

**GLENCOE
MATHEMATICS**

Grade 7

North Carolina End-of-Grade (EOG) Test

Practice and Sample Test Workbook

Includes:

- **Grade 7 North Carolina Course of Study Content Standards**
- **Diagnostic Test**
- **Numerous Practice Questions for Each Content Standard**
- **Full-Size Sample Test**
- **Student Recording Chart**

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.

Consultant

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Glencoe

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*North Carolina EOG Test
Practice and Sample Test Workbook, Grade 7*

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Overview

The material in this booklet is designed to help you prepare for the Grade 7 North Carolina End-of-Grade (EOG) Test.

It contains:

- a Student Recording Chart,
- the 1998 Standard Course of Study for Grade 7,
- a Diagnostic Test,
- practice for each Content Standard, and
- a Sample Test.

How to Use the Booklet

Diagnostic Test This test will help you identify any weaknesses you may have as you prepare to take the Grade 7 EOG Test. Once you've taken the test and it's been graded, complete the Student Recording Chart that is found on page v. 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 content standard, you could probably use some extra practice with that content standard. The Student Recording Chart lists practice pages for each content standard. 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 worksheets, take the Sample Test on pages 85 to 100.

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 standard, write *Yes* in the *Need Practice?* box. Then complete the practice pages for that standard.

Competency Goal 1: Number Sense, Numeration, and Numerical Operations								
Standard	1.01	1.02	1.03	1.04	1.05	1.06	1.07	1.08
Test Questions	7 <input type="checkbox"/>	13 <input type="checkbox"/>	22 <input type="checkbox"/>	14 <input type="checkbox"/>	34 <input type="checkbox"/>	39 <input type="checkbox"/>	45 <input type="checkbox"/>	29 <input type="checkbox"/>
	15 <input type="checkbox"/>	62 <input type="checkbox"/>	58 <input type="checkbox"/> 71 <input type="checkbox"/>	50 <input type="checkbox"/>	48 <input type="checkbox"/> 57 <input type="checkbox"/>	43 <input type="checkbox"/> 47 <input type="checkbox"/>	59 <input type="checkbox"/>	35 <input type="checkbox"/>
Need Practice?								
Practice Pages	17	19	21	23	25	27	29	31
	18	20	22	24	26	28	30	32

Competency Goal 2: Spatial Sense, Measurement, and Geometry											
Standard	2.01	2.02	2.03	2.04	2.05	2.06	2.07	2.08	2.09	2.10	2.11
Test Questions	17 <input type="checkbox"/>	19 <input type="checkbox"/>	23 <input type="checkbox"/>	46 <input type="checkbox"/>	3 <input type="checkbox"/>	11 <input type="checkbox"/>	38 <input type="checkbox"/>	66 <input type="checkbox"/>	30 <input type="checkbox"/>	6 <input type="checkbox"/>	25 <input type="checkbox"/>
	49 <input type="checkbox"/>	53 <input type="checkbox"/> 54 <input type="checkbox"/>	64 <input type="checkbox"/>	51 <input type="checkbox"/> 72 <input type="checkbox"/>	10 <input type="checkbox"/> 75 <input type="checkbox"/>	16 <input type="checkbox"/>	80 <input type="checkbox"/>	74 <input type="checkbox"/> 79 <input type="checkbox"/>	77 <input type="checkbox"/>	63 <input type="checkbox"/>	26 <input type="checkbox"/> 68 <input type="checkbox"/>
Need Practice?											
Practice Pages	33	35	37	39	41	43	45	47	49	51	53
	34	36	38	40	42	44	46	48	50	52	54

Competency Goal 3: Patterns Relationships, and Functions					
Standard	3.01	3.02	3.03	3.04	3.05
Test Questions	28 <input type="checkbox"/> 76 <input type="checkbox"/>	40 <input type="checkbox"/> 70 <input type="checkbox"/> 78 <input type="checkbox"/>	2 <input type="checkbox"/> 33 <input type="checkbox"/>	9 <input type="checkbox"/> 55 <input type="checkbox"/>	18 <input type="checkbox"/> 31 <input type="checkbox"/>
Need Practice?					
Practice Pages	55, 56	57, 58	59, 60	61, 62	63, 64

Competency Goal 4: Data, Probability, and Statistics										
Standard	4.01	4.02	4.03	4.04	4.05	4.06	4.07	4.08	4.09	4.10
Test Questions	4 <input type="checkbox"/>	36 <input type="checkbox"/>	41 <input type="checkbox"/>	1 <input type="checkbox"/>	27 <input type="checkbox"/>	12 <input type="checkbox"/>	32 <input type="checkbox"/>	65 <input type="checkbox"/>	61 <input type="checkbox"/>	8 <input type="checkbox"/>
	5 <input type="checkbox"/>	37 <input type="checkbox"/>	42 <input type="checkbox"/> 56 <input type="checkbox"/>	21 <input type="checkbox"/>	44 <input type="checkbox"/> 60 <input type="checkbox"/>	20 <input type="checkbox"/>	52 <input type="checkbox"/> 69 <input type="checkbox"/>	73 <input type="checkbox"/>	67 <input type="checkbox"/>	24 <input type="checkbox"/>
Need Practice?										
Practice Pages	65	67	69	71	73	75	77	79	81	83
	66	68	70	72	74	76	78	80	82	84

