

**GLENCOE
MATHEMATICS**

Tennessee Gateway Test Practice and Sample Test Workbook

Includes:

- **Gateway Test Objectives for Algebra I**
- **Student Recording Chart**
- **Mathematics Reference Page**
- **Diagnostic Test**
- **Numerous Practice Questions for Each Standard**
- **Full-Size Sample Test**

Test-Taking Tips

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



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*Tennessee Gateway Test
Practice and Sample Test Workbook*

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Standards Practice

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Overview

The material in this booklet is designed to help you prepare for the Tennessee Gateway Test.

It contains:

- a Student Recording Chart,
- the Algebra 1 State Performance Indicators (SPI) Correlated to Glencoe's *Algebra 1* and *Algebra: Concepts and Applications*,
- a Diagnostic Test,
- practice for each SPI, and
- a Sample Test.

How to Use This Book

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

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

Sample Test After you have completed your practice worksheet(s), take the Sample Test on pages 63 to 73.

Student Recording Chart

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

SPI	1.1.A	1.1.B	1.1.C	1.1.D	1.1.E	1.1.F	1.2.A
Test Questions	8 <input type="checkbox"/>	30 <input type="checkbox"/>	49 <input type="checkbox"/>	36 <input type="checkbox"/>	52 <input type="checkbox"/>	23 <input type="checkbox"/> 32 <input type="checkbox"/>	3 <input type="checkbox"/>
Need Practice?							
Practice Pages	12	13	14	15	16	17	18

SPI	1.2.B	1.2.C	1.2.D	1.2.E	1.2.F	1.3.A	2.1.A
Test Questions	11 <input type="checkbox"/>	47 <input type="checkbox"/>	26 <input type="checkbox"/>	18 <input type="checkbox"/>		55 <input type="checkbox"/>	21 <input type="checkbox"/>
Need Practice?							
Practice Pages	19	20	21	22	23	24	25

SPI	2.1.B	2.1.C	2.1.D	2.1.E	2.2.A	2.2.B	2.2.C
Test Questions	53 <input type="checkbox"/>	35 <input type="checkbox"/>	9 <input type="checkbox"/>	40 <input type="checkbox"/>	25 <input type="checkbox"/>	17 <input type="checkbox"/> 43 <input type="checkbox"/>	31 <input type="checkbox"/>
Need Practice?							
Practice Pages	26	27	28	29	30	31	32

SPI	2.2.D	2.2.E	2.2.F	2.2.G	2.2.H	2.2.I	2.2.J
Test Questions	22 <input type="checkbox"/>	4 <input type="checkbox"/> 45 <input type="checkbox"/>	51 <input type="checkbox"/>	27 <input type="checkbox"/>	42 <input type="checkbox"/>	33 <input type="checkbox"/>	12 <input type="checkbox"/>
Need Practice?							
Practice Pages	33	34	35	36	37	38	39

SPI	2.2.K	2.2.L	2.2.M	2.2.N	2.3.A	2.3.B	2.3.C
Test Questions	7 <input type="checkbox"/> 20 <input type="checkbox"/>	2 <input type="checkbox"/>	10 <input type="checkbox"/>	44 <input type="checkbox"/>	50 <input type="checkbox"/>	16 <input type="checkbox"/>	28 <input type="checkbox"/> 29 <input type="checkbox"/>
Need Practice?							
Practice Pages	40	41	42	43	44	45	46

SPI	3.1.A	3.2.A	3.2.B	3.3.A	4.1.A	4.1.B	4.1.C	4.2.A	4.3.A
Test Questions	46 <input type="checkbox"/>	34 <input type="checkbox"/>	6 <input type="checkbox"/>	24 <input type="checkbox"/>	15 <input type="checkbox"/>	14 <input type="checkbox"/>	39 <input type="checkbox"/>	1 <input type="checkbox"/>	37 <input type="checkbox"/>
Need Practice?									
Practice Pages	47	48	49	50	51	52	53	54	55

SPI	5.1.A	5.1.B	5.1.C	5.2.A	5.2.B	5.2.C	5.3.A
Test Questions	13 <input type="checkbox"/>	19 <input type="checkbox"/>	5 <input type="checkbox"/>	48 <input type="checkbox"/>	38 <input type="checkbox"/>	54 <input type="checkbox"/>	41 <input type="checkbox"/>
Need Practice?							
Practice Pages	56	57	58	59	60	61	62

Tennessee Gateway Test Standards Correlated to Glencoe's *Algebra 1* and *Algebra: Concepts and Applications*

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

Learning Expectations	Algebra 1 Lesson(s)	Algebra: Concepts and Applications Lesson(s)
Standard 1.0: Number and Operations <i>Students will recognize, represent, model, and apply real numbers and operations verbally, physically, symbolically, and graphically.</i>		
1.1 demonstrate an understanding of the subsets, properties, and operations of the real number system;	1-1, 1-2, 1-3, 1-4, 1-5, 1-6, 2-1, 2-2, 2-3, 2-4, 2-7	1-3, 1-4, 2-1, 2-3, 2-4, 2-5, 2-6, 3-2, 4-1, 4-3
1.2 demonstrate an understanding of the relative size of rational and irrational numbers;	2-1, 2-7, 8-3	3-1, 14-1
1.3 articulate, model, and apply the concept of inverse (e.g., opposites, reciprocals, and powers and roots);	1-1, 2-7, 3-2P, 3-2, 3-3, 3-4P, 3-4, 3-5, 3-8	2-3, 2-4, 4-3, 8-1, 8-5, 9-2, 13-5
1.4 describe, model, and apply inverse operations;	1-4, 3-2P, 3-2, 3-3, 3-4P, 3-4, 3-5, 3-8	2-3, 2-4, 4-3, 9-2, 13-5
1.5 apply number theory concepts (e.g., primes, factors, divisibility and multiples) in mathematical problem solving;	9-1	10-1
1.6 connect graphical and symbolic representations of absolute value;	6-5	2-1, 2-3, 3-7, 12-6
1.7 use real numbers to represent real-world applications (e.g., slope, rate of change, probability, and proportionality);	This objective is addressed in every lesson.	Throughout the text, but particularly 5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 5-7, 7-1
1.8 use a variety of notations appropriately (e.g. exponential, functional, square root);	2-7, 4-6, 4-7P, 4-7, 4-8, 6-1, 8-3, 10-5, 10-7	6-4, 8-4, 8-5, 8-6, 11-7, 14-3, 14-4, 14-5
1.9 select and apply an appropriate method (i.e., mental mathematics, paper and pencil, or technology) for computing with real numbers, and evaluate the reasonableness of results;	2-1, 2-2, 2-3, 2-4, 2-7, 8-3, 11-2	Throughout the text, but particularly 1-5
1.10 perform operations on algebraic expressions and informally justify the procedures chosen;	1-1, 1-2, 1-4, 1-5, 1-6, 1-7	1-3, 1-4, 1-5
1.11 perform operations on matrices in real-world problem solving (i.e., addition, subtraction, and scalar multiplication).	13-2	Ch. 2 and 13 Investigation

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

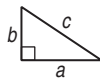
Learning Expectations	Algebra 1 Lesson(s)	Algebra: Concepts and Applications Lesson(s)
Standard 2.0: Algebra <i>Students will describe, extend, analyze, and create a wide variety of patterns and functions using appropriate materials and representations in real world problem solving.</i>		
2.1 recognize, analyze, extend, and create a variety of patterns;	4-7P, 4-7, 4-8, 10-7	1-5, Ch. 3 and 11 Investigation, 6-2, 6-3
2.2 use algebraic thinking to generalize a pattern by expressing the pattern in functional notation;	4-6, 4-7, 4-8, 10-7	6-4
2.3 solve linear systems using a variety of techniques;	7-1P, 7-1, 7-1F, 7-2, 7-3, 7-4	13-2, 13-3, 13-4, 13-5, 13-7
2.4 communicate the meaning of variables in algebraic expressions, equations, and inequalities;	1-1, 3-1, 4-5, 4-5F, 4-6, 6-1	1-1, 12-1
2.5 identify and represent a variety of functions;	1-8, 1-8F, 4-6, 10-1, 10-5	6-4, 11-1, 11-7
2.6 apply and interpret rates of change from graphical and numerical data;	5-1, 5-2	7-1, 7-2
2.7 analyze graphs to describe the behavior of functions;	1-8, 1-8F, 4-5, 4-5P, 4-6, 5-3P, 5-3, 5-3F, 10-1, 10-5	7-5, 7-6, 11-1, 11-7
2.8 interpret results of algebraic procedures;	This objective is addressed in every lesson.	This objective is addressed in every lesson.
2.9 apply the concept of variable in simplifying algebraic expressions, solving equations, and solving inequalities;	1-3, 1-4, 1-5, 1-6, 3-2P, 3-2, 3-3, 3-4P, 3-4, 3-5, 4-5, 4-5F, 4-6, 6-1, 6-2P, 6-2, 6-3, 6-4, 6-5, 6-6, 11-1, 11-2, 11-3, 12-2, 12-2F, 12-3, 12-4, 12-5, 12-6, 12-7, 12-8, 12-9	1-3, 1-4, 3-4, 3-5, 3-6, 3-7, 4-4, 4-5, 4-6, 4-7, 5-4, 8-2, 8-3, 9-3, 11-3, 11-4, 11-5, 11-6, 12-2, 12-3, 12-4, 12-5, 12-6, 14-3, 14-5, 15-1, 15-4, 15-5, 15-6
2.10 interpret graphs that depict real-world phenomena;	1-8, 1-8F, 1-9, 1-9F, 2-5, 4-5, 5-7, 5-7F, 10-5, 10-6, 13-3, 13-3F, 13-5, 13-5F	Throughout the text, but particularly 1-6, 2-2, 1-7, 7-4, 11-1, 11-7
2.11 model real-world phenomena using functions and graphs;	1-8, 1-8F, 4-5, 4-6, 5-2, 5-3P, 5-3, 5-4, 5-5, 5-7, 5-7F, 10-5, 10-6	6-4, 6-5, 7-4, 11-1, 11-2, 11-7, 12-7, 13-1, 13-6, 13-7

Learning Expectations	Algebra 1 Lesson(s)	Algebra: Concepts and Applications Lesson(s)
2.12 articulate and apply algebraic properties in symbolic manipulation;	1-4, 1-5, 1-6, 3-2P, 3-2, 3-3, 3-4P, 3-4, 3-5, 5-3, 5-4, 5-5, 5-6, 6-1, 6-2P, 6-2, 6-3, 6-4, 6-5, 6-6	1-3, 1-4, 3-5, 3-6, 3-7, 4-4, 4-5, 4-6, 4-7, 5-4, 8-2, 8-3, 9-3, 11-3, 11-4, 11-5, 11-6, 12-2, 12-3, 12-4, 12-5, 12-6, 14-3, 14-5, 15-1, 15-4, 15-5, 15-6
2.13 analyze relationships which can and which cannot be represented by a function;	1-8, 4-6	6-4
2.14 graph inequalities and interpret graphs of inequalities;	6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-6F, 7-5	12-1, 12-2, 12-5, 12-6, 12-7, 13-7
2.15 describe the domain and range of functions and articulate restrictions imposed either by the operations or by the real-life situations which the functions represent;	1-8, 4-3, 4-4	6-1, 6-2
2.16 describe the transformation of the graph that occurs when coefficients and/or constants of the corresponding linear equations are changed.	5-2, 5-3F, 5-4	7-6
Standard 3.0: Geometry <i>The student will investigate, model, and apply geometric properties and relationships.</i>		
3.1 apply geometric properties, formulas, and relationships to solve real-world problems;	2-6F, 3-6, 3-8, 3-9, 4-2, 4-3, 4-4, 4-6, 5-6, 11-4, 11-5, 11-6, 11-7P, 11-7	1-5, 3-3, 3-5, Ch. 3 Investigation, 4-4, 4-5, 4-7, 5-4, 8-6, 8-5
3.2 solve problems using the midpoint formula;	4-1	Ch. 14 Investigation
3.3 apply right triangle relationships including the Pythagorean Theorem and the distance formula;	11-4, 11-5, 11-6, 11-7P, 11-7	8-7, 14-2
3.4 find and represent solutions of quadratic equations geometrically.	10-2	11-3
Standard 4.0: Measurement <i>The student will apply appropriate tools and units of measurement to produce reasonable results.</i>		
4.1 use concepts of length, area, and volume to estimate and solve real-world problems;	3-1, 3-8, 8-1F, PS9, PS10, PS11	1-2, 1-4, 1-5, 2-6, 3-4, 4-4, 4-7, 5-1, 6-4, 8-1, 8-2, 8-5, 8-6, Ch. 8 Investigation, 9-1, 9-3, 9-4, 9-5, 10-1, 10-2, 10-3, 10-4, 10-5, 11-4, 11-5, 13-6, 14-1, 14-4
4.2 apply and communicate measurement concepts and relationships in algebraic and geometric problem-solving situations;	This objective is addressed in every lesson.	This objective is addressed in every lesson.


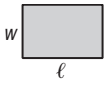

Learning Expectations	Algebra 1 Lesson(s)	Algebra: Concepts and Applications Lesson(s)
4.3 demonstrate an understanding of rates and other derived and indirect measurements (e.g., velocity, miles per hour, revolutions per minute, cost per unit);	3-6, 3-9, 5-1, 12-3, 12-4	1-5, 5-1, 13-5, 15-6
4.4 make decisions about units, scales, and measurement tools that are appropriate for problem situations involving measurement;	11-7	This objective is addressed in every lesson.
4.5 analyze precision, accuracy, tolerance, and approximate error in measurement situations.	6-5, <i>Glencoe Pre-Algebra</i> 11-7	
<p>Standard 5.0: Data Analysis and Measurement <i>The student will collect, organize, represent, and interpret data and model situations to determine theoretical and experimental probabilities.</i></p>		
5.1 collect, represent, and describe linear and nonlinear data sets developed from the real world;	1-8, 1-8F, 1-9, 1-9F, 2-5, 4-4, 4-6, 5-7, 5-7F, 13-3, 13-3F, 13-4, 13-5, 13-5F	1-6, 1-7, 7-4, 11-7
5.2 make predictions from a linear data set using a line of best fit;	5-7, 5-7F	7-4, Ch. 3 Investigation
5.3 interpret a set of data using the appropriate measure of central tendency;	2-5, PS12	3-3
5.4 choose, construct, and analyze appropriate graphical representations for a data set;	1-8, 1-8F, 1-9, 1-9F, 2-5, 5-7, 5-7F, 13-3, 13-3F, 13-4, 13-5, 13-5F	1-6, 1-7, 7-4
5.5 understand the concept of random sampling;	13-1, 14-4, 14-5	1-6
5.6 apply counting principles of permutations and combinations using appropriate technology;	14-2	Ch. 4 Investigation
5.7 model situations to determine theoretical and experimental probabilities.	2-6, 14-5	5-6

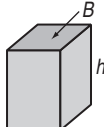
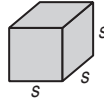
Mathematics Reference Page

Formulas	
$d = rt$	distance = rate \times time
Distance Formula:	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
Point-Slope Equation:	$y - y_1 = m(x - x_1)$
Pythagorean Theorem:	$a^2 + b^2 = c^2$
Slope Formula:	$m = \frac{y_2 - y_1}{x_2 - x_1}$
Slope-Intercept Equation:	$y = mx + b$
$\pi \approx 3.14$ or $\frac{22}{7}$	



Perimeter (P) and Circumference (C)
Any polygon: $P =$ sum of side lengths
Rectangle: $P = 2\ell + 2w$
Circle: $C = 2\pi r$ or πd

Plane Figures	Area (A)
Triangle 	$A = \frac{1}{2}bh$
Rectangle 	$A = \ell w$
Circle 	$A = \pi r^2$

Solid Figures	Volume (V)
Prism 	$V = Bh$ or $V = \ell wh$
Cube 	$V = s^3$

n	\sqrt{n}	n^2
1	1.000	1
2	1.414	4
3	1.732	9
4	2.000	16
5	2.236	25
6	2.449	36
7	2.646	49
8	2.828	64
9	3.000	81
10	3.162	100
11	3.317	121
12	3.464	144
13	3.606	169
14	3.742	196
15	3.873	225
16	4.000	256
17	4.123	289
18	4.243	324
19	4.359	361
20	4.472	400
21	4.583	441
22	4.690	484
23	4.796	529
24	4.899	576
25	5.000	625

Abbreviations	
$A =$ area	$\ell =$ length
$B =$ area of base	$P =$ perimeter
$b =$ base	$r =$ radius
$C =$ circumference	$s =$ length of side
$d =$ diameter	$V =$ volume
$h =$ height	$w =$ width

Diagnostic Test



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

1 The diameter of a circular pizza pan is 16 inches. What is the area, to the nearest tenth, of the pan? **AI spi.4.2.A** 1 _____

