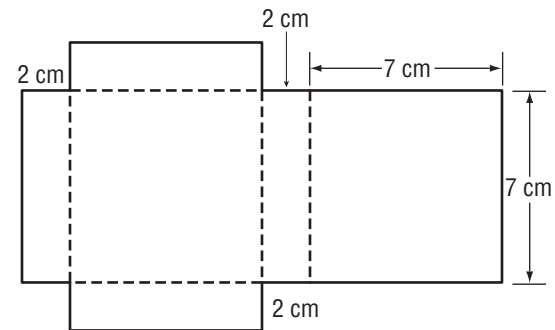
A 98 cm²   **C** 196 cm²
B 154 cm²   **D** 392 cm²

24 The figure below shows a three-dimensional solid made of stacked cubes.
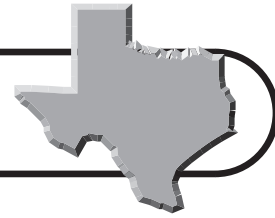

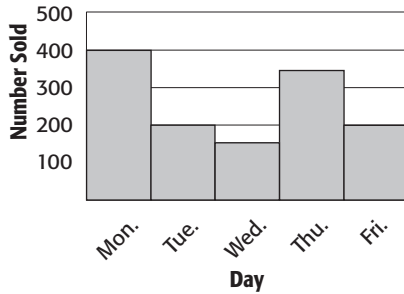Which of the following represents the front view of the figure?
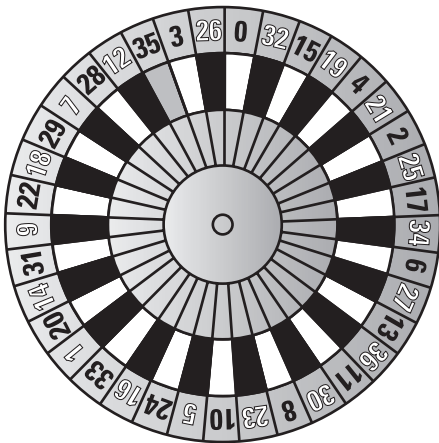
Benchmark Test 2 (continued)

25 Eliza analyzed the graph below and determined that the mode of the number of lunches sold during the week was 400. Which statement is true?

Cafeteria Lunch Sales

A Eliza's conclusion is correct.
B The actual mode is 200.
C The mean is 300.
D The collection of data is biased.

26 Miss Kane played a carnival game that uses the wheel below.
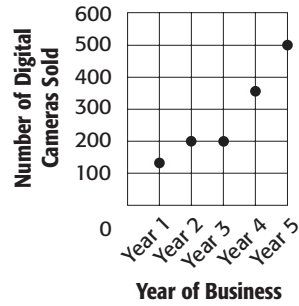

If she spins the wheel twice, what is the probability that both spins will land on a number that is a multiple of 5?

F $\dfrac{2}{1,369}$ **H** $\dfrac{49}{1,369}$

G $\dfrac{25}{1,369}$ **J** $\dfrac{100}{1,369}$

27 The scatterplot shows the number of digital cameras sold each year at a photography store.

Digital Camera Sales

Which description best represents the relationship in the data?
A No trend
B Positive trend
C Negative trend
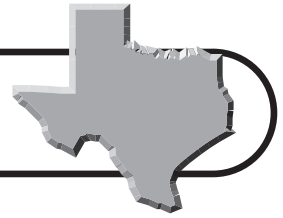**D** Both positive and negative trend

28 In the triangle below, what is the approximate length of side AB?
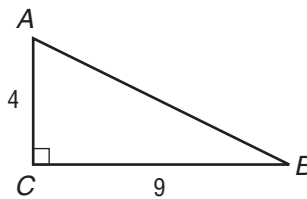
F Between 5 and 6
G Between 8 and 9
**H** Between 9 and 10
**J** Between 10 and 11

Benchmark Test 2 (continued)

29 The table shows the relationship between the number of cupcakes k, and the total cost c, in dollars for an order of cupcakes.

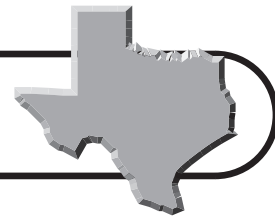| Number of Cupcakes, k	Cost in Dollars, c
1	$0.40
2	$0.65
3	$0.90
4	$1.15
5	$1.40
6	$1.65

Which equation shows the total cost for an order of doughnuts?