North Carolina 1998 Standard Course of Study Grade 7

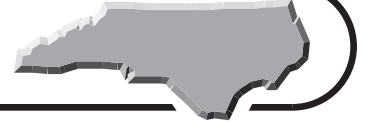
Competency Goals and Objectives	
COMPETENCY GOAL 1: Number Sense, Numeration, and Numerical Operations	
1.01	Write whole numbers in scientific notation; convert scientific notation to standard form; investigate the uses of scientific notation.
1.02	Compare and order rational numbers.
1.03	Model addition, subtraction, multiplication, and division of integers; record.
1.04	Compute with integers.
1.05	Write and solve proportions.
1.06	Estimate and solve problems using ratio, proportion and percent including discounts, taxes, commissions, and simple interest.
1.07	Use geometric models to develop the meaning of the square of a number and its positive square root; investigate and estimate square root, checking the results with a calculator.
1.08	Analyze and select appropriate operations, models, strategies and methods to solve a variety of multi-step problems using positive rational numbers, integers, and their inverses. Use calculators and computers where appropriate.
COMPETENCY GOAL 2: Spatial Sense, Measurement, and Geometry	
2.01	Construct perpendicular and parallel lines.
2.02	Identify the congruent and supplementary relationships of the angles formed by cutting parallel lines by a transversal.
2.03	Locate, give the coordinates of, and graph plane figures which are the results of translations or reflections in all quadrants of the coordinate plane.
2.04	Use models to investigate the concept of the Pythagorean Theorem.
2.05	Build models of three-dimensional figures given end, side and top views.
2.06	Draw end, side and top views of three-dimensional figures given models; use appropriate technology.
2.07	Use models to find the surface area of rectangular solids and cylinders.
2.08	Use models to find the volume of prisms and cylinders.
2.09	Calculate the volume of rectangular solids.
2.10	Recognize the effect on the area and perimeter when one or two dimensions of a plane figure are changed.
2.11	Use proportions to express relationships between corresponding parts of similar figures.
COMPETENCY GOAL 3: Patterns, Relationships, and Functions	
3.01	Evaluate algebraic expressions.
3.02	Model and solve simple equations and inequalities and graph their solutions; use appropriate technology.

Competency Goals and Objectives

3.03	Write or model a simple linear equation or inequality to solve a given problem; use appropriate technology.
3.04	Write a problem given a simple linear equation or inequality.
3.05	Describe, extend, analyze and create a wide variety of patterns to investigate relationships and solve problems; use appropriate technology. 12-2b
COMPETENCY GOAL 4: Data, Probability, and Statistics	
4.01	Interpret and construct histograms.
4.02	Compare and relate bar graphs and histograms.
4.03	Construct circle graphs using ratios, proportions, and percents.
4.04	Create, compare, contrast, and evaluate both orally and in writing, different graphic representations of the same data.
4.05	Identify appropriate uses of different measures of central tendency.
4.06	Recognize and identify misuses of statistical and numerical data.
4.07	Find all possible outcomes of simple experiments using such methods as lists, tree diagrams, frequency distribution tables, and the Fundamental Counting Principle.
4.08	Compute and apply simple permutations and combinations.
4.09	Find the probability of independent events.
4.10	Identify/explain the relationship between experimental results and theoretical probability.

Diagnostic Test

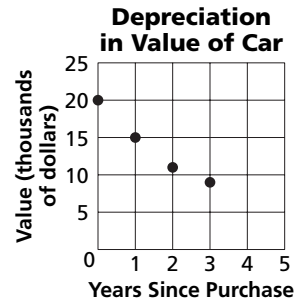
Test Practice



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.

- 1 The graph at the right shows the depreciation in the value of a car that was purchased new for \$20,000. Which would be a reasonable value of the car after 4 years? **4.04**

A \$11,000
B \$10,000
C \$8,000
D \$4,000



1 _____

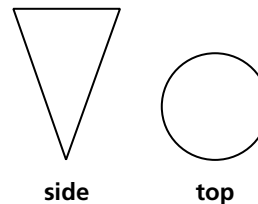
- 2 Autumn is buying mugs with her company logo on them to give out as holiday gifts. The mugs cost \$5 each plus a one-time charge of \$30 to set up the company logo. Which formula could be used to find the total cost y of x mugs? **3.03**

A $y = 5x + 30$ B $y = 35x$
C $y = 30x + 5$ D $y = 5 + x + 30$

2 _____

- 3 Which figure could have the side view and top view shown? **2.05**

A triangular pyramid
B cone
C sphere
D cylinder

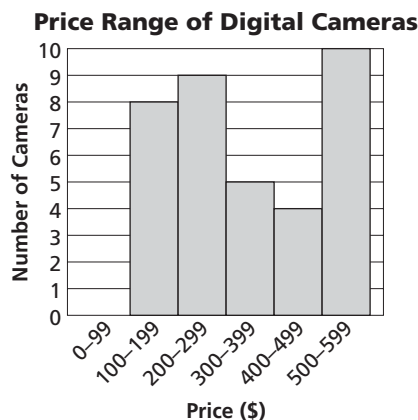


3 _____

For Questions 4 and 5, use the histogram at the right that shows information about the price of 36 digital cameras.