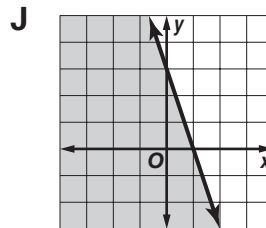
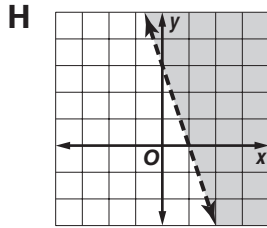
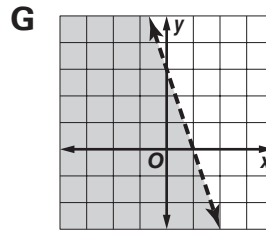
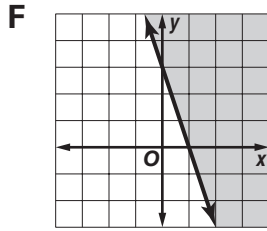
A 50.3 in^2

B 100.5 in^2

C 201.1 in^2

D 804.2 in^2

2 Which graph represents $y \leq -3x + 3$? **AI spi.2.2.L** 2 _____



3 Which list is ordered from greatest to least? **AI spi.1.2.A** 3 _____

A $-7.21, -7\frac{2}{7}, -7\frac{2}{5}, -7.46$

B $-7.21, -7\frac{2}{5}, -7\frac{2}{7}, -7.46$

C $-7\frac{2}{7}, -7.21, -7\frac{2}{5}, -7.46$

D $-7\frac{2}{7}, -7.21, -7.46, -7\frac{2}{5}$

4 Solve $12f - 15 + 3 + 16f = -2f - 12 + 20$ for f . **AI spi.2.2.E** 4 _____

F $\frac{10}{13}$

G $\frac{2}{3}$

H $-\frac{2}{13}$

J -10

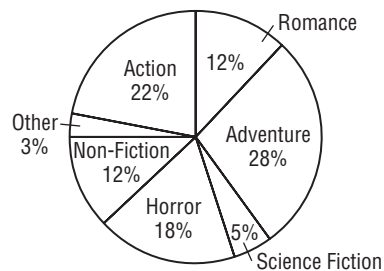
5 The graph shows the results of a survey given to 800 students about which type of book they prefer to read. How many students prefer to read either action or science fiction books? **AI spi.5.1.C** 5 _____

A 27 students

B 40 students

C 176 students

D 216 students



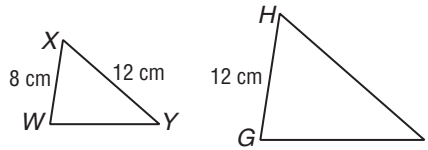
Go on

Diagnostic Test (continued)

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

- 6 If $\triangle WXY \sim \triangle GHI$, what is HI ? **AI spi.3.2.B**

F 18 cm **G** 16 cm
H 12 cm **J** 8 cm



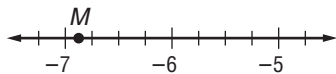
6 _____

- 7 It takes Jacki 3 hours to complete 7 posters and 9 hours to complete 21 posters. How long will it take her to complete 28 posters? **AI spi.2.2.K**

A $65\frac{1}{3}$ h **B** 21 h
C 12 h **D** 11 h

7 _____

- 8 Which is the best estimate of the coordinate of point M ? **AI spi.1.1.A**



F $-6\frac{1}{8}$ **G** $-6\frac{3}{4}$
H $-6\frac{7}{8}$ **J** $-7\frac{1}{8}$

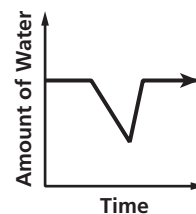
8 _____

- 9 Evaluate $4g + 2h - 6h + 3g$ for $g = 2$ and $h = -8$. **AI spi.2.1.D**

A 78 **B** 46
C -50 **D** -64

9 _____

- 10 Jamal carries a water bottle with him on a field trip to Cades Cove in the Great Smoky Mountains National Park. The graph shows the amount of water in the bottle over a given time period while at Cades Cove. Which description best matches the graph? **AI spi.2.2.M**



10 _____

- F** The water bottle is full at the beginning of the period. Jamal drinks some of the water and then sets the bottle aside.
G The water bottle is full at the beginning of the period. Then Jamal drinks some of the water, refills the bottle, and sets it aside.
H The water bottle is full at the beginning of the period. Then Jamal drinks all of the water, refills the bottle, and sets it aside.
J Jamal fills the water bottle, drinks some of the water, refills the bottle, and sets it aside.

Go on

Diagnostic Test (continued)



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

11 What is the reciprocal of $\frac{56}{9}$? **AI spi.1.2.B**

A $-\frac{56}{9}$

B $\frac{9}{65}$

C $\frac{9}{56}$

D $\frac{21}{2}$

11 _____

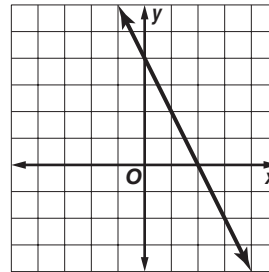
12 What is the slope of the line shown? **AI spi.2.2.J**

F 2

G $\frac{1}{2}$

H $-\frac{1}{2}$

J -2



12 _____

13 In their first 5 games of the season, a college football team scored 28 points, 33 points, 15 points, 40 points, and 15 points. What is the mean number of points scored in the 5 games? **AI spi.5.1.A**

A 15 points

B 26.2 points

C 28 points

D 29 points

13 _____

14 Miranda is buying steaks at a grocery store in Jackson. She can buy 2 pounds of steak for \$10.98, 4 pounds of steak for \$22.09, or 7 pounds of steak for \$38.75. Which number of pounds is the best buy? **AI spi.4.1.B**

F 2 lb and 7 lb are equally good buys.

G 2 lb

H 4 lb

J 7 lb

14 _____

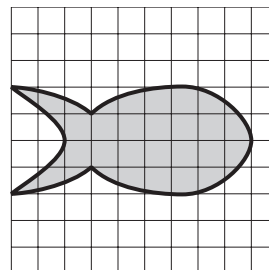
15 Which is the best estimate for the area of the fish? **AI spi.4.1.A**

A 25 units²

B 60 units²

C 125 units²

D 160 units²



15 _____



Diagnostic Test (continued)



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

16 How do the graphs of $y = -\frac{1}{4}x + 6$ and $y = \frac{1}{4}x + 6$ differ? **AI spi.2.3.B** **16** _____

- F** The first graph is a vertical line and the second graph is a horizontal line.
G The graphs are perpendicular to each other.
H The first graph rises from left to right and the second graph falls from left to right.
J The first graph falls from left to right and the second graph rises from left to right.

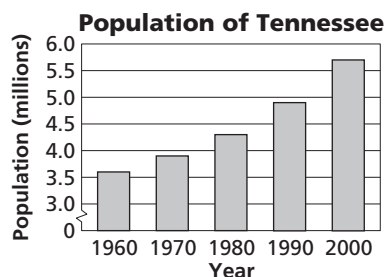
17 If a souvenir shop had sold \$4500 more in souvenirs of Lookout Mountain near Chattanooga this year, then the sales from those souvenirs would have been twice last year's sales. If sales this year from the souvenirs totaled \$22,400, which equation can be used to find the amount s of last year's sales? **AI spi.2.2.B** **17** _____

- A** $4500 + s = 2(22,400)$ **B** $4500 + 2s = 22,400$
C $22,400 + 4500 = 2s$ **D** $22,400 = 2(s + 4500)$

18 Hillary is buying carpeting for her bedroom and closet. The bedroom has an area of 206.5 square feet, and the closet has an area of 43 square feet. If the carpet costs \$2.98 per square foot, and installation costs \$1.05 per square foot, which is the best estimate of how much it will cost to have carpeting installed in the bedroom and closet? **AI spi.1.2.E** **18** _____

- F** \$750 **G** \$800 **H** \$1000 **J** \$1200

19 The bar graph shows the approximate population of Tennessee for five different U.S. census years. Approximately how many more people were living in Tennessee in 2000 than in 1970? **AI spi.5.1.B**



- A** 1,400,000 people
B 1,800,000 people
C 2,100,000 people
D 2,800,000 people

20 The surface level of a reservoir is at an elevation of 840 feet on July 1. If the reservoir is dropping an average of 3 inches per day, and this rate remains constant, about what will be the elevation of the surface on July 31? **AI spi.2.2.K** **20** _____

- F** 835 ft **G** 832.5 ft
H 830 ft **J** 750 ft



Diagnostic Test (continued)



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

26 Simplify $(2c - 5)(-3c - 1)$. **AI spi.1.2.D** 26 _____

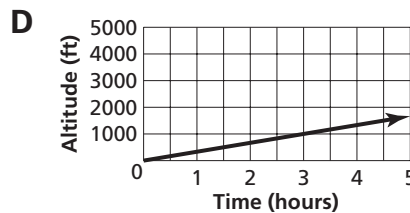
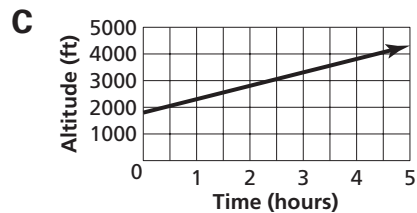
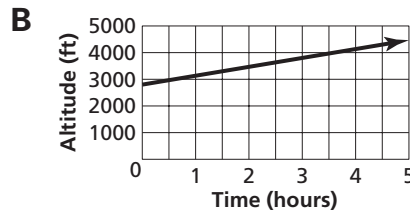
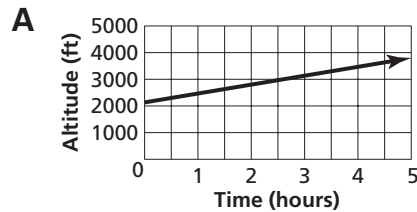
F $-6c^2 + 13c + 5$

G $-6c^2 - 17c + 5$

H $-c - 6$

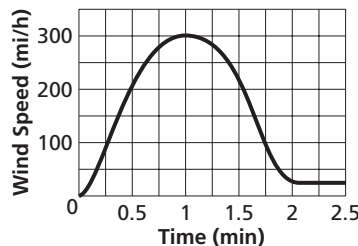
J $-6c^2 + 5$

27 Claude and Sofia are hiking up a mountain near Elkmont. After 2 hours they are at an altitude of 2800 feet. They continue to climb at a rate of 500 feet every 1.5 hours. Which graph models this climb? **AI spi.2.2.G** 27 _____



Use the following information to answer Questions 28 and 29.

The graph shows the wind speed at a given location as a tornado with a Fujitsa scale ranking of F5 passes over the location.



28 What is the domain D of the graph? 28 _____

F $0 \leq D \leq 300$

AI spi.2.3C

G $D = 1$

H $0 \leq D \leq 1$

J $0 \leq D \leq 2.5$

29 What is the range R of the graph? **AI spi.2.3.C** 29 _____

A $0 \leq R \leq 2.5$

B $25 \leq R \leq 300$

C $R = 300$

D $0 \leq R \leq 300$

30 What is the opposite of $-\frac{7}{8}$? **AI spi.1.1.B** 30 _____

F -0.875

G $\frac{7}{8}$

H -7×8

J $-\frac{8}{7}$

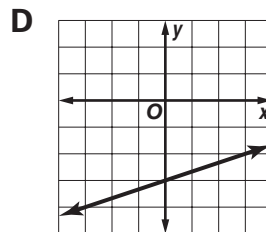
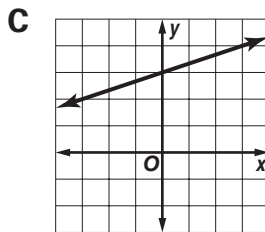
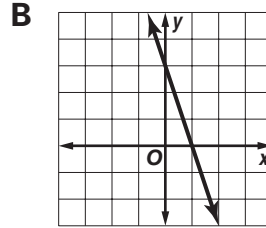
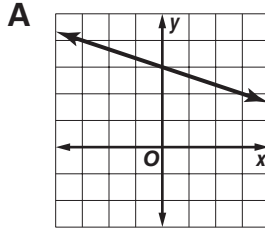
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Diagnostic Test (continued)



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

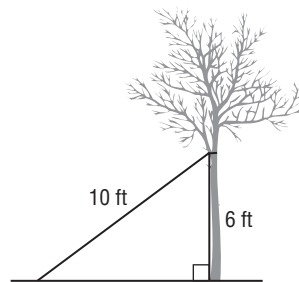
- 31 Which graph represents $y = -\frac{1}{3}x + 3$? **AI spi.2.2.C** 31 _____



- 32 Carlos is laying bricks end-to-end to border one side of a path from his house to his garden. If each brick is 8 inches long and the path is 35 feet long, how many bricks will Carlos need to buy? **AI spi.1.1.F** 32 _____
- F** 4 bricks **G** 5 bricks
H 52 bricks **J** 53 bricks

- 33 Evaluate $3t^2 - (2t + 3)^2 - t^3 + 7$ for $t = -5$. **AI spi.2.2.I** 33 _____
- A** -242 **B** -92
C 8 **D** 158

- 34 Zach is planting a willow tree. He plans to anchor the tree with a rope 10 feet long as shown in the diagram. If Zach ties the rope to the tree 6 feet above the ground, how far from the base of the tree must he anchor the rope in the ground? **AI spi.3.2.A** 34 _____
- F** 4 ft **G** 8 ft
H 9 ft **J** 16 ft



- 35 Bailey's age is 3 less than half of Morgan's age m . Which expression represents Bailey's age? **AI spi.2.1.C** 35 _____
- A** $0.5(m - 3)$ **B** $3 - 0.5m$
C $0.5m - 3$ **D** $0.5(3 - m)$



Diagnostic Test (continued)



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

36 Simplify $3 \cdot 2 \cdot p \cdot p \cdot p \cdot s \cdot s \cdot t \cdot t$. **AI spi.1.1.D**

F $72pst$

H $6(pst)^2$

G $6pst^7$

J $6p^3s^2t^2$

36 _____

37 Which is an area representation of $(4x + 1)(2x + 3)$? **AI spi.4.3.A**

A

x^2	x^2	x^2	x^2	x
x^2	x^2	x^2	x^2	x
x^2	x^2	x^2	x^2	x
x	x	x	x	1
x	x	x	x	1

B

x^2	x^2	x^2	x^2	x
x^2	x^2	x^2	x^2	x
x	x	x	x	1
x	x	x	x	1
x	x	x	x	1

C

x	x	x	x	1
x	x	1	1	1

D

x^2	x^2	x^2	x^2	1	1
x^2	x^2	x^2	x^2	1	

37 _____

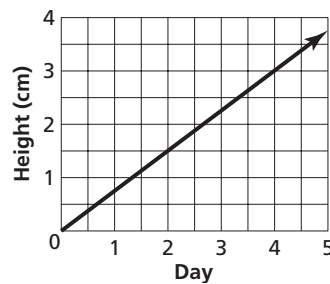
38 The graph shows the growth of a newly sprouted soybean plant. If the plant continues to grow at the same rate, how tall will it be in 8 days? **AI spi.5.2.B**

F 4.5 cm

G 5.25 cm

H 6 cm

J 7.5 cm



38 _____

39 Pedro's parents are going to buy new carpeting for his bedroom, which is 12 feet long and 15 feet wide. How many square yards of carpet must they buy? **AI spi.4.1.C**

A 180 yd^2

C 30 yd^2

B 60 yd^2

D 20 yd^2

39 _____

40 Solve $15 - 3d = -20$ for d . **AI spi.2.1.E**

F $11\frac{2}{3}$

G $1\frac{2}{3}$

H $-1\frac{2}{3}$

J -8

40 _____



Diagnostic Test (continued)



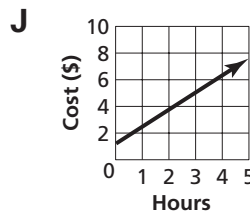
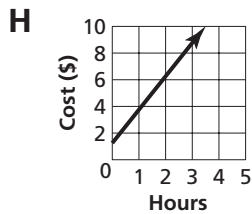
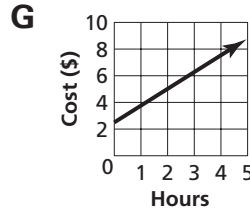
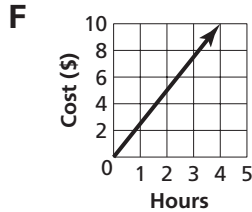
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 41** Devon is going to select 3 pictures of the Tennessee National Wildlife Refuge out of 48 pictures to enlarge as a gift for his parents. How many different groups of 3 pictures can he select? **AI spi.5.3.A** **41** _____
- A** 103,776 groups **B** 17,296 groups
C 144 groups **D** 16 groups

- 42** The table shows the cost c of parking h hours at a shopping mall parking garage. Which graph models the cost as a function of the number of hours? **42** _____

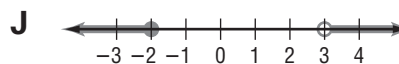
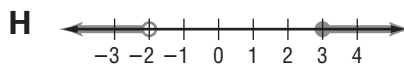
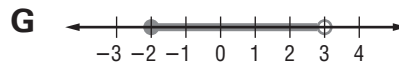
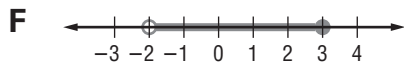
h	1	2	3	4
c	2.50	3.75	5.00	6.25

AI spi.2.2.H



- 43** The height of a pine tree p is 16 feet more than 1.3 times the height of a maple tree m . Which equation represents this situation? **AI spi.2.2.B** **43** _____
- A** $p = 1.3m + 16$ **B** $p + 16 = 1.3m$
C $m = 1.3p + 16$ **D** $1.3p = m + 16$