A $c = 0.15k + 0.25$

B $c = 0.25k + 0.15$

C $c = 0.25k$

D $c = 0.40k$

30 Which graph shows a parallelogram with at least one vertex in the second quadrant?

F

G


H

J

Go on
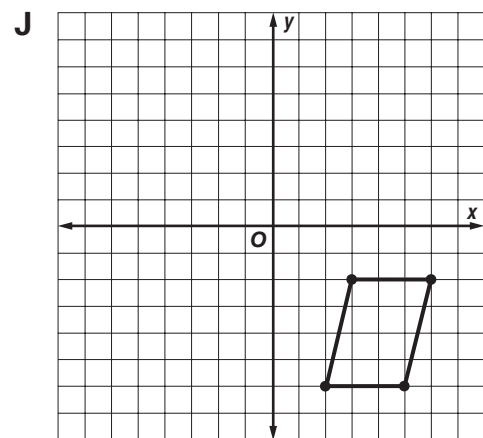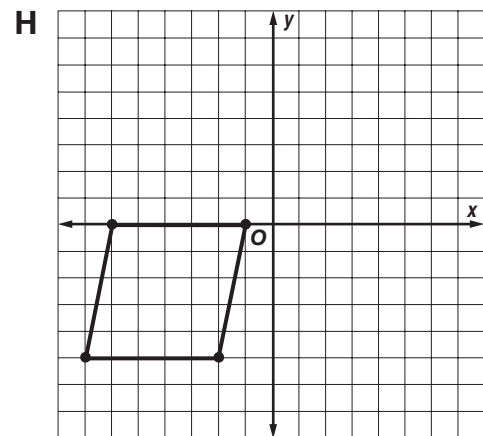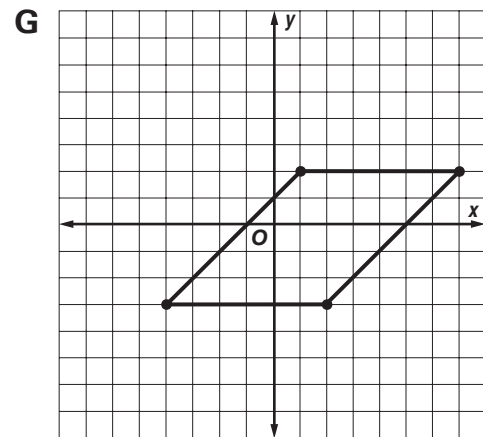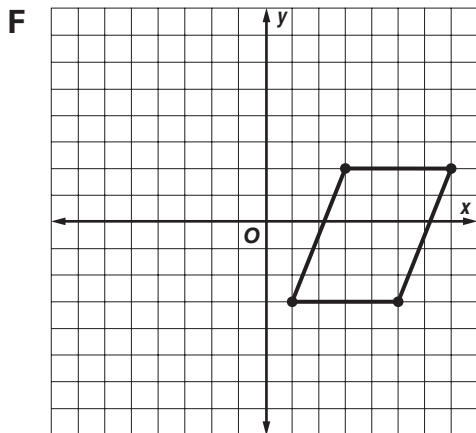
Benchmark Test 2 (continued)

31 Kaleb is ordering a pair of pants from an online store. The pants come in 12 different sizes, 8 different colors, and 2 different styles. How many different combinations of size, color, and style are possible?

A 22   **C** 96

B 48   **D** 192

32 The letters of the words GALVESTON TEXAS are placed in a bag. If he draws two letters from the bag without looking, what is the probability that Zach will draw 2 E's?

F $\frac{1}{2}$ **H** $\frac{1}{14}$

G $\frac{2}{14}$ **J** $\frac{1}{91}$

33 Television sizes are described by the diagonal measurement of the screen. The rectangular screen of Lisa's new television set measures 16 inches by 12 inches.
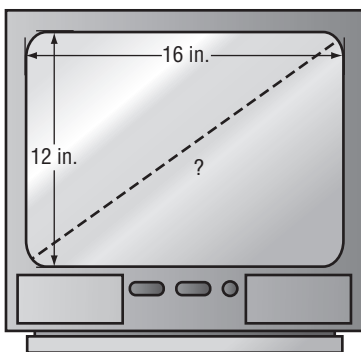
What is the diagonal size of the television?

A 18 in.   **C** 24 in.
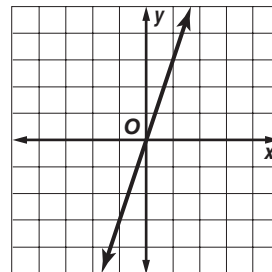
B 20 in.   **D** 32 in.

34 The table shows elements of a sequence and n, the element's position number in the sequence.

n	?
1	1
2	3
3	5
4	7

What is the missing rule in this table?

F $2n - 1$ **H** $3n$

G $2n + 1$ **J** $4n - 3$

35 Which of the following sets of ordered pairs represents the graph below?

A

x	y
0	0
1	3
2	6
3	9

C

x	y
0	−1
1	0
2	2
3	4

B

x	y
0	0
1	5
2	5
3	2

D

x	y
0	−2
1	−3
2	−4
3	−5

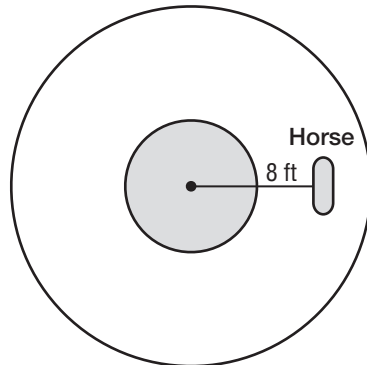**36** The Dentzel carousel at Fair Park in Dallas has operated since 1923. If a horse on the carousel is 8 feet from the center, about how far will the horse travel in 8 revolutions?

Top View of Carousel

F 50 ft
G 100 ft
H 200 ft
J 400 ft

37 Calvin filed his flight plan for a trip in his single-engine plane. From the airport, he took off heading east. He flew east for 50 miles, made a 90 degree turn, and flew south for 120 miles. At this point how far, in a direct line, was Calvin from the airport?

A 75 miles
B 100 miles
C 130 miles
D 190 miles

38 A cylinder has a volume of 5,600 cubic centimeters. If the cylinder is dilated by a factor of $\frac{1}{2}$, what is the volume of the new cylinder?

F 700 cm³
G 1,400 cm³
H 2,100 cm³
J 2,800 cm³

**39** The spinner below is divided into 8 equal sections.
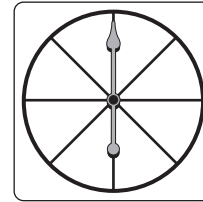
How many sections of the spinner should be colored red in order to make the probability of the arrow landing on red 0.125 in a single spin?

A 1
B 3
C 5
D 7

40 Martina ran the 100-meter dash 4 times this track season. Her times are listed in the table.

Race	Time
1	13.88
2	13.98
3	13.75
4	13.92

In which race did she have the fastest time?