- 4 How many of these cameras cost between \$300 and \$399? **4.01**

A 9 B 8
C 5 D 4



4 _____

- 5 The largest group of cameras is in what price range? **4.01**

A \$200–299 B \$300–399
C \$400–499 D \$500–599

5 _____



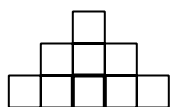
Diagnostic Test (continued)

Test Practice

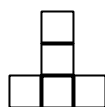


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

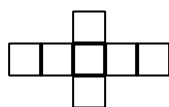
- 6** If the radius of a circle is multiplied by 10, how is the circumference changed? **2.10** **6** _____
- A** It is multiplied by 10.
B It is multiplied by 20.
C It is multiplied by 100.
D It is multiplied by 1,000.
- 7** The Dean Smith Center is about 380 feet long. What is this length in scientific notation? **1.01** **7** _____
- A** 3.8×10^{-3} ft
B 3.8×10^{-2} ft
C 3.8×10^2 ft
D 3.8×10^3 ft
- 8** There are 8 red cubes in a box of different colored cubes. What additional information would you need to find the theoretical probability of drawing a red cube from the box? **4.10** **8** _____
- A** the total number of cubes in the box
B the total number of colors
C the number of yellow cubes and blue cubes
D the total number of cubes that will be drawn
- 9** How could you express the equation $x + (x + 2) + (x + 4) = 57$ in words? **3.04** **9** _____
- A** The sum of three consecutive integers is 57.
B The product of three consecutive even integers is 57.
C The sum of three consecutive multiples of 4 is 57.
D The sum of three consecutive odd integers is 57.
- 10** Cubes of the same size are used to build a 3-dimensional figure. The front, right side, and top views are shown below. Which other view could be the same as the front view? **2.05** **10** _____



front



right side



top

- A** back view **B** left side view
C top view **D** bottom view



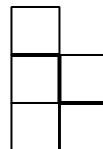
Diagnostic Test (continued)

Test 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.

- 11** The front view of a 3-dimensional figure built from same-size cubes is shown at the right. Which statement must be true? **2.06**



11 _____

- A** The figure contains an even number of cubes.
- B** The figure contains an odd number of cubes.
- C** The figure contains more than 10 cubes.
- D** The figure contains at least 8 cubes.

- 12** A toothpaste advertisement says that 9 out of 10 dentists recommend Brand X toothpaste. Which question would be most important to answer in order to evaluate this claim? **4.06**

12 _____

- A** Was a large enough random sample of dentists surveyed?
- B** How long has Brand X toothpaste been on the market?
- C** What is the average drugstore price of Brand X toothpaste?
- D** How many tubes of Brand X toothpaste were sold last year?

- 13** Which is the greatest number in this list? **1.02**

13 _____

$$\frac{2}{3}, \frac{3}{5}, \frac{1}{4}, \frac{1}{2}$$

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

- 14** If the temperature in Raleigh is 72°F and the temperature in Asheville is 46°F , how many degrees colder is it in Asheville than in Raleigh? **1.04**

14 _____

- A** 26°F
- B** 20°F
- C** 14°F
- D** 6°F

- 15** Pluto is about 3.672×10^9 miles from the Sun. What is this distance in standard form? **1.01**

15 _____

- A** 367,200 mi
- B** 367,200,000 mi
- C** 3,672,000,000 mi
- D** 3,672,000,000,000 mi



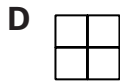
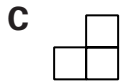
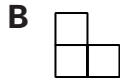
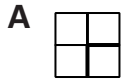
Diagnostic Test (continued)

Test 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.

16 Which is a front view drawing of this figure? 2.06



16 _____

17 Which can you use to do a geometric construction? 2.01

- A only a protractor
- B only a straightedge
- C triangle, square, and straightedge
- D compass and straightedge

17 _____

18 What is the next number in the sequence below? 3.05

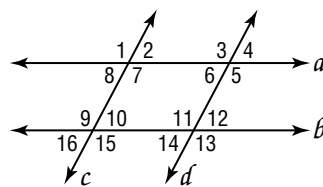
1, 4, 9, 16, 25, ...

- A 50
- B 40
- C 36
- D 30

18 _____

19 If $a \parallel b$ and $c \parallel d$, which pair of angles are congruent? 2.02

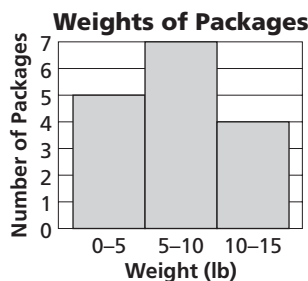
- A $\angle 1$ and $\angle 10$
- B $\angle 4$ and $\angle 11$
- C $\angle 3$ and $\angle 16$
- D $\angle 6$ and $\angle 12$



19 _____

20 What is wrong with the histogram? 4.06

- A The vertical scale does not show numbers greater than 7.
- B The vertical scale is different from the horizontal scale.
- C The bars of the histogram touch each other.
- D The intervals for the bars use overlapping numbers.

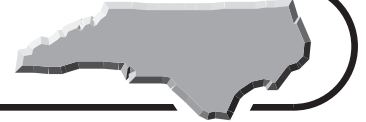


20 _____

Go on

Diagnostic Test (continued)

Test Practice

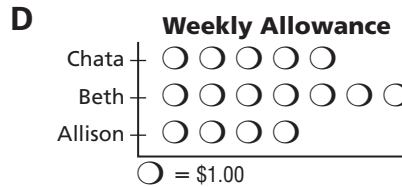
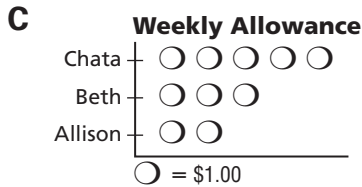
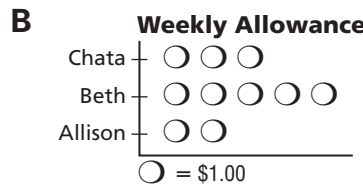
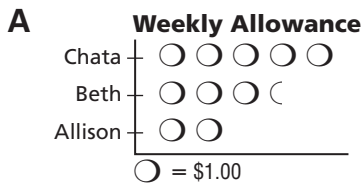