- 44** Which graph represents $-2 \leq x < 3$? **AI spi.2.2.N** **44** _____



- 45** Solve $-2x + 14 = 2x - 19$ for x . **AI spi.2.2.E** **45** _____
- A** 8.25
B -1.25
C -8.25
D no solution



Diagnostic Test (continued)

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

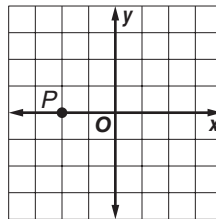
46 Which ordered pair represents point P ? **AI spi.3.1.A**

F $(0, -2)$

G $(0, 2)$

H $(-2, 0)$

J $(2, 0)$



46 _____

47 Simplify $5k + 6j - (12jk + 10k) + 17jk - 8j$. **AI spi.1.2.C**

A $-2j + 15k + 29jk$

B $-2j - 5k + 5jk$

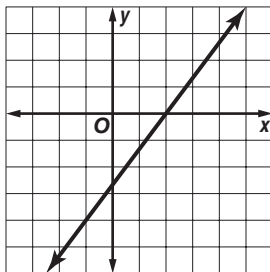
C $-2jk$

D $-2j + 15k + 5jk$

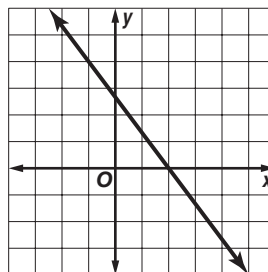
47 _____

48 Which graph contains the points at $(-1, 4)$ and $(2, 0)$? **AI spi.5.2.A**

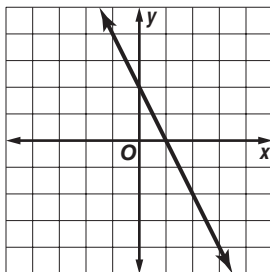
F



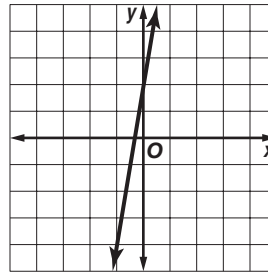
G



H



J



48 _____

49 The area of a square bathroom floor is 36 square feet. What is the length of a side of the floor? **AI spi.1.1.C**

A 18 ft

B 12 ft

C 9 ft

D 6 ft

49 _____

50 Ahman and Ella are going to a fair in Nashville. They have budgeted \$35 for the fair. If it costs \$7 for each person to enter the fair and an additional \$1.50 per person per arcade game, how many games can they play in total? **AI spi.2.3.A**

F 32 or fewer

G 23 or fewer

H 18 or fewer

J 14 or fewer

50 _____



Diagnostic Test (continued)



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

51 Solve $-3(4w - 3) + 6w = 2(5 + w - 9) - 1$ for w . **AI spi.2.2.F** **51** _____

- A** $2\frac{1}{4}$
- B** $2\frac{1}{8}$
- C** 0
- D** $-\frac{3}{7}$

52 Simplify $8 + (3 - 6) \times 3 + 12 - 14 - 4^2$. **AI spi.1.1.E** **52** _____

- F** 29
- G** 13
- H** -3
- J** -19

53 What is the next number in the pattern shown? **AI spi.2.1.B** **53** _____

188, 195, 202, 209, 216, ...

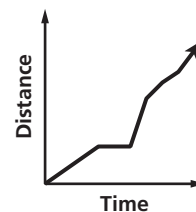
- A** 218
- B** 219
- C** 221
- D** 223

54 Owen and Angela own four dogs, each of a different breed. The amount of food the four dogs eat per day is 2.1 pounds, 1.7 pounds, 0.5 pound, and 1.3 pounds. What is the median number of pounds of food the dogs eat in a day? **AI spi.5.2.C** **54** _____

- F** 1.4 pounds
- G** 1.5 pounds
- H** 1.6 pounds
- J** 1.7 pounds

55 The graph models Raul's trip as he is traveling in his car to go to the Grand Ole Opry. What could the horizontal line segment on the graph represent? **AI spi.1.3.A** **55** _____

- A** Raul traveling at a constant speed
- B** Raul traveling on a road without hills
- C** Raul stopped at a stop light
- D** Raul braking to avoid a hole in the road



Standards Practice

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

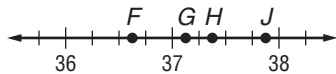
PERFORMANCE INDICATOR AI spi.1.1.A Select the best estimate for the coordinate of a given point on a number line (only rational).

- 1 Which is the best estimate of the coordinate of point D on the number line? 1 _____



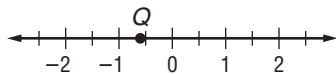
- A 230 B 240
C 250 D 260

- 2 Which point best represents a coordinate of $37\frac{3}{8}$ on the number line? 2 _____



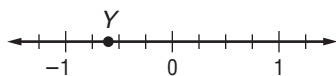
- F F G G
H H J J

- 3 Which is the best estimate of the coordinate of point Q on the number line? 3 _____



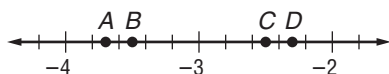
- A -1.4 B -0.6
C -0.5 D -0.4

- 4 Which is the best estimate of the coordinate of point Y on the number line? 4 _____



- F $-1\frac{2}{5}$ G $-\frac{3}{5}$
H $-\frac{1}{2}$ J $-\frac{1}{4}$

- 5 Which point best represents a coordinate of -3.7 on the number line? 5 _____



- A A B B
C C D D

Standards Practice



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

PERFORMANCE INDICATOR AI spi.1.1.B Identify the opposite of a rational number.

1 What is the opposite of 1.6? 1 _____

- A 6.1
- B 0.625
- C -0.4
- D -1.6

2 What is the opposite of -0.2 ? 2 _____

- F 5
- G 0.2
- H -0.8
- J -2.0

3 What is the opposite of $\frac{3}{8}$? 3 _____

- A $\frac{8}{3}$
- B 0.375
- C $-\frac{3}{8}$
- D 3×8

4 What is the opposite of 4? 4 _____

- F 0.4
- G 0.25
- H -0.4
- J -4

5 What is the opposite of $-\frac{5}{4}$? 5 _____

- A $\frac{5}{4}$
- B $-\frac{4}{5}$
- C -1.25
- D $5 \times (-4)$

Standards Practice



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

PERFORMANCE INDICATOR AI spi.1.1.C Determine the square root of a perfect square less than 169.

1 The area of a square parking lot at a Pigeon Forge convenience store is 144 square yards. What is the length of one side of the parking lot? **1** _____

- A** 12 yd
- B** 36 yd
- C** 48 yd
- D** 72 yd

2 Simplify $\sqrt{64}$. **2** _____

- F** 4
- G** 8
- H** 16
- J** 32

3 Simplify $-\sqrt{81}$. **3** _____

- A** 9
- B** 3
- C** -3
- D** -9

4 Simplify $-\sqrt{16}$. **4** _____

- F** -8
- G** -6
- H** -4
- J** -2

5 Simplify $\sqrt{121}$. **5** _____

- A** 10.5
- B** 11
- C** 12.1
- D** 60.5

Standards Practice



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

PERFORMANCE INDICATOR AI spi.1.1.D Use exponents to simplify a monomial written in expanded form.

1 Simplify $x \cdot x \cdot x \cdot y \cdot y$. 1 _____

- A $5xy$
- B $3x2y$
- C xy^5
- D x^3y^2

2 Simplify $2 \cdot x \cdot y \cdot y \cdot z \cdot z$. 2 _____

- F $2xy^2z^2$
- G $2x2y2z$
- H $2(xyz)^2$
- J xyz^{10}

3 Which represents $3a^3b^2$ in expanded form? 3 _____

- A $3 + a \cdot a \cdot a + b \cdot b$
- B $18 \cdot a \cdot b$
- C $3 \cdot a \cdot a \cdot a \cdot b \cdot b$
- D $3 + 3a + 2b$

4 Simplify $2 \cdot 3 \cdot 5 \cdot c \cdot c \cdot c \cdot c \cdot c$. 4 _____

- F $150c$
- G $10c^5$
- H $30 + 5c$
- J $30c^5$

5 Simplify $-3 \cdot r \cdot r \cdot s \cdot s \cdot t \cdot t$. 5 _____

- A $-24rst$
- B $-3r^2s^2t^2$
- C $-3 + 2r + 2s + 2t$
- D $-3rst$

Standards Practice



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

PERFORMANCE INDICATOR AI spi.1.1.E Apply order of operations when computing with integers using no more than two sets of grouping symbols and exponents 1 and 2.

1 Simplify $-4 + 3(1 - 6) + 7^2$. 1 _____

- A 53
- B 42
- C 30
- D -5

2 Simplify $(2 + 6)^2 - 3(4 + 9)$. 2 _____

- F 103
- G 61
- H 35
- J 25

3 Simplify $(-12 - 3^2) \div 3 - (12 - 7)^2$. 3 _____

- A -32
- B -31
- C $\frac{21}{22}$
- D 50

4 Which expression is equivalent to $6 - 2 \times 4 + 14 \div 2$? 4 _____

- F $(6 - 2) \times (4 + 14) \div 2$
- G $6 - [(2 \times 4) + 14] \div 2$
- H $(6 - 2 \times 4 + 14) \div 2$
- J $6 - (2 \times 4) + (14 \div 2)$

5 Simplify $[-8 + 3(6 - 7)^2] \times (-4)$. 5 _____

- A -68
- B 20
- C 44
- D 156

Standards Practice



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

PERFORMANCE INDICATOR AI spi.1.2.A Order a given set of rational numbers (both fraction and decimal notations).

1 Which set of numbers is ordered from least to greatest? **1** _____

A $-\frac{5}{6}, -\frac{1}{2}, -\frac{3}{8}, \frac{1}{4}, \frac{2}{3}$

B $-\frac{5}{6}, \frac{1}{4}, -\frac{3}{8}, -\frac{1}{2}, \frac{2}{3}$

C $-\frac{5}{6}, \frac{2}{3}, -\frac{1}{2}, -\frac{3}{8}, \frac{1}{4}$

D $-\frac{3}{8}, -\frac{5}{6}, -\frac{1}{2}, \frac{1}{4}, \frac{2}{3}$

2 Which list is ordered from least to greatest? **2** _____

F $-2.01, -2.1, 2.001, 2.101$

G $-2.01, 2.001, -2.1, 2.101$

H $-2.1, -2.01, 2.001, 2.101$

J $-2.1, -2.01, 2.101, 2.001$

3 Which list is ordered from greatest to least? **3** _____

A $2\frac{1}{2}, 2.35, -2.7, -2\frac{2}{3}$

B $-2.7, -2\frac{2}{3}, 2.35, 2\frac{1}{2}$

C $2.35, 2\frac{1}{2}, -2\frac{2}{3}, -2.7$

D $2\frac{1}{2}, 2.35, -2\frac{2}{3}, -2.7$

4 Which set of numbers is ordered from least to greatest? **4** _____

F $-2, -\frac{52}{25}, -\frac{19}{9}, -\frac{7}{3}$

G $-\frac{52}{25}, -\frac{19}{9}, -\frac{7}{3}, -2$

H $-\frac{19}{9}, -\frac{52}{25}, -2, -\frac{7}{3}$

J $-\frac{7}{3}, -\frac{19}{9}, -\frac{52}{25}, -2$

5 Which set of decimal numbers is ordered from greatest to least? **5** _____

A $-6.7005, -6.705, -6.75, -6.07005, -6.075$

B $-6.75, -6.705, -6.7005, -6.075, -6.07005$

C $-6.07005, -6.075, -6.7005, -6.705, -6.75$

D $-6.7005, -6.07005, -6.705, -6.075, -6.75$

Standards Practice



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

PERFORMANCE INDICATOR AI spi.1.2.B Identify the reciprocal of a rational number.

1 What is the reciprocal of $-\frac{4}{5}$? **1** _____

A $-\frac{5}{4}$

B $\frac{1}{5}$

C $\frac{4}{5}$

D $\frac{5}{4}$

2 What is the reciprocal of 0.4? **2** _____

F -0.4

G 0.6

H 2.5

J 4

3 What is the reciprocal of $\frac{1}{7}$? **3** _____

A -7

B $-\frac{1}{7}$

C $\frac{6}{7}$

D 7

4 What is the reciprocal of -8 ? **4** _____

F -4

G $-\frac{1}{8}$

H $\frac{1}{8}$

J 8

5 What is the reciprocal of $3\frac{4}{5}$? **5** _____

A $-3\frac{4}{5}$

B $3\frac{1}{5}$

C $\frac{5}{19}$

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

Standards Practice



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

PERFORMANCE INDICATOR AI spi.1.2.C Add and subtract algebraic expressions.

1 Simplify $-5y + 4y^3 + 4y - 3y^2 + y^3 - y^2$. **1** _____

- A $5y^6 - 4y^4 - y^2$
- B $5y^3 - 4y^2 - y$
- C $4y^3 - 3y^2 - y$
- D $4y^3 + 3y^2 - 20y$

2 Simplify $r^2s - rs^2 - 2r^2s + 3rs^2 - 5rs$. **2** _____

- F $-r^2s - 5rs$
- G $r^2s - 5rs$
- H $-r^2s + 2rs^2 - 5rs$
- J $-4r^3s^3$

3 Simplify $7x^4 + 13x^3 - 9x + 6 - (6x^3 - 4x + 16)$. **3** _____

- A $7x^4 + 7x^3 - 5x - 10$
- B $7x^4 + 7x^3 - 13x - 10$
- C $7x^4 + 7x^3 - 13x + 22$
- D $11x^6 - 2x^2 + 22$

4 Simplify $-2ab^3(-a^3 - 4a^2b) - a^4b^3 + 5a^3b^4 - b^3$. **4** _____

- F $-3a^4b^3 - 3a^3b^4 - b^3$
- G $a^4b^3 + 13a^3b^4 - b^3$
- H $a^4b^3 - 3a^3b^4 - b^3$
- J $2a^3b^3 + 8a^2b^3 - a^4b^3 + 5a^3b^4 - b^3$

5 Simplify $3(2z^4 - 6z) + 3(4z^4 + 8z)$. **5** _____

- A $18z^4 + 2z$
- B $6z^{12} + 2z^3$
- C $12z^4 + 2z$
- D $18z^4 + 6z$

Standards Practice



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

PERFORMANCE INDICATOR AI spi.1.2.D Multiply two polynomials with each factor having no more than two terms.

1 Simplify $(2x - 3)(x + 4)$. **1** _____

A $2x^2 - 12$

B $3x + 1$

C $2x^2 + 5x - 12$

D $2x^2 + x - 12$

2 Simplify $(x + 6)(x + 4)$. **2** _____

F $x^2 + 10x + 24$

G $x^2 + 10x + 10$

H $2x + 10$

J $x^2 + 24$

3 Simplify $(5x - 7)(2x - 4)$. **3** _____

A $7x - 11$

B $10x^2 - 34x + 28$

C $10x^2 + 28$

D $10x^2 + 18x - 28$

4 What is the product of the binomials $x + 9$ and $2x - 2$? **4** _____

F $2x^2 + 7x - 18$

G $2x^2 - 18$

H $3x + 7$

J $2x^2 + 16x - 18$

5 What is the product of the binomials $-8x + 2$ and $3x - 4$? **5** _____

A $-24x^2 - 26x - 8$

B $-24x^2 - 8$

C $-24x^2 + 38x - 8$

D $-5x - 2$

Standards Practice



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

PERFORMANCE INDICATOR AI spi.1.2.F Select ratios and proportions to represent real-world problems (e.g., scale drawings, sampling, etc.).

- 1** The U.S. Senate passed a bill with 85 senators voting yes and 15 senators voting no. What is the ratio of yes votes to no votes? **1** _____

A 3:17

B 17:20

C 3:20

D 17:3

- 2** The scale on a Tennessee map is 2 centimeters to 15 miles. If the distance from Morristown to Clarksville is 270 miles, which proportion can be used to find the distance in centimeters on the map x ? **2** _____

F $\frac{2}{x} = \frac{270}{15}$

G $\frac{2}{15} = \frac{x}{270}$

H $\frac{2}{15} = \frac{270}{x}$

J $\frac{x}{2} = \frac{15}{270}$

- 3** A recipe for making 36 chocolate chip cookies uses 2 cups of chocolate chips. Clarisse wants to make 54 chocolate chip cookies. Which proportion can she use to find how many cups c of chocolate chips she should use? **3** _____

A $\frac{36}{2} = \frac{54}{c}$

B $\frac{2}{36} = \frac{54}{c}$

C $\frac{2}{c} = \frac{54}{36}$

D $\frac{c}{36} = \frac{54}{2}$

- 4** Yung is presenting a slide show of his trip on a paddle-wheel steamer on the Mississippi River to his class. On a slide, an image of Yung is 3 millimeters tall. On the screen, his image is 1.2 meters tall. Which ratio compares Yung's height on the slide to his height on the screen? **4** _____

F 1 to 4

G 1 to 40

H 1 to 400

J 1 to 1200

- 5** The average growth rate of Carly's hair is 50 millimeters every 2 months. If this rate continues, what proportion can Carly use to find how many months m it will take her hair to grow 15 centimeters? **5** _____

A $\frac{50}{2} = \frac{15}{m}$

B $\frac{50}{2} = \frac{m}{150}$

C $\frac{50}{15} = \frac{2}{m}$

D $\frac{2}{50} = \frac{m}{150}$

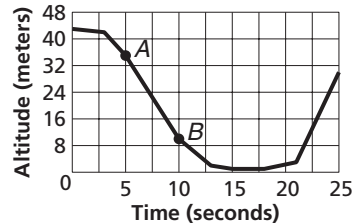
Standards Practice



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

PERFORMANCE INDICATOR AI spi.1.3.A Apply the concept of slope to represent rate of change in a real-world situation.