F Race 1   **H** Race 3
G Race 2   **J** Race 4
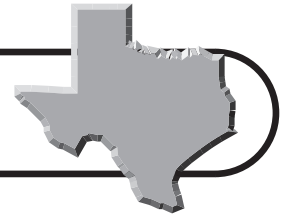
41 The parallelograms below are similar.
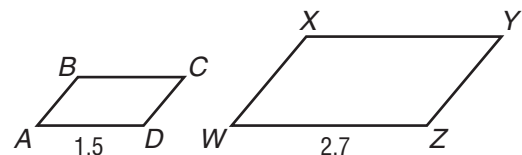
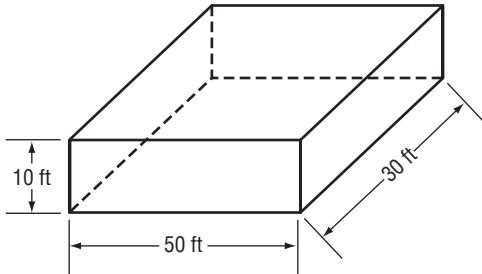What scale factor is used to dilate parallelogram *ABCD* to parallelogram *WXYZ*?

A 1.5   **C** 1.8
B 1.6   **D** 2.7

Go on

Benchmark Test 2 (continued)

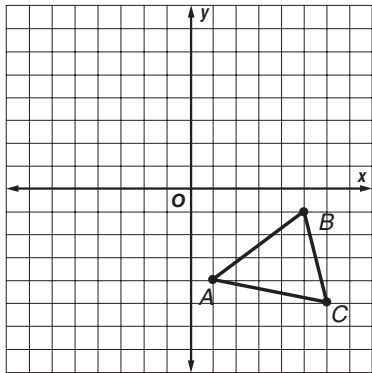**42** Marissa is having her office walls repainted. She needs to calculate the square footage of the wall surfaces. The dimensions of the office are shown on the diagram below.

10 ft
30 ft
50 ft

What is the surface area of the walls?

F 3,000 ft²   **H** 1,600 ft²
G 2,500 ft²   **J** 1,000 ft²

43 If $\triangle ABC$ is translated 5 units to the left and 3 units up, what are the coordinates of point A''?


A (−4, −1)
B (−2, 1)
C (−1, −4)
D (0, 5)

44 Mr. Rodriguez and his son attended a Dallas Mavericks basketball game. They paid $9.00 for parking and $6.00 for a program. They also bought 2 sodas at $2.75 each, 2 hot dogs at $3.75 each, and 2 tickets for $53.60 each. Mr. Rodriguez estimated that they spent $140 in all. Which best describes his estimate?

F Less than the actual amount, because he rounded to the nearest dollar.
G Less than the actual amount, because he rounded to the nearest $5.
H More than the actual amount, because he rounded to the nearest dollar.
J More than the actual amount, because he rounded to the nearest $5.
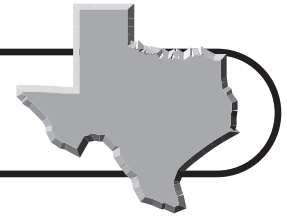
45 Rachel drew a floor plan for her new kitchen.

10 ft
4 ft
2 ft
10 ft
6 ft
12 ft
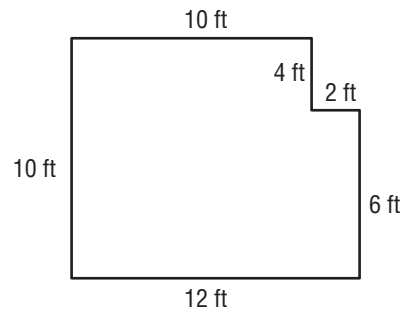
What is the area of the kitchen floor?

A 96 ft²   **C** 124 ft²
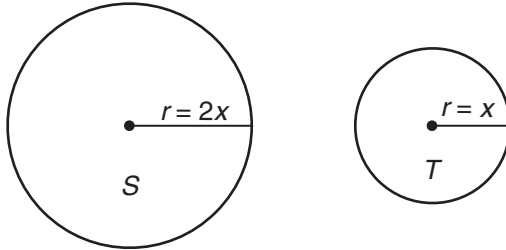**B** 112 ft²   **D** 140 ft²

Go on

Benchmark Test 2 (continued)

46 Circle S has a radius that is twice the length of the radius of circle T.

Which is an accurate statement about the relationship of the areas of circles S and T?

F The area of circle S is 4 times the area of circle T.

G The area of circle S is 2 times the area of circle T.

H The area of circle S is $\frac{1}{2}$ the area of circle T.

J The area of circle S is $\frac{1}{4}$ the area of circle T.

47 Sasha bowled 4 games at Sunshine Lanes for $9.80. Joel bowled 5 games at Moonlit Lanes for $2.40 per game. Why did Joel think that he got the better price?

A Sasha's cost per game was $2.45, and Joel's was only $2.40 per game.

B Sasha's and Joel's cost per game was the same.

C The cost at Sunshine Lanes is $0.50 less per game.

D The cost per game at Moonlit Lanes is $0.05 more than at Sunshine Lanes.

48 $\triangle ABC$ is similar to $\triangle XYZ$.
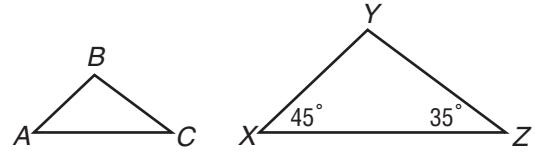
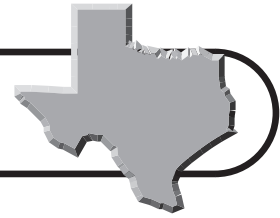Which procedure can be used to find the number of degrees in $\angle B$?

F Divide 180 by 3.

G Subtract 80 from 360.