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

21 Which pictograph shows the data in this table? **4.04**

Student	Weekly Allowance
Allison	\$2.00
Beth	\$3.50
Chata	\$5.00

21 _____



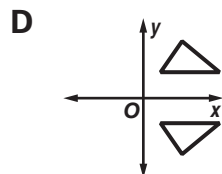
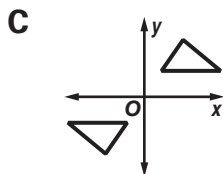
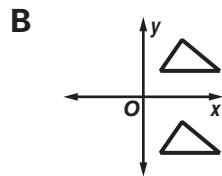
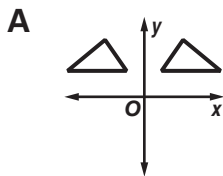
22 The bakery sells 10 cupcakes for \$4.00. What operation would you use to find the cost of 1 cupcake? **1.03**

22 _____

- A addition
- B subtraction
- C multiplication
- D division

23 Which shows a triangle and its image after a reflection over the x -axis? **2.03**

23 _____



24 Suppose 200 people are asked to name their favorite vegetable. The number of people who answered beans is then divided by 200. The quotient tells you the chances that a randomly selected person from the group said that their favorite vegetable is beans. This is an example of which kind of probability? **4.10**

24 _____

- A theoretical
- B experimental
- C geometric
- D numerical



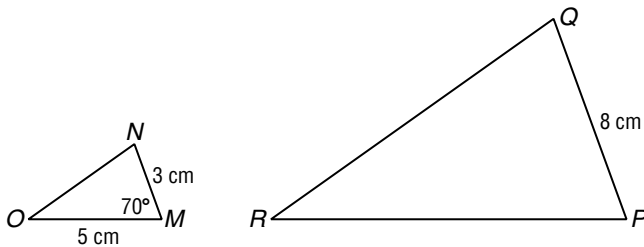
Diagnostic Test (continued)

Test 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.

For Questions 25 and 26, $\triangle MNO$ is similar to $\triangle PQR$.



25 What is PR ? 2.11

- A $1\frac{7}{8}$ cm
- B 10 cm
- C $13\frac{1}{3}$ cm
- D 15 cm

25 _____

26 What is $m\angle P$? 2.11

- A 50
- B 70
- C 140
- D $186\frac{2}{3}$

26 _____

27 The table shows the value of major North Carolina seafood landings in 2001, rounded to the nearest thousand dollars. Which measure gives the best “average” value of these landings? 4.05

- A mean
- B mode
- C median
- D range

Seafood	Value
Blue Crab	\$32,231,000
Hard Clam	\$5,007,000
Atlantic Menhaden	\$4,551,000
Sea Scallop	\$1,692,000
Yellow Fin Tuna	\$1,461,000
King Mackerel	\$1,344,000

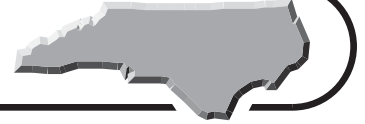
27 _____

28 What is the value of $5x + 3y - 7$ if $x = -2$ and $y = 4$? 3.01

- A -10
- B -5
- C 9
- D 15

28 _____



Diagnostic Test (continued)**Test Practice**

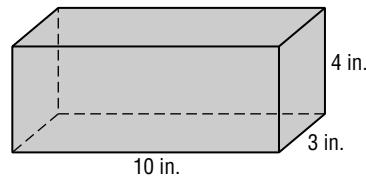
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 29** Suppose there are 50 seventh graders in one school in Boone. If $\frac{1}{10}$ of the students are at home sick and $\frac{2}{3}$ of those who are not sick are on a field trip, how many are in school? **1.08**

A 5 **B** 15
C 20 **D** 30

- 30** What is the volume of the box shown at the right? **2.09**

A 120 in^3
B 70 in^3
C 34 in^3
D 17 in^3



30 _____

- 31** Which equation describes how the values of x and y are related? **3.05**

A $y = x + 4$
B $y = x - 1$
C $y = 2x + 1$
D $y = 2x - 1$

x	y
0	-1
2	3
4	7

31 _____

- 32** Jamila can buy a silver or white car. She can choose between a 6-cylinder or an 8-cylinder engine, and she can get a black, red, or tan interior. How many different style cars can she choose from? **4.07**

A 3 **B** 6
C 12 **D** 18

32 _____

- 33** Ursula can do 30 sit-ups in 1 minute. Which function gives the number of sit-ups y that Ursula can do in x minutes? **3.03**

A $y = 30x$ **B** $y = 2x$
C $y = \frac{1}{2}x$ **D** $y = \frac{1}{30}x$

33 _____

- 34** What is x if $\frac{x}{15} = \frac{7}{9}$? **1.05**

A $2\frac{4}{9}$ **B** 10
C $11\frac{2}{3}$ **D** $19\frac{2}{7}$

33 _____



Diagnostic Test (continued)

Test 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.

- 35** Ukari bought a DVD for \$21.95 and a package of gum for \$0.90. She gave the clerk \$25. How much change did she receive? Do not include tax. **1.08**

A \$22.85
B \$21.05
C \$3.15
D \$2.15

35 _____

For Questions 36 and 37, use the table at the right that shows the lengths of several rivers.