Use the graph of the flight of a bald eagle to answer Questions 1 and 2.



1 What is the rate of change in the height of the eagle's flight from point A to point B?

- A -5 m/sec B $-\frac{1}{5}$ m/sec
C $\frac{1}{5}$ m/sec D 5 m/sec

1 _____

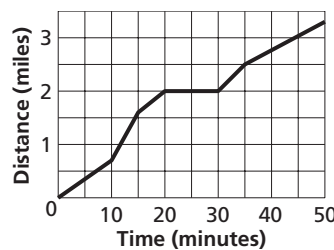
2 Which interval represents the time when the rate of descent is the greatest?

- F 0 sec to 3 sec G 3 sec to 10 sec
H 13 sec to 21 sec J 21 sec to 25 sec

2 _____

Use the graph to answer Questions 3–5.

Kwasi walks, jogs, and runs on a Cumberland Mountain State Park trail. The graph represents one of her workouts.



3 Which is the most reasonable interpretation of the steepest segment of the graph?

- A Kwasi resting
B Kwasi walking
C Kwasi jogging
D Kwasi running down a hill

3 _____

4 Which is the most reasonable interpretation of the horizontal segment of the graph?

- F Kwasi resting G Kwasi walking
H Kwasi jogging J Kwasi running down a hill

4 _____

5 What was Kwasi's rate of change between 30 minutes and 35 minutes?

- A $\frac{1}{10}$ mi/min B $\frac{2}{15}$ mi/min
C $\frac{3}{20}$ mi/min D $\frac{15}{2}$ mi/min

5 _____

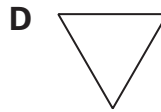
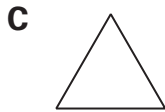
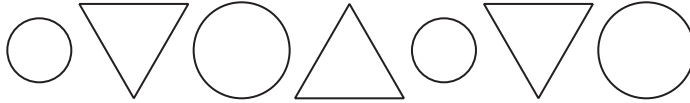
Standards Practice

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

PERFORMANCE INDICATOR AI spi.2.1.A Extend a geometric pattern.

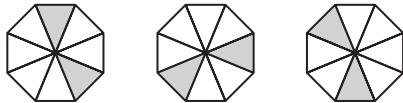
1 What is the next figure in the pattern?

1 _____



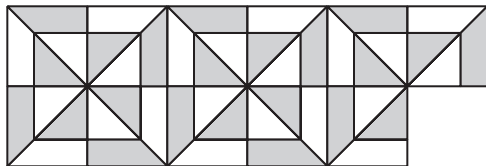
2 What is the next figure in the pattern?

2 _____



3 Malcolm and his sister Mahalia are making a quilt. Which figure comes next in the quilt pattern?

3 _____



Standards Practice



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

PERFORMANCE INDICATOR AI spi.2.1.B Extend a numerical pattern.

1 What is the next number in the pattern 2, 5, 11, 23, 47, ...? **1** _____

- A 68
- B 76
- C 84
- D 95

2 What is the next number in the sequence 1, 4, 3, 6, 5, 8, 7, 10, 9, ...? **2** _____

- F 14
- G 13
- H 12
- J 11

3 The table shows the costs for different lengths of time for Chris, who lives in Murfreesboro, to call her cousin, who lives in the Czech Republic. What is the cost to Chris for making a 30-minute call? **3** _____

Length of Call (min)	10	15	20	25
Cost (\$)	2.45	3.05	3.65	4.25

- A \$4.85
- B \$4.75
- C \$4.60
- D \$4.55

4 What is the eighth number in the pattern 31, 23, 15, 7, -1, ...? **4** _____

- F -25
- G -23
- H -22
- J -19

5 What is the next number in the sequence $\frac{1}{3}, -\frac{1}{9}, \frac{1}{27}, -\frac{1}{81}, \dots$? **5** _____

- A $-\frac{1}{3}$
- B $-\frac{1}{243}$
- C $\frac{1}{243}$
- D $\frac{1}{84}$

Standards Practice



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

PERFORMANCE INDICATOR AI spi.2.1.C Translate a verbal expression into an algebraic expression.

- 1 The number of antique glass electrical insulators that Amy has is 3 less than 4 times the number of insulators n that Clinton has. Which expression represents the number of insulators Amy has? **1** _____
- A** $3 - 4n$
B $3n - 4$
C $4n - 3$
D $4 - 3n$
- 2 Which expression represents 6 times the sum of a number y and 2? **2** _____
- F** $6(y + 2)$
G $6y + 2$
H $(6 + 2)y$
J $6(y - 2)$
- 3 Which expression represents 8 less than the quotient of a number x and 3? **3** _____
- A** $\frac{3}{x} - 8$
B $\frac{x}{3} - 8$
C $\frac{x - 8}{3}$
D $\frac{8}{x} - 3$
- 4 Gabriel has 1 fewer Tennessee state quarters than twice the difference of 5 and the number of Kentucky state quarters k that he has. Which expression represents the number of Tennessee state quarters that Gabriel has? **4** _____
- F** $2(5 - k) - 1$
G $1 - 2(k - 5)$
H $1 - 2(5 - k)$
J $2(5 - k - 1)$
- 5 Which expression represents 36 decreased by 6 times a number b ? **5** _____
- A** $6b - 36$
B $b(36 - 6)$
C $\frac{36}{6b}$
D $36 - 6b$

Standards Practice



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

PERFORMANCE INDICATOR AI spi.2.1.D Evaluate a first degree algebraic expression given values for one or more variables.

- 1 Evaluate $-4p - 8$ for $p = 2$. **1** _____
- A** -16
B -14
C -10
D 0
- 2 What is the value of $-6r + 8s$ when $r = -2$ and $s = 4$? **2** _____
- F** -40
G 4
H 20
J 44
- 3 Evaluate $3w + 7x - 4y + 3w - 7x + 10y$ for $w = -5$, $x = 2$, and $y = 9$. **3** _____
- A** 28
B 26
C 24
D 22
- 4 What is the value of $2(2x + z)$ when $x = 7$ and $z = -6$? **4** _____
- F** 40
G 16
H 3
J -10
- 5 The total expense for gasoline and food for Tamika's 415-mile car trip from Jackson to Johnson City is given by $415m + 2f$, where m is the cost of fuel per mile driven and f is the cost of a meal. If Tanya knows that the cost of fuel per mile driven for her car is \$0.07 at today's prices, and if she budgets so that f is \$5.50, how much will the gasoline and food for the trip cost Tamika? **5** _____
- A** \$29.05
B \$34.55
C \$40.05
D \$301.50

Standards Practice



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

PERFORMANCE INDICATOR AI spi.2.1.E Solve one- and two-step linear equations using integers (with integral coefficients and constants).

- 1 Solve $3 + 7x = 17$ for x . 1 _____
- A 2
B $2\frac{6}{7}$
C 7
D 8
- 2 Solve $-9 + d = 12$ for d . 2 _____
- F -3
G $-1\frac{1}{3}$
H 3
J 21
- 3 What is the solution of $16 - 3t = 0$? 3 _____
- A -19
B $\frac{3}{16}$
C $5\frac{1}{3}$
D 13
- 4 The equation $15 = 6r$ expresses the relationship between a hiking distance of 15 miles, a hiking time of 6 hours, and a hiking rate of r miles per hour. What is the value of r ? 4 _____
- F $\frac{2}{5}$ mi/h
G $1\frac{2}{3}$ mi/h
H $2\frac{1}{2}$ mi/h
J 9 mi/h
- 5 What value of a makes $-3a - 4 = 10$ a true statement? 5 _____
- A 17
B $-\frac{3}{14}$
C -2
D $-4\frac{2}{3}$

Standards Practice



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

PERFORMANCE INDICATOR AI spi.2.2.A Select the algebraic notation which generalizes the pattern represented by data in a given table.

- 1 Which function generalizes the pattern in the table?

1 _____

x	-2	-1	0	1
$f(x)$	4	1	0	1

A $f(x) = x^2$

B $f(x) = -2x$

C $f(x) = (x + 1)^2 + 3$

D $f(x) = -2x - 2$

- 2 During a go-cart race, Kennedy's father recorded her data in the table. Which equation generalizes the pattern for Kennedy's distance d as a function of her time t ?

2 _____

t (minutes)	0.8	1.6	2.4	3.2
d (laps)	2	4	6	8

F $t = 2.5d$

G $d = 2.5t$

H $t = 0.4d$

J $d = 0.4t$

- 3 The table shows the number of sides s in a polygon and the number of triangles t formed by diagonals drawn from one vertex of the polygon to all possible other vertices. Which equation generalizes the pattern shown in the table?

3 _____

s	4	5	6	7
t	2	3	4	5

A $s = 2t$

B $s = t - 2$

C $t = s - 2$

D $s = t^2$

- 4 Jesús measures the length of a kudzu vine that is rapidly creeping across a back corner of the school yard. The table shows the length ℓ of the vine each Monday of successive weeks w . Which equation generalizes the pattern shown in the table?

4 _____

w	1	2	3	4
ℓ	8.25	11	13.75	16.5

F $\ell = 2w + 6.25$

G $\ell = w^2 + 7.25$

H $\ell = 8.25w$

J $\ell = 2.75w + 5.5$

Standards Practice



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

PERFORMANCE INDICATOR AI spi.2.2.B Translate a verbal sentence into an algebraic equation.

- 1** Which equation represents “The sum of 2 consecutive even integers is 26”? **1** _____
- A** $2n = 26$
B $2n + (2n + 4) = 26$
C $n + (n + 2) = 26$
D $2(n + n) = 26$
- 2** The length of a rectangular parking lot is 5 times its width w . The perimeter of the parking lot is 360 feet. Which equation represents this situation? **2** _____
- F** $5w(w) = 360$
G $5w = 360$
H $5w + w = 360$
J $2(5w) + 2w = 360$
- 3** The sum of the heights of Mt. Caldwell in Warren County, elevation 1883 feet, and Harris Mountain in Overton County, elevation 1925 feet, is 497.5 feet more than half the elevation h of Mt. Guyot in the Great Smoky Mountains National Park. Which equation can be used to find the height of Mt. Guyot? **3** _____
- A** $1883 + 1925 = 0.5(h + 497.5)$
B $1883 + 1925 = 0.5h + 497.5$
C $1883 + 1925 + 497.5 = h$
D $1883 + 1925 + 0.5h = 497.5$
- 4** A group of 98 students is traveling on two buses to the National Civil Rights Museum in Memphis. One bus has 12 fewer than 1.5 times as many students as the other bus. Which equation represents this situation? **4** _____
- F** $1.5s - 12 = 98$ **G** $\frac{98}{1.5} = s + 12$
H $s + (12 - 1.5s) = 98$ **J** $s + (1.5s - 12) = 98$
- 5** Which equation represents “4 times a number k divided by the number squared equals the square root of 2”? **5** _____
- A** $\frac{4k}{k^2} = \sqrt{2}$ **B** $\frac{k + 4}{k^2} = \sqrt{2}$
C $\frac{4k}{\sqrt{k}} = 2^2$ **D** $\frac{4k}{4^2} = \sqrt{2}$

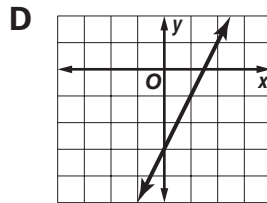
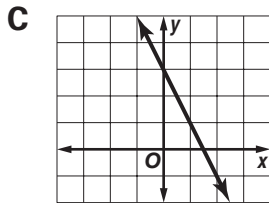
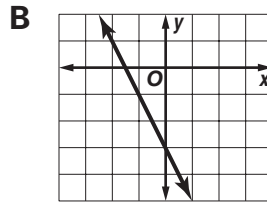
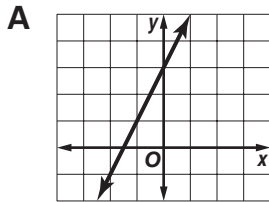
Standards Practice

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

PERFORMANCE INDICATOR AI spi.2.2.C Select the graph that represents a given linear function expressed in slope-intercept form.

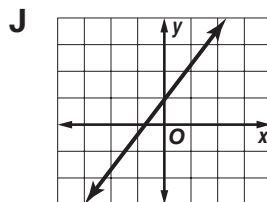
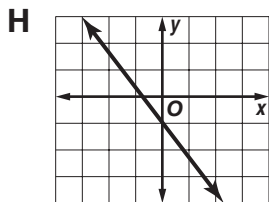
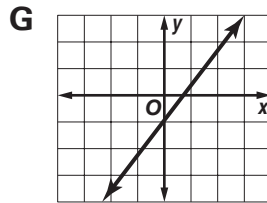
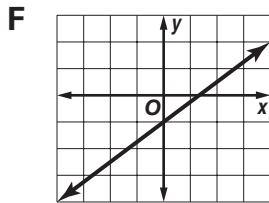
1 Which graph represents $y = -2x + 3$?

1 _____



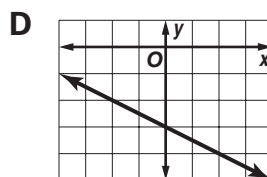
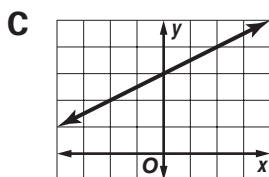
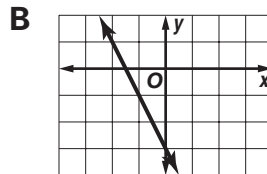
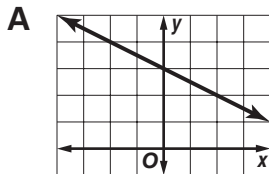
2 Which graph represents $y = \frac{4}{3}x - 1$?

2 _____



3 Which graph represents $y = -0.5x - 3$?

3 _____



Standards Practice



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

PERFORMANCE INDICATOR AI spi.2.2.D Solve multi-step linear equations (more than two steps, variables on only one side of the equation).

1 What is the solution of $2w + 6 - 7w + 12 = -18$? **1** _____

- A $7\frac{1}{5}$
- B 4
- C 0
- D -2

2 Solve $\frac{1}{3}n - \frac{1}{4}n = \frac{2(3-5)}{6}$ for n . **2** _____

- F 18
- G $-\frac{1}{18}$
- H -1
- J -8

3 What value of y makes $\frac{2y-5}{3} = 27.5$ a true statement? **3** _____

- A 175
- B 43.75
- C 43.25
- D 38.75

4 Solve $-9(t-8) = -63$ for t . **4** _____

- F -1
- G $6\frac{1}{9}$
- H 15
- J 80

5 Solve $\frac{-4b}{3} - 1 = -\frac{1}{6}$ for b . **5** _____

- A $-\frac{5}{8}$
- B $-\frac{7}{24}$
- C $\frac{7}{8}$
- D $1\frac{1}{9}$

Standards Practice



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

PERFORMANCE INDICATOR AI spi.2.2.E Solve multi-step linear equations (more than two steps, with variables on both sides of the equation).

1 What is the solution of $3x + 4x + 10x = 20x + 1.5$? **1** _____

- A -2
- B -0.5
- C -0.12
- D -0.04

2 Solve $2y - 4 + y - 2 = 6y - 8$ for y . **2** _____

- F $\frac{3}{4}$
- G $\frac{2}{3}$
- H $\frac{3}{8}$
- J $-\frac{1}{2}$

3 Solve $z - 8z + 3 = 5z + 12z + 45$ for z . **3** _____

- A 4.8
- B 4.2
- C -1.75
- D -2

4 What value of q makes $8 - 5q = q - 4$ a true statement? **4** _____

- F 3
- G 2
- H $\frac{1}{2}$
- J $-\frac{2}{3}$

5 Solve $5v - 4 = 4v + 8$ for v . **5** _____

- A $\frac{3}{4}$
- B $1\frac{1}{3}$
- C 4
- D 12

Standards Practice



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

PERFORMANCE INDICATOR AI spi.2.2.F Solve multi-step linear equations (more than two steps, with one set of parentheses on each side of the equation).