H Subtract 80 from 180.

J Divide 100 by 2.

49 The area of the pentagonal base of the solid figure below is 45 square inches. Which of the following formulas can be used to find the volume of the figure?
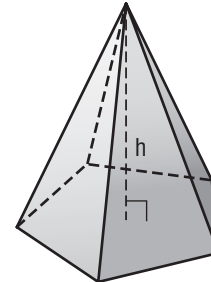
A $V = \frac{1}{3}(45)h$ **C** $V = 45h$

B $V = \frac{4}{3}(45)h$ **D** $V = 45Bh$

50 Which of the following is ordered from least to greatest?

F $0.005, 5\%, \frac{5}{10}, 5, 10^5$

G $5, 10^5, 0.005, \frac{5}{10}, 5\%$

H $\frac{5}{10}, 5\%, 0.005, 5, 10^5$
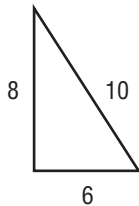
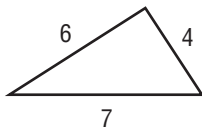**J** $5, 10^5, 5\%, 0.005, \frac{5}{10}$

Benchmark Test 3

Read each question and choose the correct answer.

1 For which triangle does the relationship $a^2 + b^2 = c^2$ fit?
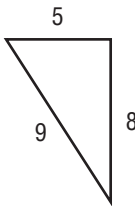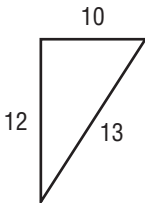
A

8   10

6

B

6   4

7

C

5

9   8

D

10

12   13

2 Maria used a local telephone directory to randomly choose 8 people to survey about a new park. All 8 people said that they were in favor of the new park. Which is the best explanation for why her conclusion might not be valid?

F The sample was not representative of all of the people in her town.

G The sample size was too small.

H The survey population was too large.

J The survey was conducted by telephone.

3 Julia is creating a design for the library wall. The first 3 elements of the pattern are shown below.
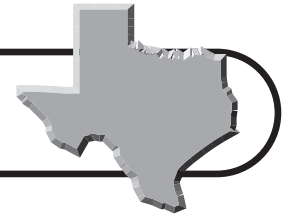

1   2   3
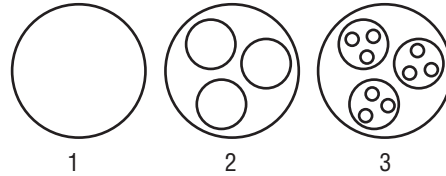
If the pattern continues, what will be the total number of circles formed in the 5th element of the pattern?

A 40

B 81

C 121

D 336

4 There are 40 newborn babies in the hospital nursery. For every 3 girls, there are 2 boys. How many newborn boys are in the nursery?

F 7

G 12

H 16

J 18

5 Casey is making his grandmother's baklava recipe. He is making a batch that uses $\frac{3}{4}$ the amount of ingredients that the original recipe uses. If the recipe calls for $1\frac{1}{2}$ cups of sugar, how much sugar will Casey use?

A $\frac{3}{4}$ cup
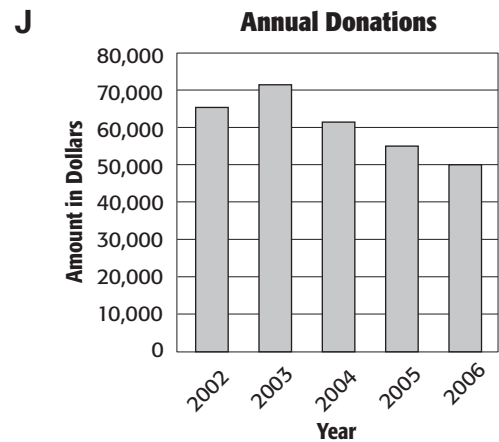
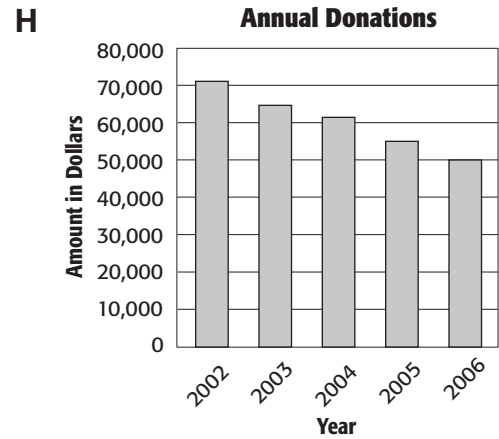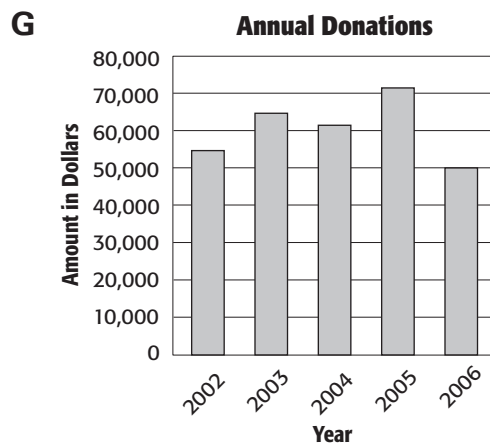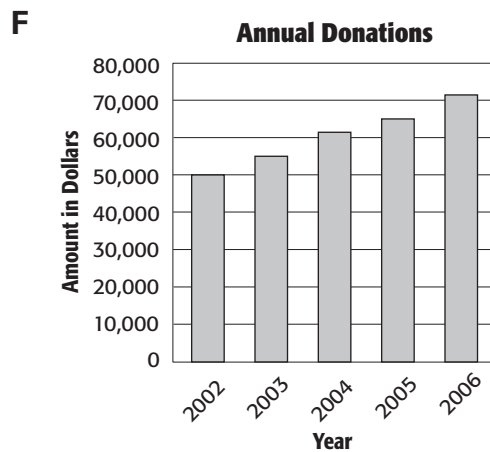**C** $1\frac{1}{8}$ cups

B 1 cup

D $2\frac{1}{4}$ cups

Go on

Benchmark Test 3 (continued)

6 The table below shows a company's charitable donations for the years 2002 to 2006.

Year	Annual Donation
2002	$50,000
2003	$55,000
2004	$61,000
2005	$65,000
2006	$70,000

Which bar graph matches the data in the table?