River	Length (mi)
Tennessee French Broad	886
Kanawha-New	352
Pee Dee-Yadkin	435
Santee-Wateree-Catawba	538
Nolichucky	150

- 36** To make a bar graph for this data how many bars are needed? **4.02**

A 5
B 4
C 3
D 2

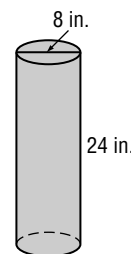
36 _____

- 37** To make a histogram for the data, if the first interval is 0–299, what will the last interval be? **4.02**

A 700–899
B 500–899
C 700–999
D 600–899

37 _____

- 38** Nancy wants to cover the side of a cylindrical umbrella stand with decorative adhesive paper. The dimensions of the umbrella stand are shown in the figure. About how many square inches of paper does she need? Round your answer to the nearest whole number. **2.07**



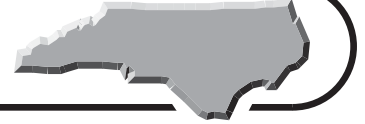
38 _____

A 50 in²
B 603 in²
C 1,206 in²
D 2,381 in²



Diagnostic Test (continued)

Test 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.

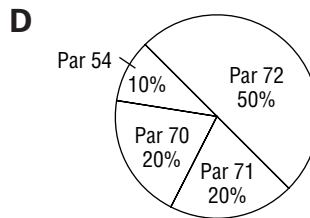
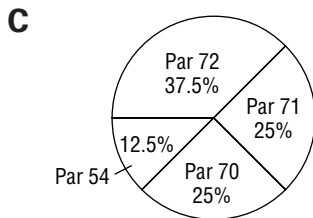
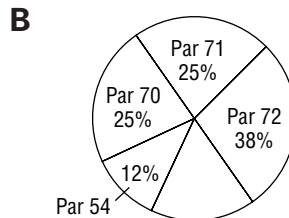
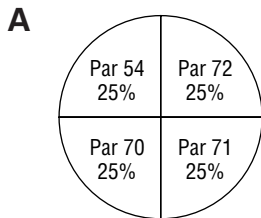
- 39** The population of North Carolina was estimated to be 8,000,000 in March, 2000 and 8,400,000 in August, 2002. What was the percent of increase? **39** _____
A 2% **B** 5% **C** 10% **D** 20% **1.06**

- 40** What is the solution of $8x + 2 < 18$? **3.02** **40** _____
A $x < 8$ **B** $x = \frac{5}{2}$ **C** $x > 2$ **D** $x < 2$

For Questions 41 and 42, use the table below. It shows the number of strokes for par at several North Carolina golf courses.

Golf Course	Number of Strokes for Par
Pearl Golf Links	72
Grassy Creek	72
Mt. Mitchell	72
Smoky Mountain Country Club	71
Sherwood Forest	54
Pinehurst #1	70
Nags Head	71
Sapphire Mountain	70

- 41** Which circle graph represents this data? **4.03** **41** _____



- 42** How many degrees are used for the part representing the par-72 courses? **4.03** **42** _____
A 135° **B** 120°
C 90° **D** 45°



Diagnostic Test (continued)

Test 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.

- 43** Perry earns 5% commission on each used car he sells. His commission last week was \$700. What was the total value of his sales last week? **1.06** **43** _____

A \$35
B \$140
C \$3,500
D \$14,000

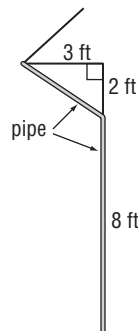
- 44** Suppose five people in a community paid property taxes of \$2,000, \$2,100, \$2,200, \$2,300, and \$7,000. Which measure would be best for a real estate agent to use to express the average taxes to a client? **4.05** **44** _____

A mean
B median
C mode
D range

- 45** If \sqrt{a} is between 6 and 7, between which pair of numbers is $\sqrt{4a}$? **1.07** **45** _____

A 1.5 and 1.75
B 3 and 3.5
C 12 and 14
D 24 and 28

- 46** The gutter on one side of the roof of a house drains through the pipe shown in the figure. What is the length of the entire pipe, rounded to the nearest tenth of a foot? **2.04**



A 3.6 ft
B 10.3 ft
C 11.6 ft
D 14.0 ft

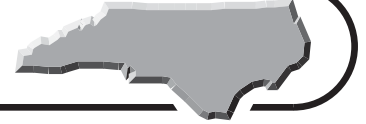
- 47** The Tar Heel Bank pays 2.25% interest on 12-month certificates of deposit. How much interest will a \$10,000 certificate earn in 1 year? **1.06** **47** _____

A \$2,250
B \$444.44
C \$225
D \$44.44

Go on

Diagnostic Test (continued)

Test 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.

- 48** A bread machine requires $2\frac{1}{4}$ teaspoons of yeast to make a $1\frac{1}{2}$ -pound loaf. How much yeast is needed to make a 2-pound loaf? **1.05** **48** _____

A $2\frac{1}{4}$ teaspoons **B** 3 teaspoons
C $3\frac{1}{2}$ teaspoons **D** 4 teaspoons

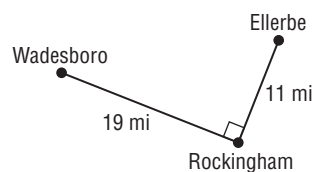
- 49** How many lines can be constructed in a single plane perpendicular to a given line through a given point on the line? **2.01** **49** _____

A 4
B 2
C 1
D 0

- 50** A baby weighed 8 pounds at birth. If she triples her weight by age 2, how much does she weigh at age 2? **1.04** **50** _____

A 11 lb
B 16 lb
C 24 lb
D 32 lb

- 51** Two highways form an angle of approximately 90 degrees at Rockingham, as shown in the figure. About how many miles is the shortest distance between Ellerbe and Wadesboro? Round your answer to the nearest mile. **2.04**



A 5 mi
B 14 mi
C 15 mi
D 22 mi

- 52** There are 3 routes from Kinston to Trenton and 2 routes from Trenton to Jacksonville. How many ways are there to get from Kinston to Jacksonville if you go through Trenton? **4.07** **52** _____

A 5
B 6
C 12
D 36



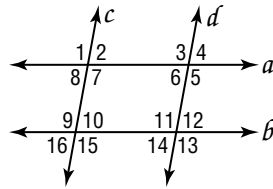
Diagnostic Test (continued)

Test 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.