1 Solve $5(2c + 3) = 2(4c - 1)$ for c . **1** _____

A -15

B -8.5

C -2

D 6.5

2 Solve $3m - (5 - m) = 6m + 2(m - 4) - 1$ for m . **2** _____

F 1

G $\frac{3}{4}$

H $\frac{2}{3}$

J $\frac{1}{2}$

3 What is the solution of $-4(1 + p) + 3p - 10 = 5p - 2(3 - p)$? **3** _____

A -1.125

B -1

C 0

D 11

4 Solve $\frac{2}{3}(-9 + 12d) - 7 = -4(d - 2) + 3 + 2d$ for d . **4** _____

F -14

G $-1\frac{1}{4}$

H $\frac{4}{7}$

J $2\frac{2}{5}$

5 What value of h makes $-2(1 + 7h) = 3(4h + 9) + 1$ a true statement? **5** _____

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

B $-1\frac{2}{13}$

C -1

D 4

Standards Practice

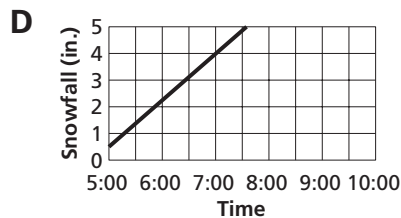
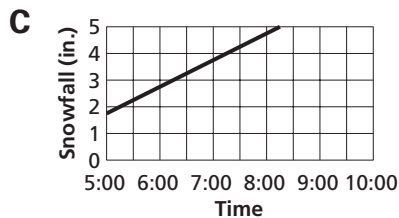
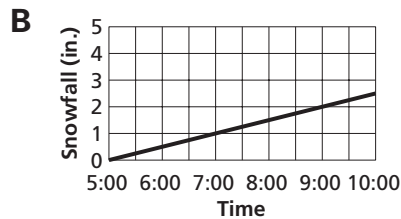
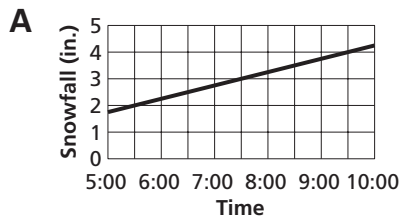


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR AI spi.2.2.G Select the linear graph that models the given real-world situation described in a narrative (no data set given).

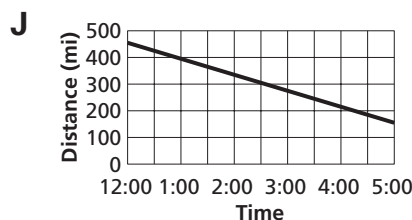
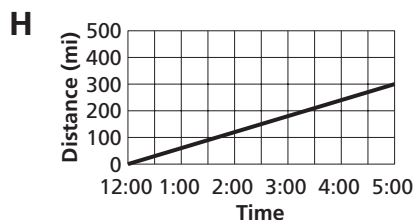
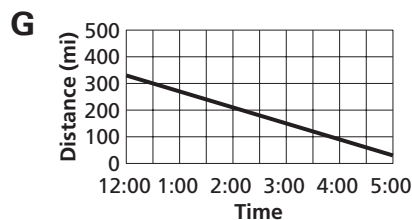
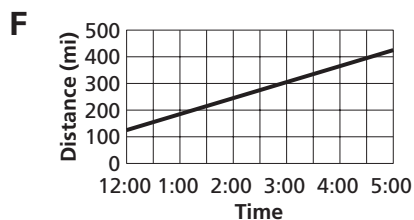
- 1 While on a ski vacation near Gatlinburg, Pierre recorded the depth of new snow on the deck every half hour. At 5:00 P.M., there were 1.75 inches of new snow. The snow continued to fall at a rate of 0.5 inch per hour for several hours. Which graph models the depth of new snow?

1 _____



- 2 Kimberly and Alfredo are driving from Union City to Bristol, a distance of 455 miles. By 12:00 P.M., they have driven 125 miles. If they continue driving at a rate of 60 miles per hour, which graph represents the distance remaining to Bristol as a function of time?

2 _____



Standards Practice



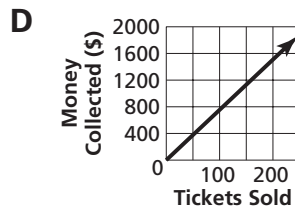
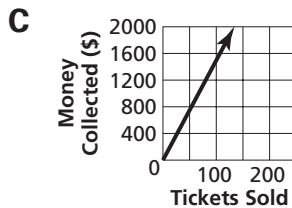
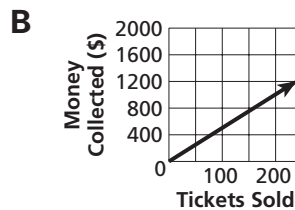
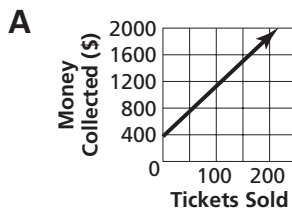
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR AI spi.2.2.H Select the linear graph that models the given real-world situation described in a tabular set of data.

- 1 Charmaine is selling movie tickets at a theater in Clarksville. The table records the number of tickets she sells and the amount of money she takes in. Which graph models the amount taken in as a function of the number of tickets sold?

1 _____

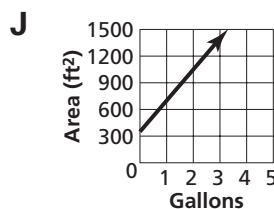
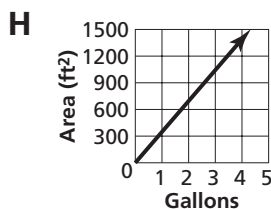
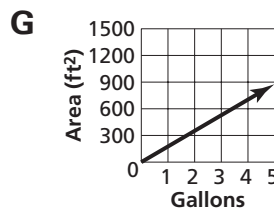
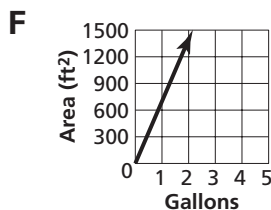
Tickets Sold	50	100	125	200
Money Collected (\$)	375	750	937.50	1500



- 2 The table records the number of gallons of paint needed to cover different amounts of wall area. Which graph models the number of square feet covered as a function of the number of gallons of paint?

2 _____

gal	1	3	4
ft²	350	1050	1400



Standards Practice



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

PERFORMANCE INDICATOR AI spi.2.2.1 Evaluate an algebraic expression given values for one or more variables using grouping symbols and/or exponents less than four.

1 Evaluate $3(2n - 4) - 7n + 6$ for $n = -2$. **1** _____

- A -32
- B -15
- C -8
- D -4

2 Evaluate $x^3 + 5x^2 - 12x - 2$ for $x = 4$. **2** _____

- F 94
- G 42
- H 35
- J 2

3 What is the value of $(a - 2b)^2 - 3a + b$ when $a = 5$ and $b = -1$? **3** _____

- A -7
- B 5
- C 33
- D 35

4 Evaluate $2 - (z + 3)^3 + 7z - 12$ for $z = -8$. **4** _____

- F -191
- G -31
- H 59
- J 171

5 A jet pilot makes a loop that has a radius r of 2000 meters while traveling at a constant velocity v of 250 meters per second. The **5** _____

expression $w\left(1 + \frac{v^2}{10r}\right)$ approximates the *apparent weight*, or the weight that the pilot feels, at the bottom of the loop in terms of the pilot's normal weight w . What is the approximate apparent weight of the pilot in the situation described?

- A $1.3125w$
- B $3.125w$
- C 3.125
- D $4.125w$

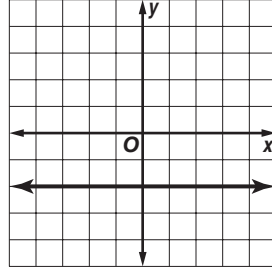
Standards Practice

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

PERFORMANCE INDICATOR AI spi.2.2.J Determine the slope from the graph of a linear equation (no labeled points).

1 What is the slope of the line?

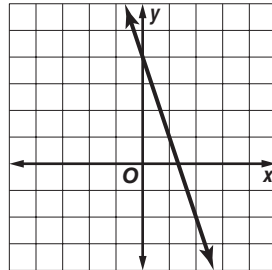
- A -2
- B 0
- C 1
- D undefined



1 _____

2 What is the slope of the line?

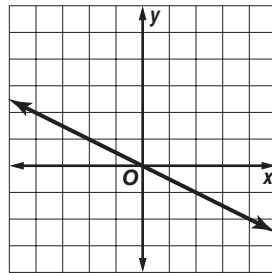
- F 3
- G $\frac{1}{3}$
- H $-\frac{1}{3}$
- J -3



2 _____

3 What is the slope of the line?

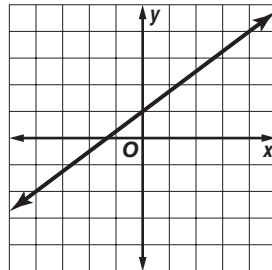
- A -2
- B -0.5
- C 0.5
- D 2



3 _____

4 What is the slope of the line?

- F $\frac{4}{3}$
- G $\frac{3}{4}$
- H $-\frac{3}{4}$
- J $-\frac{4}{3}$



4 _____

Standards Practice



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

PERFORMANCE INDICATOR AI spi.2.2.K Apply the concept of rate of change to solve real-world problems.

- 1 Keesha is flying to Iceland. If the rate of exchange between kronas, the currency of Iceland, and dollars is 1 krona = \$0.016, how many kronas are worth \$500? **1** _____
- A** 31,250 kronas **B** 8000 kronas
C 3125 kronas **D** 8 kronas
- 2 If sales of 30 cattle bring in a profit of \$4500 and sales of 50 cattle bring in a profit of \$12,500, and the profit model is linear, how much profit will the sale of 75 cattle bring in? **2** _____
- F** \$10,000 **G** \$11,250
H \$18,750 **J** \$22,500
- 3 The population of an Appalachian town in 1960 was 3350. If the population decreased at a rate of 45 people every 5 years, what was the 2005 population? **3** _____
- A** 3148 people **B** 2945 people
C 2025 people **D** 1325 people
- 4 Martin, a student at the University of Memphis, is typing a research report. It takes him 28 minutes to type the first 2 pages. At this rate, how much additional time will it take him to type the last 5 pages of the 7-page report? **4** _____
- F** 1 h 10 min **G** 1 h 28 min
H 1 h 32 min **J** 1 h 38 min
- 5 A school with excessive student absences began a program to increase attendance. Before the program began, there was an average of 180 students absent each day. In the program's first year, there was an average of 166 daily absences and there were 152 daily absences the second year. If this rate of improvement continues, how many absences will there be the program's fifth year? **5** _____
- A** 134 absences **B** 124 absences
C 110 absences **D** 96 absences

Standards Practice

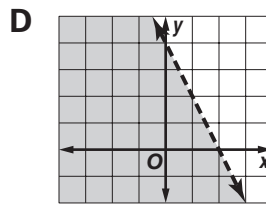
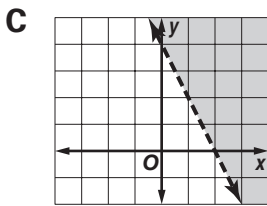
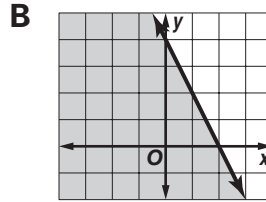
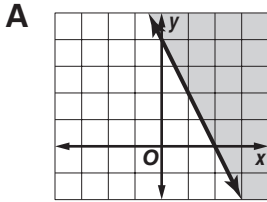


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR AI spi.2.2.L Select the appropriate graphical representation of a given linear inequality.

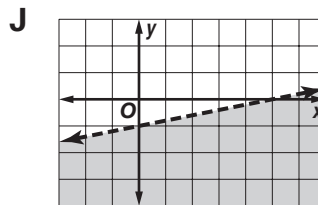
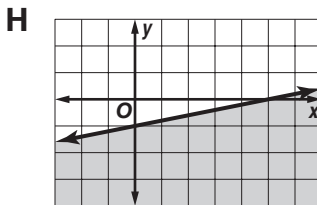
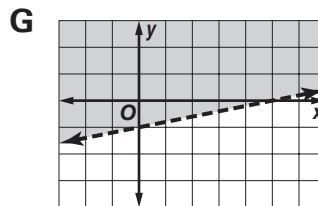
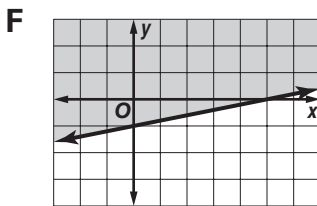
1 Which graph represents $2x + y < 4$?

1 _____



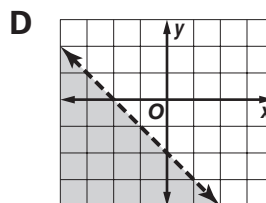
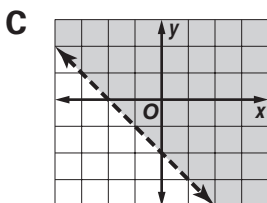
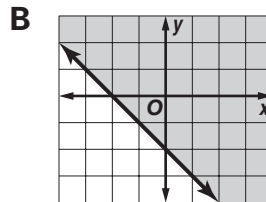
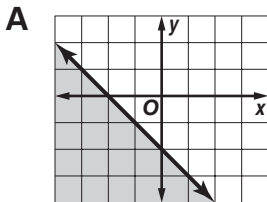
2 Which is the graph of $y \geq 0.2x - 1$?

2 _____



3 Which graph represents $x + y > -2$?

3 _____



Standards Practice

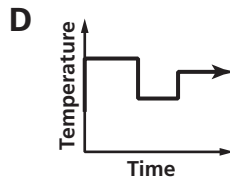
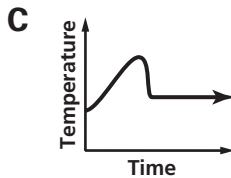
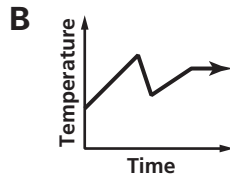
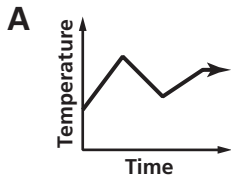


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR AI spi.2.2.M Select the non-linear graph that models the given real-world situation or vice versa.

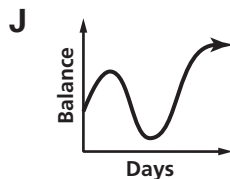
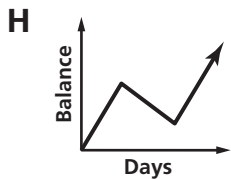
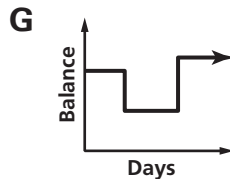
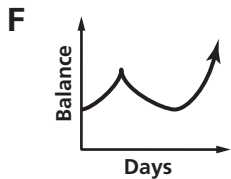
- 1 One day in Cookeville, the temperature rose steadily for 4 hours. A storm passing through caused the temperature to drop quickly for 1 hour and then climb for 3 hours and level off. Which graph best models this situation?

1 _____



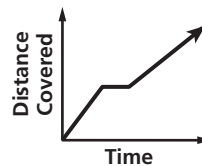
- 2 Simone's checking account balance is constant for 3 days before a check she writes halves her balance. She deposits a check 4 days later, which raises her balance higher than it was 7 days before. The balance remains at this level for 4 more days. Which graph best represents this situation?

2 _____



- 3 The graph models Andrew's bicycle trip. Which provides the most likely description of the trip?

- A** Andrew rode at an increasing rate, then rode at a constant speed, then increased speed again, though not as quickly as before.
- B** Andrew rode at an increasing rate, then stopped for lunch, then increased speed again, though not as quickly as before.
- C** Andrew rode at a steady rate, stopped for lunch, then rode at a steady rate again even faster than before lunch.
- D** Andrew rode at a steady rate, stopped for lunch, then rode back at a steady rate, but slower than before.



3 _____

Standards Practice

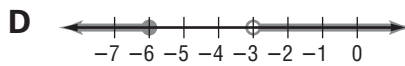
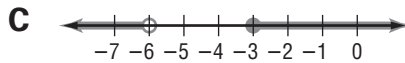
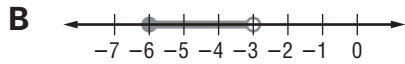
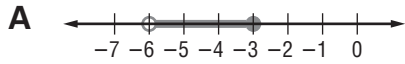


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR AI spi.2.2.N Identify the graphical representation of the solution to a one variable inequality on a number line.

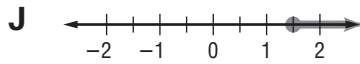
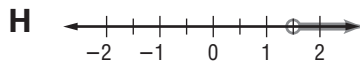
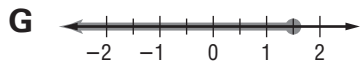
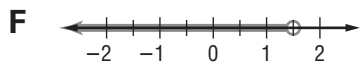
1 Which graph represents $x < -6$ or $x \geq -3$?

1 _____



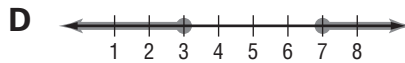
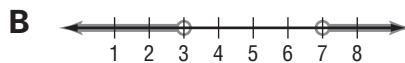
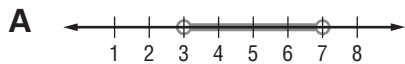
2 Which is the graph of $x < 1\frac{1}{2}$?

2 _____



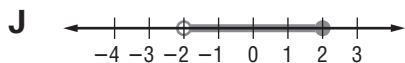
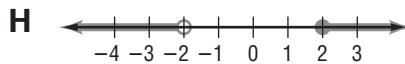
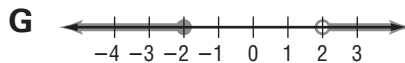
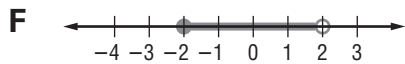
3 Which is the graph of $3 < x < 7$?