F

Annual Donations

G

Annual Donations

H

Annual Donations

J

Annual Donations

7 These trapezoids are similar. What is the length of side x?

15 cm

25 cm   30 cm

35 cm

12 cm

x

28 cm
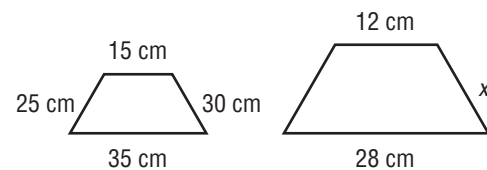
A 15 cm
B 18 cm
C 20 cm
D 24 cm

Go on

8 David is using a cardboard tube in the shape of a cylinder as part of his science project. He covers both ends of the cylinder. The volume of air in the cylinder is 24 cubic inches. David needs to make another cylinder for his project that has half the radius and length of the cardboard tube. What will be the volume of the second cylinder?

F 12 in^3

G 8 in^3

H 6 in^3

J 3 in^3

9 The equation $c = 10 + .07m$ represents Quinn's monthly cell phone cost c, in dollars for m minutes of peak usage time. Which table reflects this equation?

Monthly Cell Phone Cost

A

m	100	200	300	400
c	17	24	31	38

Monthly Cell Phone Cost

B

m	10	20	30	40
c	7	14	21	28

Monthly Cell Phone Cost

C

m	1	2	3	4
c	17	24	31	38

Monthly Cell Phone Cost

D

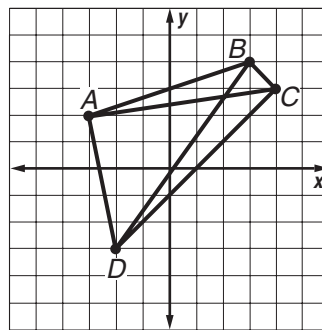| m	1000	2000	3000	4000
c	17	24	31	38

10 The triangular base of the solid figure below has an area of 25 square inches. Which of the following formulas can be used to find the volume of the figure?

base
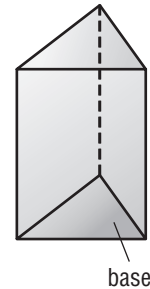
F $V = \frac{1}{3}(25)h$ **H** $V = 25h$

G $V = \frac{4}{3}(25)h$ **J** $V = 25Bh$

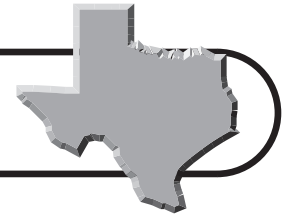**11** Which segment connects (3, 4) and (−2, −3)?

A $\overline{AB}$ **C** $\overline{BD}$

B $\overline{BC}$ **D** $\overline{AC}$

12 A micrometer is equal to 1×10^{-6} meter. Which expression represents this number in standard notation?

F 0.0000001   **H** 0.00001

**G** 0.000001   **J** 1,000,000

Go on

Benchmark Test 3 (continued)

13 The workers at a crayon factory can produce an average of 400 crayons every 5 minutes. At this rate, about how long will it take to produce 50,000 crayons?

A 7 hours   **C** 13 hours
B 11 hours   **D** 15 hours

14 Ms. Nelson constructed a Venn diagram that shows the number of eighth-grade athletes who play volleyball, baseball, and soccer. Which phrase best identifies the number 2 shown in the diagram?

8th Grade Students
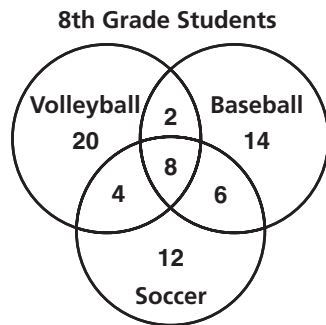
F The total number of athletes who do not play soccer or volleyball
G The total number of athletes who play all three sports
H The total number of athletes who do not play soccer
J The total number of athletes who play both baseball and volleyball, but not soccer

15 The Rosati family went out to dinner. The cost of the dinner was $38.00 before adding the tip. They want to leave a 15% tip. Which of the following represents the 15% tip?

A $0.57   **C** $11.40
B $5.70   **D** $15.00

16 A T-shirt shop keeps records of how many shirts they sell. The most popular shirt colors from one week are shown in the table.

Color of Shirt	Number Sold
Red	26
Blue	32
Yellow	18
Purple	14
Gray	10

What is the probability that the next shirt purchased will be yellow?
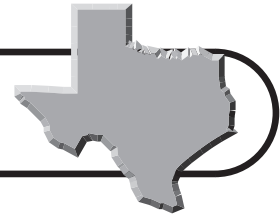
F 0.32   **H** 0.08
G 0.18   **J** 0.05

17 Carol plans to put new carpeting in her house. The floor plan below shows the part of the house that will be carpeted. How many square feet of carpet does she need?
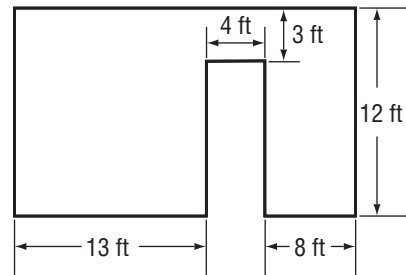
A 252 ft^2 **C** 300 ft^2
B 264 ft^2 **D** 336 ft^2

Go on

Benchmark Test 3 (continued)

18 The table below shows attendance at the library for preschool story time for the first four weeks of the year. Which of the following equations describes the data?