For Questions 53 and 54, use the figure at the right that shows four lines, with $a \parallel b$ and $c \parallel d$.



53 Which pair of angles must be supplementary? **2.02**

- A $\angle 1$ and $\angle 3$
- B $\angle 4$ and $\angle 11$
- C $\angle 12$ and $\angle 16$
- D $\angle 6$ and $\angle 12$

53 _____

54 If $m\angle 10 = 80$, what is $m\angle 2$? **2.02**

- A 120
- B 100
- C 90
- D 80

54 _____

55 Which situation could be represented by the equation $x + y = 26$? **3.04**

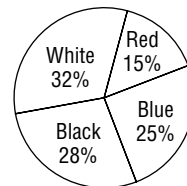
- A The product of 2 numbers is 26.
- B The difference of 2 numbers is 26.
- C The sum of the ages of Scooter and his brother is 26.
- D Scooter is 26 years older than his brother.

55 _____

56 The circle graph shows the percent of cars of various colors that Ludmila saw on the Blue Ridge Parkway. If she saw 200 cars, how many *more* cars were white than blue? **4.03**

- A 7
- B 8
- C 14
- D 24

Cars on Parkway



56 _____

57 A recipe that makes 48 cookies uses $\frac{3}{4}$ cup of brown sugar. Skip wants to make 72 cookies. How much brown sugar should he use? **1.05**

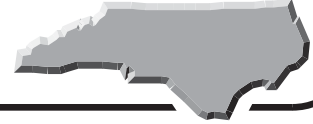
- A $\frac{1}{2}$ cup
- B $\frac{3}{4}$ cup
- C 1 cup
- D $1\frac{1}{8}$ cups

57 _____



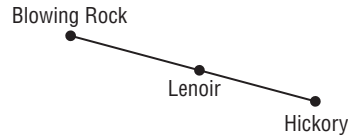
Diagnostic Test (continued)

Test 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.

- 58** The distance from Blowing Rock to Lenoir is 20 miles and the distance from Blowing Rock to Hickory is 38 miles. How many miles is it from Lenoir to Hickory? **1.03**



58 _____

- A** 18 mi
B 38 mi
C 58 mi
D 76 mi

- 59** The area of the square floor of Kenny's bedroom is 144 square feet. He wants to put a mural on one wall. How many feet long can the mural be?

59 _____

- A** 12 ft
B 24 ft
C 36 ft
D 48 ft

1.07

- 60** You have test grades of 92, 80, 96, and 100. What must you get on the next test to have an average of 90? Assume all tests count the same amount.

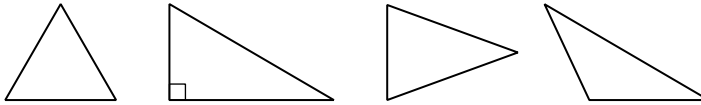
60 _____

- A** 82
B 88
C 90
D 94

4.05

- 61** If two triangles are chosen at random from the triangles shown, what is the probability that both triangles will be acute? **4.09**

61 _____



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



Diagnostic Test (continued)

Test 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.

- 62** Between which two points will you graph $\frac{3}{2}$ on the number line shown? **1.02**



- A** *A* and *B*
B *B* and *C*
C *C* and *D*
D *D* and *E*

62 _____

- 63** If the length of a parallelogram is multiplied by 3 and the height multiplied by 2, how is the area changed? **2.10**

- A** It is multiplied by 2.
B It is multiplied by 3.
C It is multiplied by 6.
D It is multiplied by 36.

63 _____

- 64** What is the image of $T(-1, 3)$ after it is translated 1 unit left and 2 units up? **2.03**

- A** $T'(-2, 1)$ **B** $T'(-2, 5)$
C $T'(0, 1)$ **D** $T'(0, 5)$

64 _____

- 65** You have framed photos of 7 of your favorite singers. You are going to put one photo at each end of a shelf in your room. In how many ways can you choose 2 of the photos? **4.08**

- A** 21 **B** 42
C 2,520 **D** 5,040

65 _____

- 66** How deep is a rectangular pool that is 24 feet long and 15 feet wide if the volume of the pool is 1,620 cubic feet? **2.08**

- A** 3 ft **B** 4.5 ft
C 6 ft **D** 8 ft

66 _____

- 67** Kosla went fishing at Jordan Lake. He caught 2 bass, 3 bluegill, 5 sunfish, and 10 crappie. If one of the fish is chosen at random for weighing, what is the probability that it is a bluegill? **4.09**

- A** $\frac{3}{20}$ **B** $\frac{1}{4}$
C $\frac{1}{2}$ **D** $\frac{3}{4}$

67 _____



Diagnostic Test (continued)

Test 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.