3 _____



4 Which graph represents $x < -2$ or $x \geq 2$?

4 _____



Standards Practice



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

PERFORMANCE INDICATOR AI spi.2.3.A Solve multi-step linear inequalities in real-world situations.

- 1 Grant is paid \$220 a week plus a commission of \$12 on each stereo he sells. How many stereos s must Grant sell to make at least \$400 for the week? Use the inequality $220 + 12s \geq 400$ to find the number of stereos. **1** _____

A $s \leq 52$

B $s \geq 52$

C $s \leq 15$

D $s \geq 15$

- 2 Bryce rents a car for a week at the rate of \$110 plus \$0.15 per kilometer. How many kilometers k can Bryce drive if he has \$215 budgeted for the rental? **2** _____

F $k \geq 700$ km

G $k \leq 700$ km

H $k \geq 2166$ km

J $k \leq 2166$ km

- 3 A hemlock tree that Marsha sees while on a hike in the Smokies is 200 feet tall. Marsha estimates that this tree is at least 40 feet more than twice the height of the old maple tree in her yard. If Marsha is correct, which inequality represents the possible heights m of the maple tree? **3** _____

A $m \geq 80$ ft

B $m \leq 80$ ft

C $m \geq 120$ ft

D $m \leq 120$ ft

- 4 A bakery sells white bread for \$1.80 per loaf and whole wheat bread for \$2.50 per loaf. For the bakery to earn more than \$900 selling the loaves, the inequality $1.8x + 2.5y > 900$ must be true, where x is the number of white loaves sold and y is the number of whole wheat loaves sold. Which ordered pair satisfies the inequality? **4** _____

F (250, 180)

G (496, 0)

H (320, 125)

J (100, 290)

- 5 Abel and his sister Arabella sell produce at a farmer's market. Abel estimates that each of his 40 bean plants will produce from 1.75 to 2.5 pounds of beans that he can sell this weekend for \$1.25 per pound. Arabella estimates that each of her 24 raspberry plants will produce between 0.75 and 1.5 pounds of raspberries that she can sell this weekend for \$4 per pound. If Abel and Arabella sell all of the beans and raspberries produced, which inequality represents the total amount of money m that they can make this weekend from selling beans and raspberries? **5** _____

A $\$41 \leq m \leq \96

B $\$88 \leq m \leq \136

C $\$151.50 \leq m \leq \269

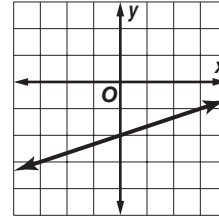
D $\$159.50 \leq m \leq \269

Standards Practice

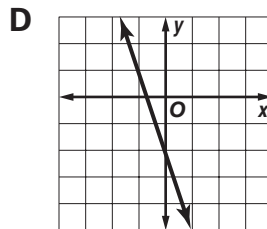
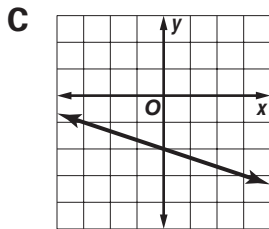
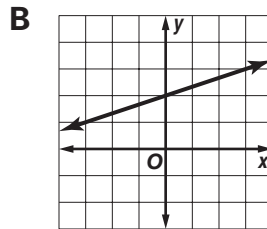
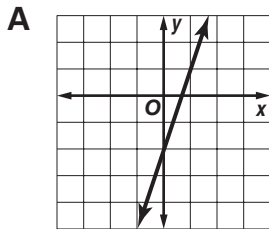
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR AI spi.2.3.B Recognize the graphical transformation that occurs when coefficients and/or constants of the corresponding linear equations are changed.

- 1 The graph represents $y = \frac{1}{3}x - 2$. What would the graph look like if the coefficient of x changed from $\frac{1}{3}$ to 3?



1 _____

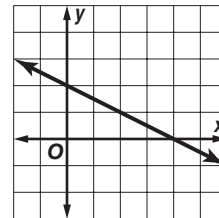


- 2 If the equation $y = -2x + 3$ changes to $y = -2x - 3$, which shift occurs to the line?

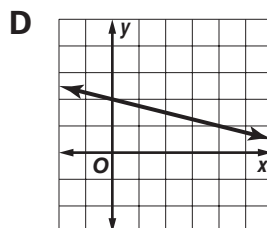
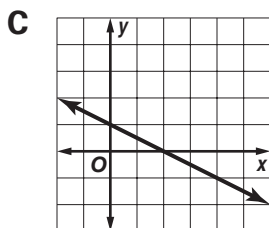
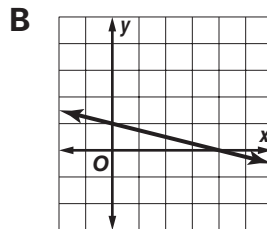
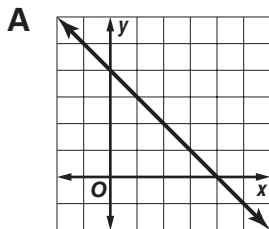
F 3 units up **G** 3 units down **H** 6 units left **J** 6 units down

2 _____

- 3 The graph represents $2y = -x + 4$. What would the graph look like if the coefficient of y changed from 2 to 4?



3 _____



Standards Practice

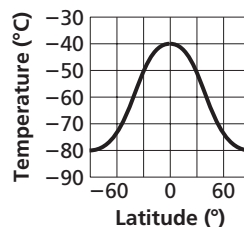


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR AI spi.2.3.C Determine the domain and/or range of a function represented by the graph of real-world situations.

Use the following information to answer Questions 1 and 2.

The graph shows how temperature on Mars is a function of latitude during spring in one hemisphere.



1 What is the domain D of the function?

- A $-80 \leq D \leq -40$
- B $0 \leq D \leq 90$
- C $-80 \leq D \leq 0$
- D $-90 \leq D \leq 90$

1 _____

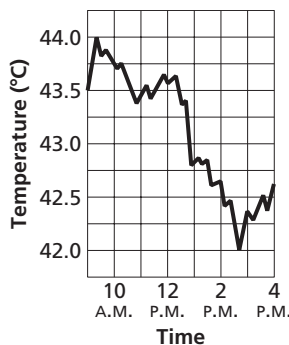
2 What is the range R of the function?

- F $-80 \leq R \leq 0$
- G $-80 \leq R \leq -40$
- H $-90 \leq R \leq 90$
- J $0 \leq R \leq 90$

2 _____

Use the following information to answer Questions 3 and 4.

The graph shows the variance in price of a stock over one day.



3 What is the domain D of the function?

- A $10:00 \text{ A.M.} \leq D \leq 3:00 \text{ P.M.}$
- B $9:00 \text{ A.M.} \leq D \leq 4:00 \text{ P.M.}$
- C $43.5 \leq D \leq 42.75$
- D $42.0 \leq D \leq 44.0$

3 _____

4 What is the range R of the function?

- F $42.0 \leq R \leq 44.0$
- G $43.5 \leq R \leq 42.75$
- H $9:00 \text{ A.M.} \leq R \leq 4:00 \text{ P.M.}$
- J $10:00 \text{ A.M.} \leq R \leq 3:00 \text{ P.M.}$

4 _____

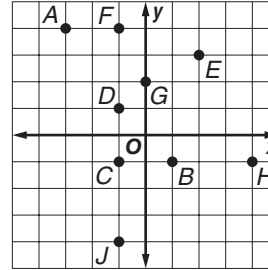
Standards Practice



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

PERFORMANCE INDICATOR AI spi.3.1.A Identify ordered pairs in the coordinate plane.

Use the graph to answer Questions 1–5.



1 Which ordered pair represents the coordinates of point A ?

- A $(-3, -4)$
- B $(-4, 3)$
- C $(-3, 4)$
- D $(4, -3)$

1 _____

2 Which ordered pair represents the coordinates of point G ?

- F $(0, 2)$
- G $(2, 0)$
- H $(0, -2)$
- J $(-2, 0)$

2 _____

3 Which point has coordinates $(1, -1)$?

- A A
- B B
- C C
- D D

3 _____

4 Which point has coordinates $(-1, -4)$?

- F F
- G G
- H H
- J J

4 _____

5 Which ordered pair represents the coordinates of point E ?

- A $(2, 3)$
- B $(3, 2)$
- C $(-2, -3)$
- D $(-3, -2)$

5 _____

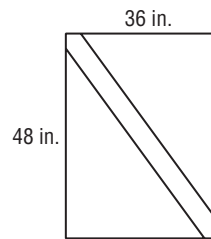
Standards Practice

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

PERFORMANCE INDICATOR AI spi.3.2.A Apply the Pythagorean Theorem to a real life problem illustrated by a diagram (no radicals in answer).

- 1 A nursery owner wants to build a rectangular gate for the entrance to the gardens. What is the length, in inches, of the middle of the cross brace if the dimensions of the gate are as shown?

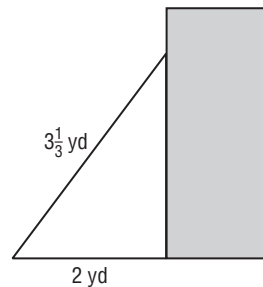
A 42 in. **B** 60 in.
C 72 in. **D** 84 in.



1 _____

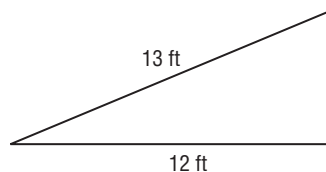
- 2 A painter is using a ladder that is $3\frac{1}{3}$ yards long. She places the base 2 yards from the house and leans the ladder against the house as shown in the diagram. How far up the wall of the house does the ladder reach?

F $1\frac{1}{3}$ yd **G** $2\frac{2}{3}$ yd
H $2\frac{7}{10}$ yd **J** $3\frac{9}{10}$ yd



2 _____

- 3 A loading ramp is 13 feet long and extends horizontally 12 feet, as shown in the diagram. How high above the ground does the ramp reach?

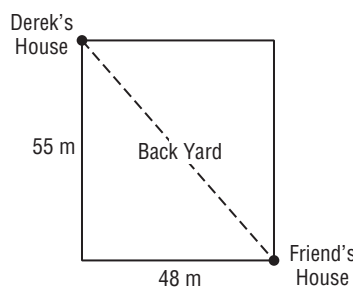


A 1 ft **B** 4 ft
C 5 ft **D** 7 ft

3 _____

- 4 Derek's house is 55 meters from the corner and his friend's house is 48 meters from the corner as shown in the diagram. If Derek walks straight across his back yard to his friend's house, how far will he walk?

F 51.5 m **G** 73 m
H 79 m **J** 103 m



4 _____

Standards Practice



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

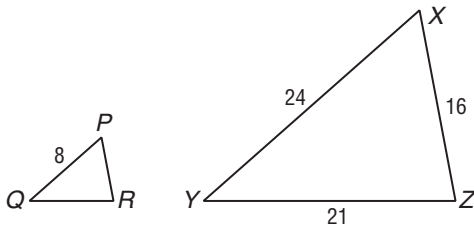
PERFORMANCE INDICATOR AI spi.3.2.B Apply proportion and the concepts of similar triangles to find the length of a missing side of a triangle.

- 1 Esperanza, who is 5 feet 6 inches tall, casts a shadow that is 9 feet 2 inches long at the same time that the observation tower on top of Clingmans Dome casts a shadow that is 90 feet long. How tall is the observation tower?

A 45.8 ft **B** 54 ft **C** 59.4 ft **D** 150 ft

1 _____

In the diagram, $\triangle PQR \sim \triangle XYZ$. Use the diagram to answer Questions 2 and 3.



- 2 Which proportion can be used to find the length of \overline{QR} ?

F $\frac{x}{8} = \frac{16}{24}$

G $\frac{8}{16} = \frac{x}{24}$

H $\frac{8}{24} = \frac{x}{21}$

J $\frac{8}{x} = \frac{21}{24}$

2 _____

- 3 What is the length of \overline{PR} ?

A 5

B $5\frac{1}{3}$

C $5\frac{2}{3}$

D 6

3 _____

- 4 If $\triangle ABC \sim \triangle FGH$ with $BC = 12$ millimeters, $FG = 8$ millimeters, and $GH = 16$ millimeters, what is the length of \overline{AB} ?

F 24 mm

G 20 mm

H 11 mm

J 6 mm

4 _____

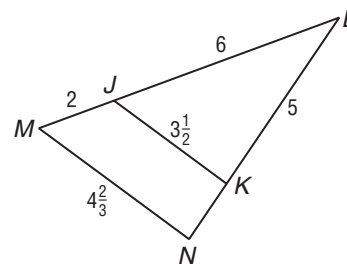
- 5 In the diagram, $\triangle MNL \sim \triangle JKL$. What is the length of \overline{NK} ?

A $6\frac{2}{3}$

B $3\frac{3}{4}$

C $1\frac{2}{3}$

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



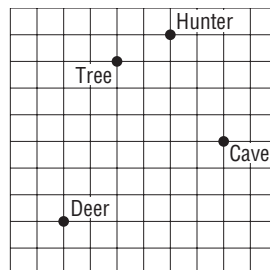
5 _____

Standards Practice

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

PERFORMANCE INDICATOR AI spi.3.3.A Calculate the distance between two points given the Pythagorean Theorem and the distance formula.

Use the diagram to answer Questions 1–4.



1 What is the distance from the tree to the cave?

- A 7 units
- B 6 units
- C 5 units
- D 4 units

1 _____

2 What is the distance from the deer to the cave?

- F $\sqrt{15}$ units
- G $3\sqrt{5}$ units
- H $9\sqrt{5}$ units
- J 9 units

2 _____

3 What is the distance from the hunter to the deer?

- A $\sqrt{11}$ units
- B $\sqrt{33}$ units
- C $\sqrt{65}$ units
- D 11 units

3 _____

4 What is the distance from the hunter to the tree?

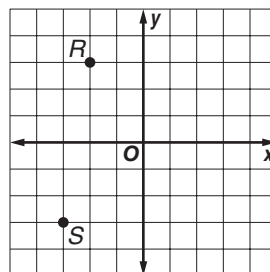
- F $\sqrt{3}$ units
- G 2 units
- H $\sqrt{5}$ units
- J 3 units

4 _____

5 What is the distance from point R to point S ?

- A $\sqrt{37}$ units
- B $\sqrt{35}$ units
- C 7 units
- D 6 units

5 _____



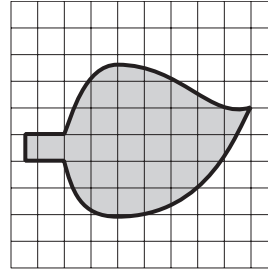
Standards Practice

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

PERFORMANCE INDICATOR AI spi.4.1.A Estimate the area of irregular geometric figures on a grid.

1 Which is the best estimate for the area of the leaf?

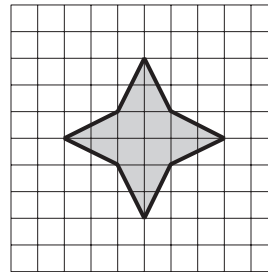
- A** 112 units²
- B** 60 units²
- C** 56 units²
- D** 28 units²



1 _____

2 Which is the best estimate for the area of the star?

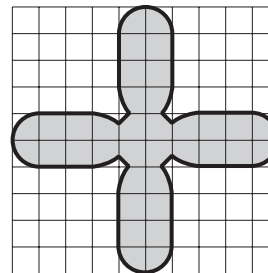
- F** 4 units²
- G** 8 units²
- H** 12 units²
- J** 24 units²



2 _____

3 Which is the best estimate for the area of the fan blade?

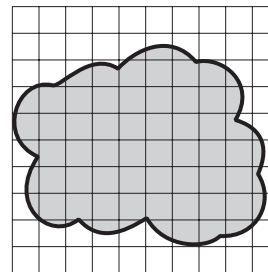
- A** 297 units²
- B** 198 units²
- C** 99 units²
- D** 33 units²



3 _____

4 Which is the best estimate for the area of the cloud?

- F** 1 units²
- G** 3.25 units²
- H** 35 units²
- J** 48 units²



4 _____

Standards Practice



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

PERFORMANCE INDICATOR AI spi.4.1.B Calculate rates involving cost per unit to determine the best buy (no more than three samples).

- 1** A 32-ounce bag of tortilla chips costs \$4.99, a 16-ounce bag costs \$2.59, and a 12-ounce bag costs \$1.75. Which is the best buy? **1** _____
- A** The 16-oz bag and 32-oz bag are equally good buys.
B the 32-oz bag
C the 16-oz bag
D the 12-oz bag
- 2** The mint tea Anika is buying is sold in boxes of 16 bags for \$0.99, 48 bags for \$1.99, and 100 bags for \$3.39. Which size box is the best buy? **2** _____
- F** The 48-bag box and the 100-bag box are equally good buys.
G the 100-bag box
H the 48-bag box
J the 16-bag box
- 3** A roadside stand sells fresh peanuts in three sizes. A 2-pound basket costs \$4.95, a 5-pound basket costs \$10.95, and a 10-pound basket costs \$22.50. Which size is the best value? **3** _____
- A** The 2-lb and 5-lb baskets are equally good values.
B the 2-lb basket
C the 5-lb basket
D the 10-lb basket
- 4** A 2.2-kilogram bag of dogfood sells for \$3.18, a 6-kilogram bag sells for \$7.56, and an 8.5-kilogram bag sells for \$10.71. Which size bag gives you the most dog food for your money? **4** _____
- F** The 6-kg and 8.5-kg bags give you the same amount of dog food for your money.
G the 2.2-kg bag
H the 6-kg bag
J the 8.5-kg bag
- 5** Evan is buying paint for his bathroom. He has a choice of 3 sizes of paint: 1 pint for \$3.54, 1 quart for \$7.05, or 1 gallon for \$28.50. Which size is the best value? **5** _____
- A** 1 pint and 1 quart are equally good values.
B 1 pint
C 1 quart
D 1 gallon

Standards Practice



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

PERFORMANCE INDICATOR AI spi.4.1.C Apply the given formula to determine the area or perimeter of a rectangle.