Week (w)	Number of Children (c)
1	55
2	70
3	85
4	100

F $c = 15w + 40$
G $c = 40w + 15$
H $c = 55w$
J $c = 25w$

19 The estimated populations of 6 towns are listed below.

48,000   23,000   27,000
25,000   28,000   24,000

Which measure of central tendency is the largest value?

**A**   Mean   **C**   Mode
B   Median   **D**   Range

20 A root beer stand sells glasses of root beer in 3 different sizes. Antwan and his friends bought 2 small drinks for $1.29 each, 2 medium drinks for $1.49 each, and 3 large drinks for $1.59 each. Which equation can be used to find a, the average price that they paid for a glass of root beer?

F $a = \dfrac{(2 \times 1.29) + (2 \times 1.49) + (3 \times 1.59)}{7}$

G $a = \dfrac{1.29 + 1.49 + 1.59}{3}$

H $a = \dfrac{1.29 \times 1.49 \times 1.59}{7}$

J $a = \dfrac{(2 \times 1.29) + (2 \times 1.49) + (3 \times 1.59)}{3}$

21 Ellen can type 50 words per minute. Which of the following represents typing at the same rate?

A   20 words in 30 seconds
B   40 words in 40 seconds
C   60 words in 70 seconds
D   75 words in 90 seconds

22 Disha is researching her family tree. She has made a template for recording the names of her ancestors. How many people will be represented in the 5th generation before her?
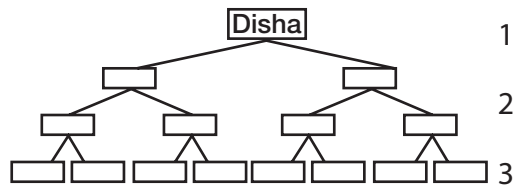
F   24   **H**   48
G   32   **J**   56

23 Josh found the cylindrical can shown in his recycling bin. He plans to use it for a craft project and needs to cover the side and bottom with construction paper.
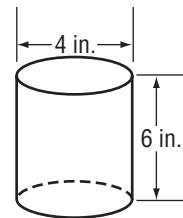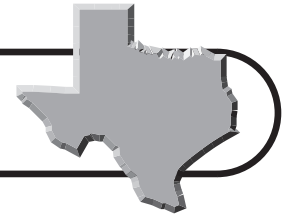

Approximately how many square inches of paper will Josh need if there is no overlap?
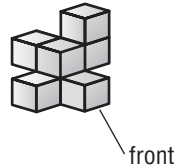
A   75 in^2
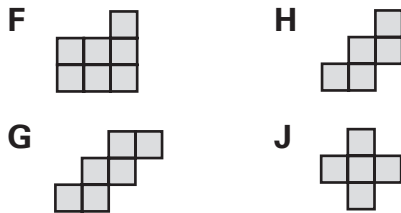**B**   88 in^2
C   150 in^2
D   201 in^2

Go on

24 The figure below shows a three-dimensional solid made of stacked cubes.

front

Which of the following represents the front view of the figure?

F

H

G

J

25 Which statement best explains why a person reading the circle graph would get an incorrect idea about the number of students who prefer certain fruits?

**Students' Fruit Preferences
300 Students Surveyed**


40%
Grapes

25%
Apple

9%
Orange

7%
Peach

25%
Banana
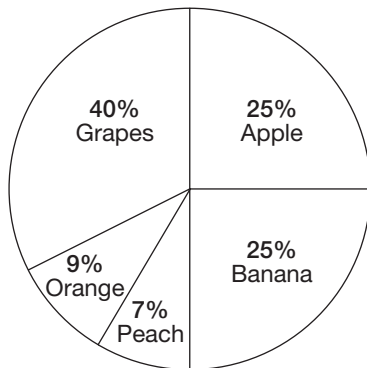
A The title is misleading.
B The section labeling is unclear.
C The circle graph is missing a scale.
D The percentages for each section have a sum greater than 100.

26 In a number cube game, the object is to roll three 6's. If a player rolls three number cubes, what is the probability of rolling three 6's?

F $\frac{1}{2}$ **H** $\frac{1}{36}$

G $\frac{1}{6}$ **J** $\frac{1}{216}$

27 The scatterplot below shows the winning times for the men's Olympic 400-meter run since 1948. Based on the data, which of the following is a reasonable prediction for the winning time in the 2012 Olympics?
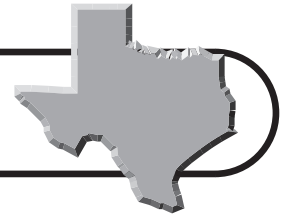

Time (seconds)

Year
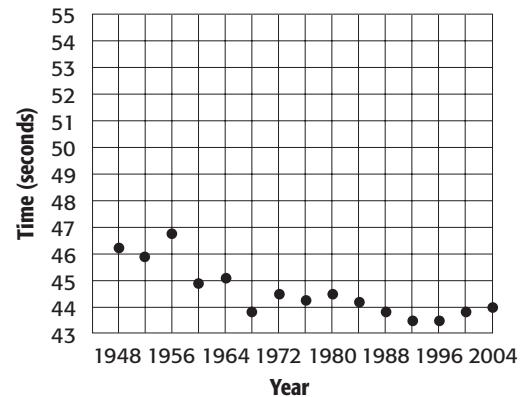
A 48.70 seconds   **C** 43.80 seconds
B 46.50 seconds   **D** 38.10 seconds