68 $\triangle DEF$ is similar to $\triangle GHI$. If $DE = 4$ meters, $EF = 6$ meters, and $GH = 8$ meters, what is HI ? **2.11** **68** _____

A 6 m

B 8 m

C 10 m

D 12 m

69 Hikara is putting a pool in her backyard. It can be round, oval, or rectangular. It can be all one depth or have a deeper area. The lining can be blue, green, gray, or print. How many different pools does she have to choose from? **4.07** **69** _____

A 9

B 12

C 18

D 24

70 What is the solution of $a + 12 = 46$? **3.02** **70** _____

A 12

B 24

C 34

D 58

71 Yvonne went to the ice cream parlor with two girlfriends. Her friends had sodas that cost \$3.25 each. Yvonne had a banana split for \$3.50. How much was the total bill before tax? **1.03** **71** _____

A \$6.75

B \$9.75

C \$10.00

D \$10.50

72 Mazella is painting her two-story house. She has a 25 foot extension ladder. If the base of the ladder is 5 feet from the wall, how high up the wall will the ladder reach, to the nearest foot? **2.04** **72** _____

A 20 ft

B 24 ft

C 25 ft

D 30 ft

73 In how many ways can a committee of 4 students be selected from a group of 5 students? **4.08** **73** _____

A 20

B 10

C 9

D 5

74 What is the volume of wax needed to make a cylindrical pillar candle 6 inches tall with a radius of 2 inches? Use 3.14 for π . **2.08** **74** _____

A 89.48 in³

B 75.36 in³

C 37.68 in³

D 56.52 in³



Diagnostic Test (continued)

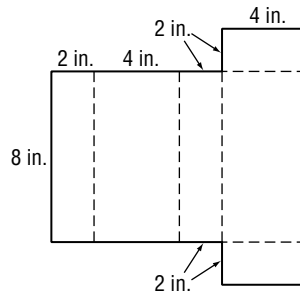
Test Practice



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.

- 75 If the figure shown is cut out and folded on the dashed lines, what kind of closed, 3-dimensional figure can be formed? **2.05**

A rectangular pyramid
 B rectangular prism
 C cube
 D hexagonal prism



75 _____

- 76 What is the value of $5x - 7y$ if $x = 4$ and $y = 2$? **3.01**

A 0
 B 6
 C 11
 D 34

76 _____

- 77 If the volume of a rectangular prism is 300 cubic meters, the width is 15 meters, and the length is 40 meters, what is the height? **2.09**

A 0.5 m
 B 2 m
 C 3.5 m
 D 4 m

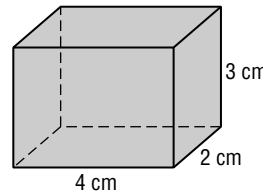
77 _____

- 78 What is the solution of $5x = 35$? **3.02**

A 5
 B 7
 C 30
 D 175

78 _____

For Questions 79 and 80, use the rectangular prism shown at the right.



- 79 What is the volume of the prism? **2.08**

A 24 cm^3
 B 26 cm^3
 C 48 cm^3
 D 52 cm^3

79 _____

- 80 What is the surface area of the prism? **2.07**

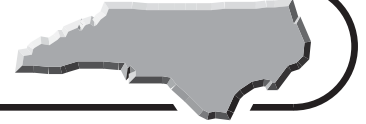
A 24 cm^2
 B 26 cm^2
 C 48 cm^2
 D 52 cm^2

80 _____



Standards Practice

Objective 1.01



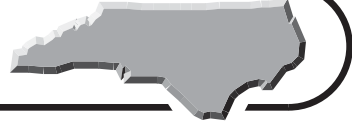
Write whole numbers in scientific notation; convert scientific notation to standard form; investigate the uses of scientific notation.

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

- 1 Which is 268,000 in scientific notation? 1 _____
A 0.268×10^{-6} **B** 2.68×10^{-5}
C 26.8×10^4 **D** 2.68×10^5
- 2 Which is 0.0459 in scientific notation? 2 _____
A 4.59×10^{-2} **B** 4.59×10^{-1}
C 4.59×10^2 **D** 4.59×10^4
- 3 Which is 9.84×10^2 in standard form? 3 _____
A 0.0984 **B** 2.984
C 100.984 **D** 984
- 4 Which is 1.5×10^{-3} in standard form? 4 _____
A 0.00015 **B** 0.0015
C 3.15 **D** 1,500
- 5 What does $(2 \times 10^5) \times (5 \times 10^3)$ equal? 5 _____
A 1.0×10^8 **B** 7.0×10^8
C 1.0×10^9 **D** 10.0×10^{15}
- 6 What does $\frac{1.2 \times 10^3}{4.0 \times 10^2}$ equal? 6 _____
A 3.0×10^0 **B** 3.0×10^1
C 3.0×10^5 **D** 4.8×10^5
- 7 The area of North Carolina is about 52,600 square miles. What is this in scientific notation? 7 _____
A 5.26×10^3 **B** 52.6×10^3
C 5.26×10^4 **D** 5.26×10^{-4}
- 8 The Star Theater in Morehead Planetarium seats 3.1×10^2 people. What is this in standard notation? 8 _____
A 31 **B** 310
C 3,100 **D** 31,000

Standards Practice

Objective 1.01 (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.

For Questions 9 and 10, use the table below that shows the number of eggs produced per hundred egg layers by month in North Carolina in 2000 and 2001.