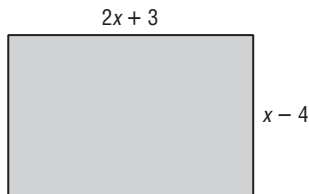
1 How many 6-inch by 6-inch ceramic tiles are needed to cover a rectangular kitchen floor that has dimensions of 14 feet by 16 feet? **1** _____

- A** 896 tiles **B** 448 tiles
C 224 tiles **D** 112 tiles

2 Shania runs twice around the outside of a rectangular field that is 140 yards long and 50 yards wide. How far does she run? **2** _____

- F** 190 yd **G** 380 yd
H 570 yd **J** 760 yd

Use the rectangle shown to answer Questions 3 and 4.



3 Which expression represents the area of the rectangle? **3** _____

- A** $2x - 12$ **B** $2x^2 - 12$
C $2x^2 - 11x - 12$ **D** $2x^2 - 5x - 12$

4 Which expression represents the perimeter of the rectangle? **4** _____

- F** $6x - 2$ **G** $3x - 1$
H $5x - 1$ **J** $6x - 4$

5 A rectangular patch of azaleas blooming on the grounds of a Germantown estate has a perimeter of 112 feet. If the patch is 8 feet wide, how long is it? **5** _____

- A** 104 ft **B** 58 ft
C 48 ft **D** 14 ft

Standards Practice



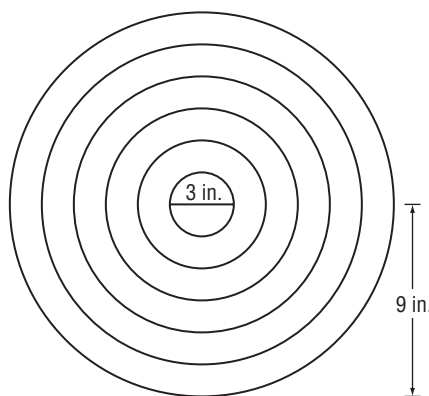
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR AI spi.4.2.A Apply the given formula to find the area of a circle, the circumference of a circle, or the volume of a rectangular solid.

- 1** How many cubic yards of rock are needed to cover a landscape area that is 24 feet long, 9 feet wide, and 6 inches deep? **1** _____
- A** 4 yd³ **B** 12 yd³
C 108 yd³ **D** 1296 yd³

Use the following information to answer Questions 2–4.

An archery target has a radius of 9 inches, and the bull's-eye on the target has a diameter of 3 inches, as shown in the figure.



- 2** What is the area, to the nearest tenth, of the bull's-eye? **2** _____
- F** 4.7 in²
G 7.1 in²
H 9.4 in²
J 28.3 in²
- 3** What is the circumference, to the nearest tenth, of the entire target? **3** _____
- A** 18.0 in.
B 28.3 in.
C 56.5 in.
D 254.5 in.
- 4** What is the area, to the nearest tenth, of the target excluding the bull's-eye? **4** _____
- F** 47.1 in²
G 226.2 in²
H 247.4 in²
J 254.5 in²
- 5** If the area of a circular painting is 201.06 square feet, what is the diameter, to the nearest foot, of the painting? **5** _____
- A** 8 ft **B** 14 ft
C 16 ft **D** 32 ft

Standards Practice



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

PERFORMANCE INDICATOR AI spi.4.3.A Select the area representation for a given product of two one-variable binomials with positive constants and coefficients.

1 Which is the area representation of $(3x + 2)(x + 2)$?

1 _____

A

x^2	x^2	x^2	x	x
x	x	x	1	1
x	x	x	1	1

B

x	x	x	1	1
1	1			

C

x	x	x	x	1	1
				1	1

D

x^2	x^2	x^2	1
1	1		1

2 Which is the area representation of $(x + 2)(2x + 1)$?

2 _____

F

x^2	x^2	x	x
x	x	1	1

G

x^2	x	x
x^2	x	x
x	1	1

H

x	x	x	1	1
			1	

J

x^2	1
x^2	1

3 Which is the area representation of the product of the binomials $2x + 3$ and $3x + 1$?

3 _____

A

x^2	x^2	x^2	x	x	x
x^2	x^2	x^2	x	x	x
x	x	x	1	1	1

B

x	x	1
x	x	1
x	x	1

C

x^2	x^2	x^2	1	
x^2	x^2	x^2	1	1

D

x^2	x^2	x	x	x
x^2	x^2	x	x	x
x^2	x^2	x	x	x
x	x	1	1	1

Standards Practice

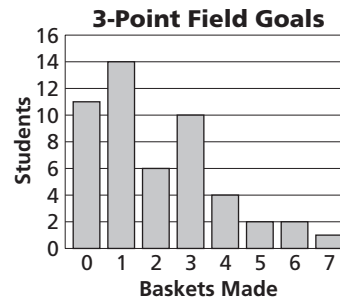


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR AI spi.5.1.B Interpret bar graphs representing real-world data.

Use the following information to answer Questions 1 and 2.

The bar graph shows how many 3-point field goals 50 students from a high school in Lawrenceburg made in a basketball shooting contest. Each contestant had 7 tries.



1 How many students made more than four 3-point field goals?

- A** 2 students **B** 4 students
C 5 students **D** 9 students

1 _____

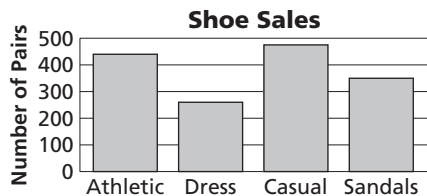
2 What percent of the students made no 3-point field goals?

- F** 11% **G** 14%
H 19% **J** 22%

2 _____

Use the following information to answer Questions 3 and 4.

The graph shows the numbers of different types of pairs of shoes sold by a store in one week.



3 Approximately how many pairs of shoes sold were athletic, casual, or dress?

- A** 1175 pairs **B** 915 pairs
C 600 pairs **D** 350 pairs

3 _____

4 Which statement is true?

- F** Three types of shoes sold more than 400 pairs each.
G Casual shoes accounted for more than one-fourth of sales.
H The difference between sales of athletic shoes and sandals was more than 100 pairs.
J More pairs of casual shoes were sold than dress shoes and sandals combined.

4 _____

Standards Practice

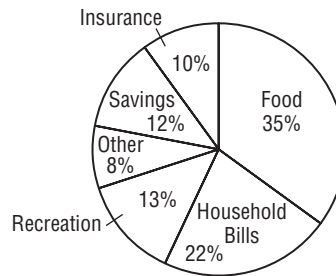


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR AI spi.5.1.C Interpret circle graphs (pie charts) representing real-world data.

Use the following information to answer Questions 1 and 2.

The circle graph shows what percent of the Sturm family's annual income was spent in various categories.



1 What percent of family income was spent on items other than food and savings?

- A** 35%
- B** 47%
- C** 53%
- D** 65%

1 _____

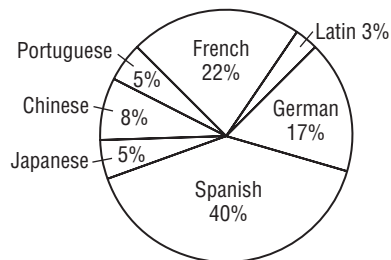
2 If the Sturm's annual income is \$72,000, about what amount did they spend on recreation?

- F** \$1300
- G** \$5538
- H** \$9360
- J** \$22,320

2 _____

Use the following information to answer Questions 3–5.

The circle graph shows the languages chosen by 5442 university students who were enrolled in foreign language classes.



3 What percent of the students chose Spanish, French, or German?

- A** 79%
- B** 62%
- C** 39%
- D** 21%

3 _____

4 About how many of the students chose Chinese?

- F** 8 students
- G** 435 students
- H** 1088 students
- J** 4354 students

4 _____

5 About how many more students chose Portuguese than Latin?

- A** 2 students
- B** 109 students
- C** 435 students
- D** 1090 students

5 _____

Standards Practice



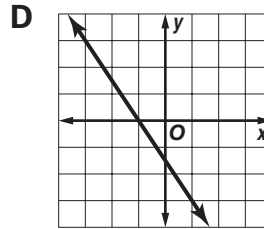
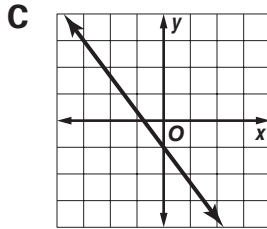
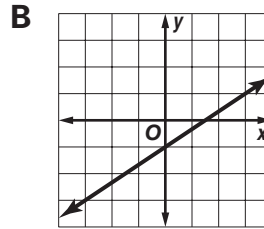
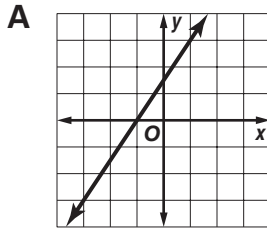
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR AI spi.5.2.A Choose the matching linear graph given a set of ordered pairs.

- 1 Which graph corresponds to the table of values?

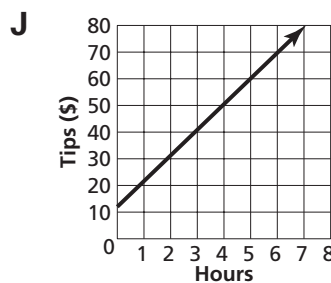
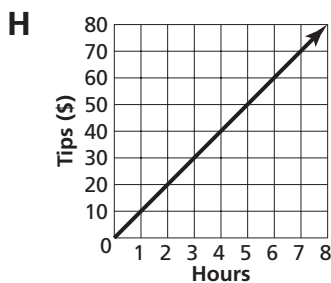
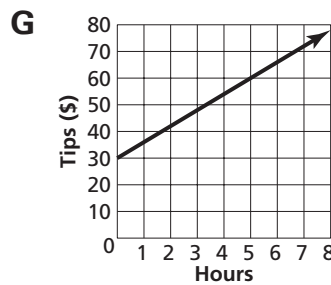
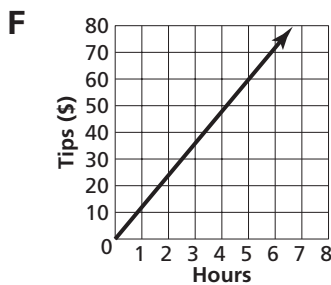
x	-3	0	3	6
y	-3	-1	1	3

1 _____



- 2 Sydney drives a shuttle from a remote parking lot to the terminal at Memphis International Airport. The ordered pairs (2.5, 30), (3.5, 42), and (5, 60) represent the number of dollars y she had earned in tips after working for x hours. Assuming that Sydney continues to collect tips at the same rate for the rest of the day, which graph represents the amount in tips she will collect as a function of the number of hours she works?

2 _____



Standards Practice

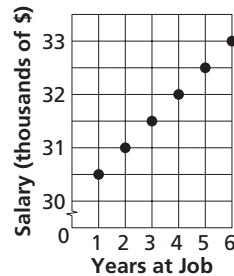


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

PERFORMANCE INDICATOR AI spi.5.2.B Make a prediction from the graph of a real-world linear data set.

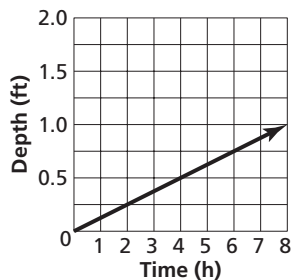
- 1 The graph shows Shondra's salary at her current job each year after her annual raise. If Shondra's salary continues to increase at the same rate, after how many years at her job will her salary reach \$35,000?

A 4 yr B 7 yr
C 9 yr D 10 yr



1 _____

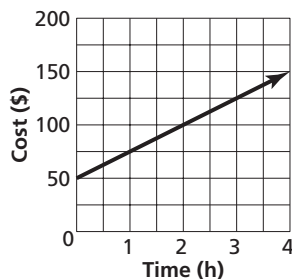
- 2 The graph shows the depth of water in Gabriel's swimming pool as it is filled. If the water level continues to increase at the same rate, after how long will the water depth in the pool reach 3 feet?



F 16 h G 17 h
H 24 h J 30 h

2 _____

- 3 Eric is spending one day of his summer vacation fishing on Tellico Lake with a personal guide. The graph shows the cost of fishing with the guide. If the cost continues to increase at the same rate, how much will it cost Eric to fish with the guide for 9 hours?



A \$300 B \$275
C \$250 D \$225

3 _____

Standards Practice



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

PERFORMANCE INDICATOR AI spi.5.3.A Apply counting principles of permutations or combinations in real-world situations.

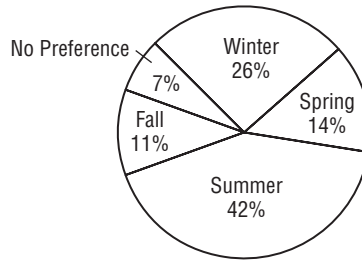
- 1 An automobile race at the Bristol Motor Speedway has 18 entrants. In how many ways can first, second, and third place be awarded? **1** _____
- A 4896 ways
B 816 ways
C 324 ways
D 6 ways
- 2 How many arrangements are there for 6 boys in a choir sextet to stand in a row for a performance? **2** _____
- F 6 arrangements
G 30 arrangements
H 120 arrangements
J 720 arrangements
- 3 Lamont plans to watch 3 of his 22 action movies this weekend. How many different groups of 3 movies can Lamont choose? **3** _____
- A 10,648 groups
B 9240 groups
C 1540 groups
D 7 groups
- 4 A book club is going to select a committee of 5 members from its 35 members. How many different committees are possible? **4** _____
- F 38,955,840 committees
G 324,632 committees
H 175 committees
J 7 committees
- 5 Bailey has 15 digital video discs. She plans to choose and arrange 7 of them in a case that holds 7 discs in a row. In how many different ways can Bailey place 7 discs in the case? **5** _____
- A 105 ways
B 5040 ways
C 6435 ways
D 32,432,400 ways

Sample Test (continued)



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

- 6** A survey was given to 300 students in the junior class at a Shelby County high school asking what season of the year they enjoy the most. The results are shown in the circle graph. What percent of students chose summer or winter?



6 _____

- F** 68% **G** 42%
H 33% **J** 26%

- 7** A rancher has an underground water cistern in the shape of a rectangular prism. The cistern is 15 feet long, 12 feet wide, and 4 feet deep. How many cubic feet of water will the cistern hold?

7 _____

- A** 720 ft³ **B** 2,160 ft³
C 6,480 ft³ **D** 12,960 ft³

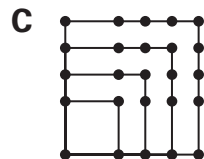
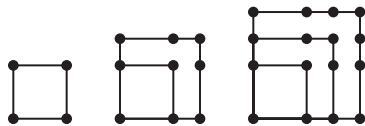
- 8** Simplify $5 \cdot 7 \cdot b \cdot b \cdot b \cdot c \cdot d \cdot d \cdot d \cdot d \cdot d$.

8 _____

- F** $35bcd^9$ **G** $35bcd^{15}$
H $35b^3cd^5$ **J** $525bcd$

- 9** What is the next figure in the pattern?

9 _____



- 10** The cost of a small candy bar s is \$0.15 more than half the cost of a large candy bar c . Which equation represents this situation?

10 _____

- F** $s + 0.15 = 0.5c$
G $s = 0.5(c + 0.15)$
H $0.5s = c + 0.15$
J $s = 0.5c + 0.15$

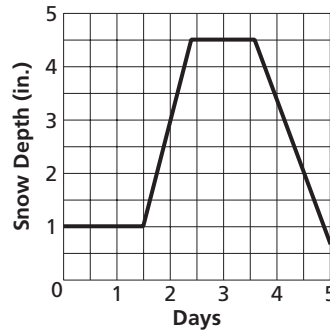


Sample Test (continued)



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

- 11** The graph shows the depth of snow over several days in Aliyah's back yard. Which is the most likely explanation of the segment of the graph above day 4?



11 _____

- A** Snow was falling lightly.
B Snow was melting.
C The temperature fell.
D Snow was falling heavily.

- 12** What is the value of $\frac{a^2 - (2b - c^3)}{6a}$ for $a = 3$, $b = 5$, and $c = -2$?

12 _____

- F** $\frac{11}{18}$ **G** $\frac{1}{2}$
H $\frac{7}{18}$ **J** $-\frac{1}{2}$

- 13** Which expression represents 9 times a number n divided by the sum of $\frac{1}{2}$ the number and 7?