28 The area of a square is 200 square meters. Which best represents the length of a side of the square?
F 10.5 m   **H** 14.1 m
G 11.8 m   **J** 20 m

29 What is the measure of the larger of two complementary angles if the measure of one angle is five times the measure of the other angle?
A 15°   **C** 74°
B 16°   **D** 75°

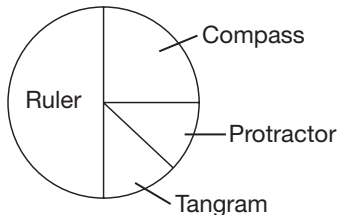

Go on

Benchmark Test 3 (continued)

30 Mr. Thomas asked his students to name their favorite math tool or object. The table below shows the results.
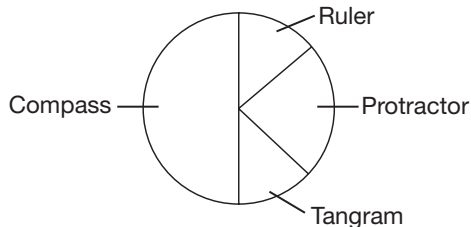
Favorite Math Tool or Object

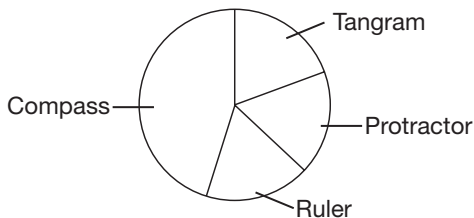| Tool or Object	Number of Students
Ruler	12
Compass	50
Protractor	25
Tangram	13

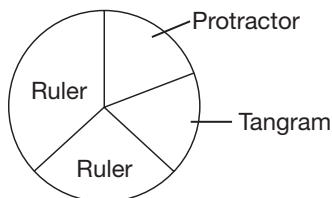Which graph best represents the data?

F Favorite Math Tool

G Favorite Math Tool

H Favorite Math Tool

J Favorite Math Tool

31 Mary paid $4.20 for a sandwich, a cup of soup, and a soft drink. If the sandwich costs $1.95, what was the cost of the cup of soup?

What additional information is needed to solve this problem?

A The cost of a soft drink

B The total cost of the lunch

C The size of the cup of soup

D No additional information is needed.

32 Five women are all due to have babies in June. If the chances of having a boy or a girl are equal, and these events are independent of one another, what is the probability that all five women will have boys?

F $\frac{5}{2}$ **H** $\frac{1}{5}$

G $\frac{1}{2}$ **J** $\frac{1}{32}$

33 Kyle is drawing the diagonal on a 9-inch by 13-inch rectangular sheet of paper. Approximately how long is the diagonal from corner to corner?
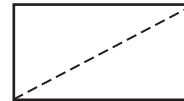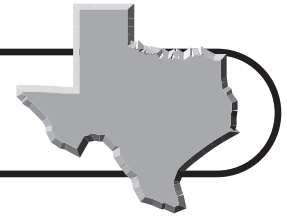

A 25 in.

B 16 in.

C 13 in.

D 11 in.

Go on

Benchmark Test 3 (continued)

34 The table shows the total number of diagonals in a convex polygon with *n* sides.

Number of Sides	4	5	6	*n*
Number of Diagonals	2	5	9	$\frac{1}{2}n(n-3)$

How many diagonals does an octagon have?

F 16   **H** 20

G 18   **J** 24

35 The table at the right shows adult ticket prices at the Six Flags Over Texas amusement park.

Six Flags Adult Ticket Prices

Year	Price
1965	$3.50
1975	$7.00
1985	$14.95
1995	$26.95
2005	$45.00

Based on the data, what is a reasonable prediction for the adult ticket price in 2015?

A $46.00   **C** $72.00

B $48.00   **D** $120.00

36 Sam, Megan, and Caroline scored a total of 46 goals during the soccer season. Megan scored 6 more goals than Sam. Caroline scored twice as many goals as Sam. Which is a reasonable conclusion about the goals scored by the players?

F Sam scored the most goals.

G Megan and Caroline scored an equal number of goals.

H Caroline scored the most goals.
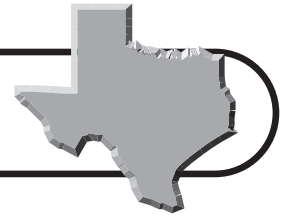
J Megan scored exactly half of the total goals.

37 James needs to climb onto his roof to clean the gutters. The house is 13 feet tall at the lower edge of the roof. If he places the ladder 8 feet away from the base of the house, about how long must the ladder be to reach the lower edge of the roof?

13 ft

8 ft
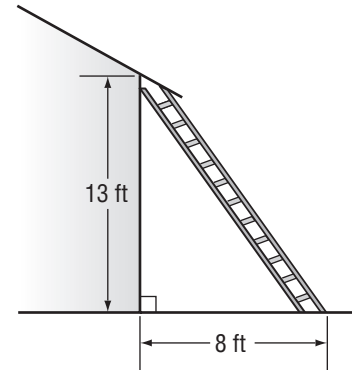
A 15–16 ft   **C** 17–18 ft

B 16–17 ft   **D** 18–19 ft

38 A shipping company offers two sizes of boxes in the shape of rectangular prisms. The larger box has a volume of 408 cubic inches. The smaller box has length, width, and height dimensions that are half those of the larger box. What is the volume of the smaller box?

F 3,264 in^3 **H** 102 in^3

G 204 in^3 **J** 51 in^3

39 Dominic wants to simulate random guessing on a 10-question True or False test. How can he best conduct this simulation?

A Roll a die 10 times. Let even numbers be True and odd numbers be False.