13 _____

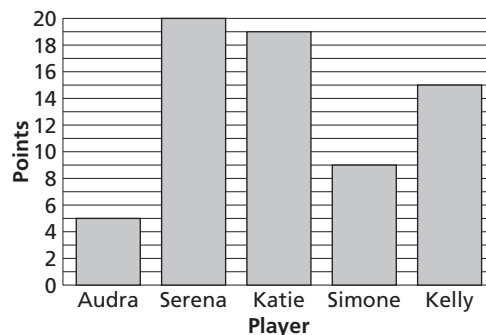
- A** $\frac{9n}{0.5n + 7}$ **B** $\frac{9n}{0.5(n + 7)}$
C $\frac{9n}{7} + 0.5n$ **D** $\frac{9n}{0.5n} + 7$

- 14** Solve $12h - 17 = 79$ for h .

14 _____

- F** 84 **G** 50
H 8 **J** $5\frac{1}{6}$

- 15** The bar graph shows the number of points scored in a game by the 5 starting players on a women's college basketball team. Which 2 members of the team scored exactly half of the total points made by the 5 women?



15 _____

- A** Serena and Katie
B Audra and Serena
C Simone and Serena
D Kelly and Katie



Sample Test (continued)



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

16 Tennessee has 926 square miles of water and 41,220 square miles of land. What is the ratio of the total area of the state to the area of water?

F 21,073 to 20,610

G 21,073 to 463

H 463 to 20,610

J 463 to 21,073

16 _____

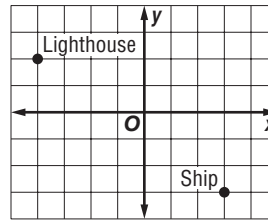
17 What is the shortest distance from the lighthouse to the ship?

A 11 units

B $\sqrt{74}$ units

C $2\sqrt{5} + 3\sqrt{2}$ units

D $2\sqrt{6}$ units



17 _____

18 A cargo ship can carry 500 tons of freight. If the ship now has 122 tons of freight aboard and is going to load tanks that weigh 22 tons each, use the inequality $122 + 22t \leq 500$ to find the maximum number of tanks the ship can carry.

F 3

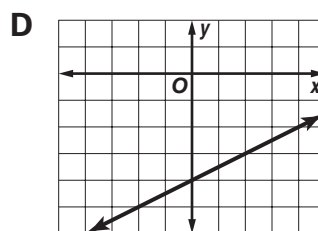
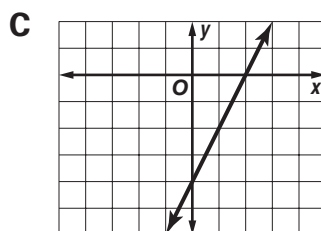
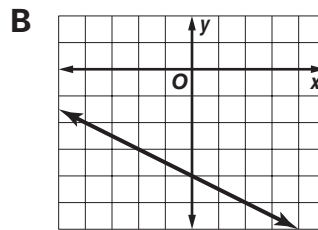
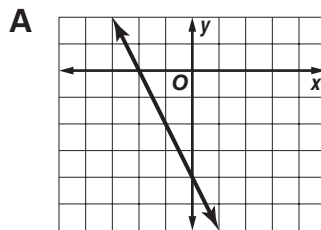
G 17

H 18

J 28

18 _____

19 Which graph represents $y = 2x - 4$?



19 _____

20 Simplify $(6v - 4)(3v + 7)$.

F $9v^2 + 6v + 3$

G $9v - 3$

H $18v^2 - 28$

J $18v^2 + 30v - 28$

20 _____



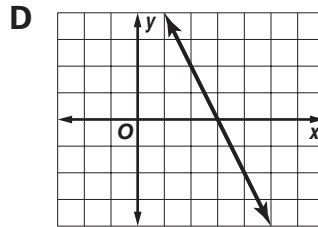
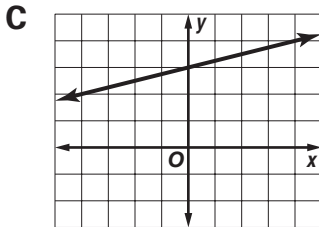
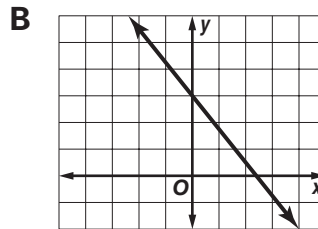
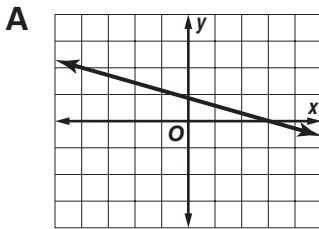
Sample Test (continued)



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

- 21 Which graph contains the points at $(3, 0)$ and $(4, -2)$?

21 _____



- 22 The length of a rectangle is 3 times its width w . Which is an expression for the area of the rectangle?

22 _____

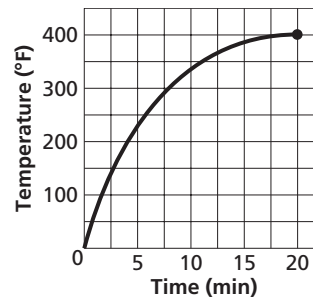
- F** $4w$
H $4w^2$

- G** $3w$
J $3w^2$

- 23 The graph shows the temperature increase over a period of time in an oven after it is turned on and set for 400°F . What is the range R of the function?

23 _____

- A** $0 \leq R \leq 400$
B $0 \leq R \leq 20$
C $200 \leq R \leq 300$
D $15 \leq R \leq 300$



- 24 Solve $0.5j - 3.2 + 7.9j = 26.2$ for j .

24 _____

- F** -4
H 3.5

- G** 2.7
J 21

- 25 Wayne is going to plant rhododendron bushes around his yard. He can buy small bushes in lots of 3 for \$23, 5 for \$37.50, or 12 for \$92. Which number of bushes is the best buy?

25 _____

- A** 3 bushes
B 5 bushes
C 12 bushes
D 5 bushes and 12 bushes are equally good buys.

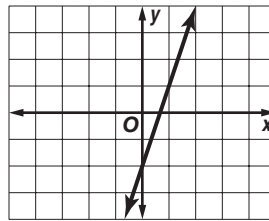


Sample Test (continued)

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

26 What is the slope of the graph shown?

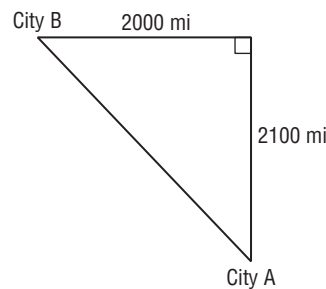
- F 3
 G $\frac{1}{3}$
 H $-\frac{1}{3}$
 J -3



26 _____

27 An airplane traveled north from City A for 2100 miles and then turned and flew west for 2000 miles and landed at City B, as shown. If the plane had flown directly from City A to City B, how far would it have traveled?

- A 4100 mi B 3800 mi
 C 3200 mi D 2900 mi



27 _____

28 Which graph represents $x \leq 0.4$ or $x \geq 2.7$?

- F
 G
 H
 J

28 _____

29 Fiona is sewing curtains for all of the rooms in her house. She used 2 spools of thread to sew 3 curtains and 6 spools of thread to sew 9 curtains. How many spools of thread will Fiona need to sew 15 curtains?

- A 8 spools B 9 spools
 C 10 spools D 12 spools

29 _____

30 The cost of a 9-pound mixture of pecans and pistachios is \$46.50. Which equation can be used to find the number of pounds p of pecans in the mixture if pistachios cost \$4.50 per pound and pecans cost \$6 per pound?

- F $6p + 4.5p = 46.50$
 G $6p + 4.5(p + 9) = 46.50$
 H $6p + 4.5(p - 9) = 46.50$
 J $6p + 4.5(9 - p) = 46.50$

30 _____

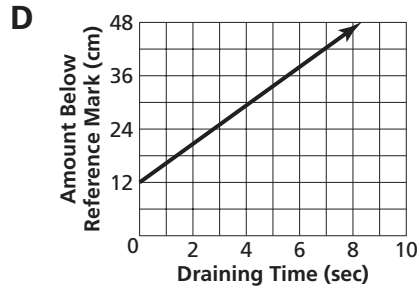
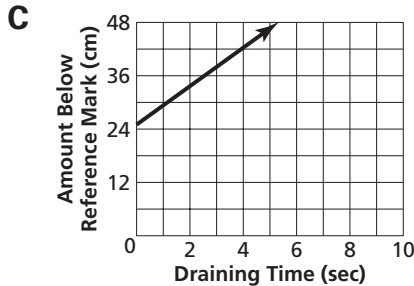
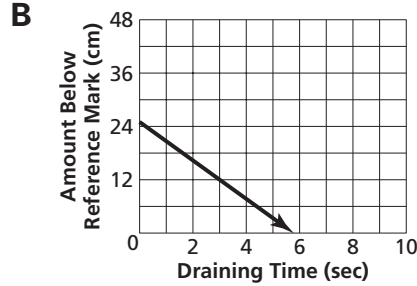
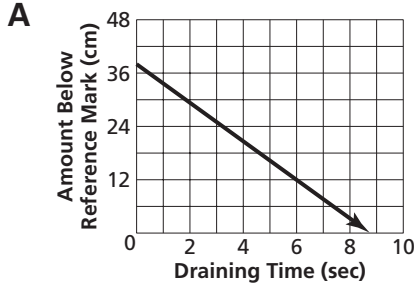


Sample Test (continued)



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

- 31** The surface of a chemical solution being drained from a cylinder is at a level of 25 centimeters below a reference mark after 3 seconds of draining. If the surface level drops from this point at a constant rate of $4\frac{1}{3}$ centimeters per second, which graph best models the situation? **31** _____



- 32** Which is the best estimate of point S ? **32** _____



F $\frac{13}{16}$

G $\frac{11}{16}$

H $\frac{5}{8}$

J $\frac{9}{16}$

- 33** Evaluate $0.6j^3 - 2.2j(-3j + 5) - 6.1j^2$ for $j = -2$. **33** _____
- A** -77.6 **B** 19.2 **C** 28.8 **D** 68

- 34** Mr. Siefken plans to show four movies to his class about all aspects of the Tennessee Valley Authority. The lengths of the movies are 1 hour 44 minutes, 46 minutes, 2 hours 8 minutes, and 58 minutes. If Mr. Siefken plans to show about 30 minutes of movies each class period, which is the best estimate for the number of class periods he will need to show all of the movies? **34** _____

F 11 class periods

G 8 class periods

H 6 class periods

J 4 class periods



Sample Test (continued)

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

35 What is the next number in the pattern 10, 9, 7, 4, 0, -5, ...? **35** _____

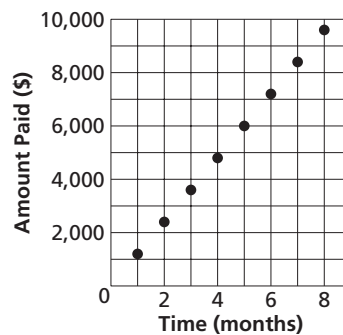
- A** -11 **B** -10 **C** -7 **D** -6

36 What is the reciprocal of 0.2? **36** _____

- F** -0.2 **G** 0.8 **H** 2 **J** 5

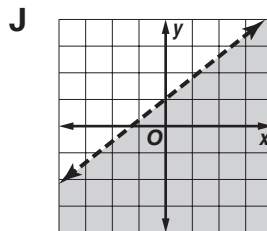
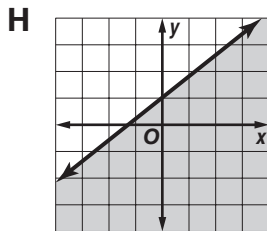
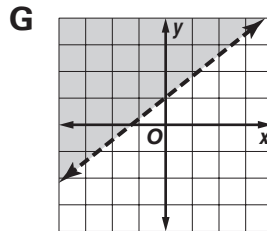
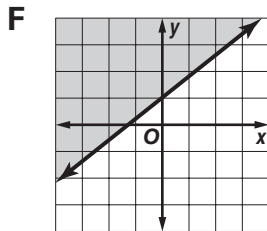
37 The Wollesen's are buying a house in Dyersburg. The graph represents the amount the Wollesen's have paid on their house after the first 8 months. How much will they have paid on their house after 1 year?

- A** \$10,800
B \$12,000
C \$13,200
D \$14,400



37 _____

38 Which graph represents $y > 0.8x + 1$? **38** _____



39 Evaluate $-3z + 0.8y + 0.2z - 6.2y + 3y$ for $y = 1.2$ and $z = -2.6$. **39** _____

- A** 5.44 **B** 4.4
C -8 **D** -11.2

40 What is the solution of $-4x - 9 = 5$? **40** _____

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

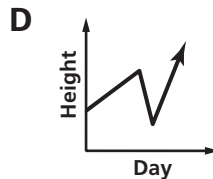
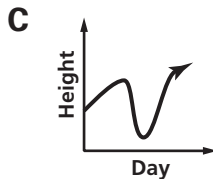
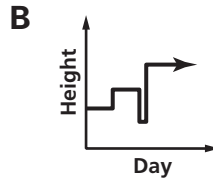
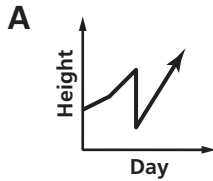


Sample Test (continued)



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

41 The grass in Daniel's lawn grows slowly but steadily for 2 days. After being watered, the grass grows more rapidly for 2 days. Then Daniel mows the grass just in time for a summer shower, and the grass grows very rapidly for a few days. Which graph best represents this situation? **41** _____



42 Malik bakes 125 cookies for a company picnic. If 38 people show up and each person eats the same number of cookies, and there are not enough cookies left for everyone to have another, how many cookies will be left over? **42** _____

F 27 cookies

G 14 cookies

H 11 cookies

J 3 cookies

43 Solve $4d - 7 - 8d + 14 = 6d - 16 + 12 + d$ for d . **43** _____

A -1

B 0

C 1

D 3

44 Simplify $\sqrt{100}$. **44** _____

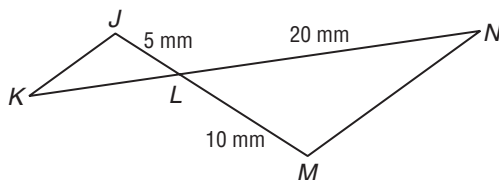
F 10

G 25

H 50

J 10,000

45 In the diagram, $\triangle JKL \sim \triangle MNL$. What is the length of \overline{KL} ? **45** _____



A 2.5 mm

B 10 mm

C 20 mm

D 40 mm



Sample Test (continued)



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

46 What is the opposite of 4.2?

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

G $\frac{5}{21}$

H -2.4

J -4.2

46 _____

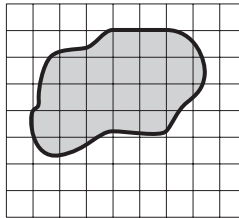
47 Which is the best estimate for the area of the lake?

A 5 units²

B 15 units²

C 22 units²

D 32 units²



47 _____

48 The annual salaries of five Nashville Zoo workers are \$35,600, \$29,000, \$48,950, \$38,775, and \$53,625. What is the mean salary of these workers?

F \$18,025

G \$37,187.50

H \$41,190

J \$44,612.50

48 _____

49 Which is an area representation of $(3x + 2)(2x + 1)$?

A

x	x	x	1	1
x	x	1		

B

x ²	x ²	x ²	1
x ²	x ²	x ²	1

C

x ²	x ²	x	x
x ²	x ²	x	x
x ²	x ²	x	x
x	x	1	1

D

x ²	x ²	x ²	x	x
x ²	x ²	x ²	x	x
x	x	x	1	1

49 _____

50 Which equation generalizes the pattern shown in the table?

s	0	1	2	3
t	-1	2	11	26

F $t = 3s - 1$

G $t = 9s - 1$

H $t = 3s^2 - 1$

J $t = 3s^3 - 1$

50 _____



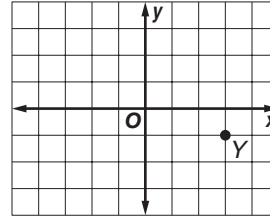
Sample Test (continued)



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

- 51** Which ordered pair represents point Y ?

A $(3, -1)$
B $(-1, 3)$
C $(-3, -1)$
D $(-3, 1)$



51 _____

- 52** Pablo is going to paint a canvas using 3 of his 44 colors, applying one color at a time. Each successive color will cover some of the previous color. In how many different ways can Pablo apply the colors?

F 79,464 ways **G** 13,244 ways
H 132 ways **J** 14 ways

52 _____

- 53** Which list is ordered from least to greatest?

A 5.00302, 5.00203, 5.0302, 5.0203, 5.23
B 5.00203, 5.00302, 5.0203, 5.0302, 5.23
C 5.00203, 5.0203, 5.23, 5.00302, 5.0302
D 5.23, 5.0203, 5.00203, 5.0302, 5.00302

53 _____

- 54** Solve $\frac{1}{3}(9h + 16 - 7h) = 22 - \frac{1}{2}(18 - 7h) + 3h$ for h .

F $13\frac{1}{2}$ **G** $2\frac{2}{3}$ **H** 0 **J** $-1\frac{11}{35}$

54 _____

- 55** The table shows Miranda's progress typing her biology report. Which graph models how many pages Miranda types as a function of time?

55 _____

Pages	1	2	4	6
Time (min)	15	30	60	90