B Toss 3 coins 10 times. Let all heads be True and all Tails be False.

C Spin a 4-section spinner 10 times.

D Ask his sister to say "True" or "False" 10 times.

Go on

Benchmark Test 3 (continued)

40 Rebecca wants to make a pencil case for her desk. She will cover the sides of a cylinder whose base has a diameter of 10 inches and whose height is 10 inches with contact paper. Approximately how much contact paper will Rebecca need to cover the sides of the cylinder?

  F 314 in^2 **H** 560 in^2

  G 471 in^2 **J** $1,000 \text{ in}^2$

41 Triangle *ABC* is a dilation of triangle *XYZ*.
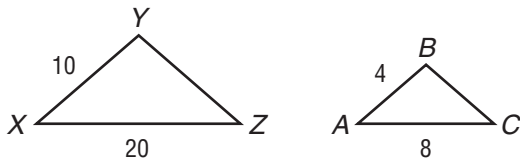
What scale factor was used to reduce *XYZ* to *ABC*?

 **A** 2.5   **C** 0.4

  B 0.8   **D** 0.2

42 The chart below shows basketball shots attempted and made by four players on the team.

Name	Shots Attempted	Shots Made
Alan	16	5
Ben	12	7
Carter	10	4
Davin	9	4

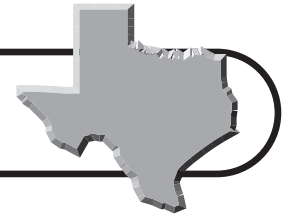Which of the following lists the players in order from highest to lowest percentage of shots made out of the shots attempted?

  F Ben, Davin, Carter, Alan

  G Alan, Carter, Davin, Ben

  H Davin, Carter, Ben, Alan

  J Ben, Carter, Alan, Davin

**43** Which of the following graphs shows the rectangle below reflected over the *y*-axis?

A

B

C

D

Go on
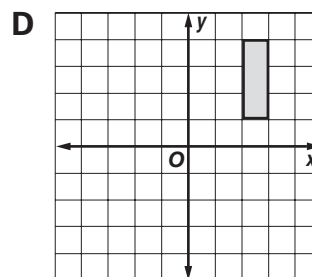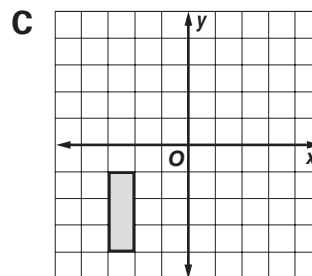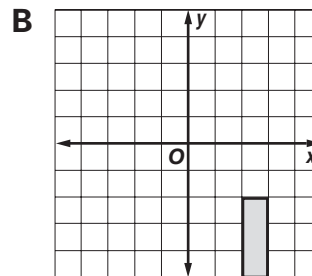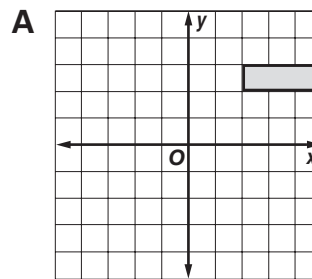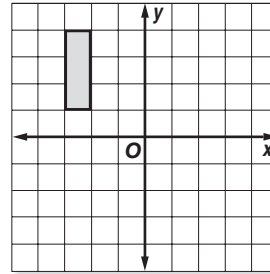
Benchmark Test 3 (continued)

44 Tonya's monthly grocery bills for the past four months were $97.24, $126.54, $148.21, and $88.20. She estimated that she spent a total of $470.00 over the four months. Which best describes her estimate?

  F Less than the actual amount, because she rounded to the nearest dollar.

  G Less than the actual amount, because she rounded to the nearest $10.

  H More than the actual amount, because she rounded to the nearest dollar.

  J More than the actual amount, because she rounded to the nearest $10.

45 Katie has a painting of the Alamo that she would like to frame. The painting is 14 inches long and 12 inches wide. If she puts a 3-inch frame around the painting, what will be the dimensions of the outside edge of the frame?

  A 28 in. × 24 in.

  B 20 in. × 18 in.

  C 17 in. × 15 in.

  D 11 in. × 9 in.
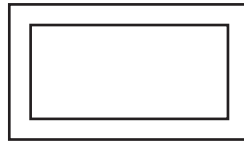
46 A right triangle has a perimeter of 30 centimeters. The length of each side is increased to 5 times its original length. What is the perimeter of the larger triangle?

  F 60 cm   **H** 150 cm

  G 90 cm   **J** 300 cm

47 Which of the following rational numbers is greater than $\frac{1}{8}$ and less than $\frac{1}{6}$?

  A 0.113   **C** 0.186

  B 0.145   **D** 0.191

48 In the equation $5x + y = 30$, if an x-value is increased by 2, what would be the effect on the corresponding y-value?

  F The value of y will be 5 times as large.

  G The value of y will be $\frac{1}{2}$ as large.

  H The value of y will increase by 10.
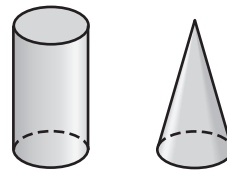
  J The value of y will decrease by 10.

49 Scientists are studying a problem with too many fruit flies in an orchard. The following results were generated.

Day	1	2	3	4	5
Number of Fruit Flies	256	1,024	4,096	16,384	65,536

How can the data best be described?

  A The number of fruit flies doubles daily.

  B The number of fruit flies quadruples daily.

  C The number of fruit flies increases by a power of 2 daily.

  D The number of fruit flies increases by 4 daily.

50 The cone and the cylinder have the same base diameter and the same height. How many times more is the volume of the cylinder than the volume of the cone?

  F $\frac{1}{3}$ **H** 2

  G $\frac{1}{2}$ **J** 3

Stop