Year	Jan.	Feb.	Mar.	Apr.	May
2000	1,912	1,717	1,894	1,831	1,886
2001	1,951	1,739	1,908	1,844	1,917

9 What is the number of eggs produced per hundred egg layers in March 2001, expressed in scientific notation? **9** _____

- A 1.894×10^2
- B 1.908×10^2
- C 1.894×10^3
- D 1.908×10^3

10 How many *more* eggs were laid in January 2001 per hundred egg layers than in January 2000? Write your answer in scientific notation. **10** _____

- A 3.9×10^{-1}
- B 3.9×10^1
- C 1.912×10^2
- D 1.951×10^3

For Questions 11 and 12, use the table of cellular phone subscriptions at the right.

Year	Number of Subscriptions
1985	340
1990	5,283
1995	33,786
1998	69,208
1999	86,047
2000	109,478
2001	128,375

11 What was the number of subscriptions in 2000, written in scientific notation? **11** _____

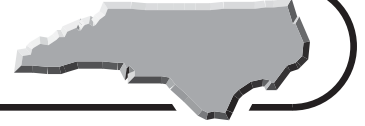
- A 1.09478×10^8
- B 1.09478×10^5
- C 1.09478×10^{-5}
- D 1.09478×10^{-8}

12 By how many did the number of subscriptions increase from 1985 to 1990? Express your answer in scientific notation. **12** _____

- A 1.55×10^3
- B 3.4×10^3
- C 4.943×10^3
- D 5.283×10^6

Standards Practice

Objective 1.02



Compare and order rational numbers.

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

1 Which is the least number in this list? 1 _____

$$\frac{3}{4}, \frac{7}{12}, \frac{5}{6}, \frac{2}{3}$$

A $\frac{3}{4}$

B $\frac{7}{12}$

C $\frac{5}{6}$

D $\frac{2}{3}$

2 Which statement is true? 2 _____

A $\frac{3}{5} < \frac{5}{9}$

B $\frac{3}{5} = \frac{5}{9}$

C $\frac{3}{5} > \frac{5}{9}$

D $\frac{5}{9} - \frac{3}{5} = \frac{1}{2}$

3 Which statement is true? 3 _____

A $5\frac{1}{4} < 4\frac{2}{3}$

B $5\frac{1}{4} = 5.4$

C $3\frac{1}{3} < 3\frac{1}{6}$

D $6\frac{1}{2} < 6\frac{9}{10}$

4 Which shows the numbers $0.6, \frac{2}{3}, 0.67,$ and $0.6\bar{5}$ in order from least to greatest? 4 _____

A $0.6, 0.6\bar{5}, \frac{2}{3}, 0.67$

B $0.6, 0.6\bar{5}, 0.67, \frac{2}{3}$

C $0.6, \frac{2}{3}, 0.6\bar{5}, 0.67$

D $\frac{2}{3}, 0.67, 0.6, 0.6\bar{5}$

5 Which statement is true? 5 _____

A $-3\frac{1}{2} < -3$

B $-3\frac{1}{2} > -3$

C $-3\frac{1}{2} < -4$

D $-3\frac{1}{2} = -3.2$

6 Which statement is true? 6 _____

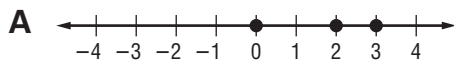
A $\frac{1}{11} < -11$

B $\frac{1}{11} > 11$

C $\frac{1}{11} > \frac{1}{10}$

D $\frac{1}{11} < \frac{1}{10}$

7 Which graph shows $-2, 0,$ and 3 ? 7 _____



Standards Practice

Objective 1.02 (continued)



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

- 8** Which statement is true? **8** _____
- A** $\frac{2}{3} = \frac{3}{5}$ **B** $\frac{5}{3} < \frac{2}{3}$
C $\frac{2}{3} < \frac{3}{5}$ **D** $\frac{2}{3} > \frac{3}{5}$
- 9** Which statement is true? **9** _____
- A** $-7 < -6$ **B** $-7 > -6$
C $-7 > 2$ **D** $-7 < -8$
- 10** Which shows the numbers 2, $0.6\frac{1}{3}$, $1.\bar{7}$, and $3\frac{3}{5}$ in order from least to greatest? **10** _____
- A** $0.6, 3\frac{3}{5}, 2, 1.\bar{7}, \frac{1}{3}$ **C** $0.6, 1.\bar{7}, 2, \frac{1}{3}, 3\frac{3}{5}$
C $0.6, \frac{1}{3}, 1.\bar{7}, 2, 3\frac{3}{5}$ **D** $\frac{1}{3}, 0.6, 1.\bar{7}, 2, 3\frac{3}{5}$
- 11** It rained for three days straight in Monroe. On Tuesday there was $\frac{3}{10}$ of an inch of rain, on Wednesday $\frac{1}{2}$ inch, and on Thursday $\frac{1}{4}$ inch. Which lists the days in order from least rain to most rain? **11** _____
- A** Tuesday, Wednesday, Thursday
B Thursday, Tuesday, Wednesday
C Thursday, Wednesday, Tuesday
D Wednesday, Thursday, Tuesday
- 12** Which is the least number in the list below? **12** _____
- $-1, 3\frac{2}{3}, 0.\bar{1}, -\frac{11}{10}, 0, 16, -0.02$
- A** $-\frac{11}{10}$ **B** -1
C -0.02 **D** $0.\bar{1}$
- 13** Which shows the numbers $-2\frac{1}{2}$, 0, 1.6, $-\frac{9}{5}$, $-0.\bar{2}$ in order from least to greatest? **13** _____
- A** $-\frac{9}{5}, -2\frac{1}{2}, 0, -0.\bar{2}, 1.6$ **B** $-\frac{9}{5}, -2\frac{1}{2}, -0.\bar{2}, 0, 1.6$
C $0, -0.\bar{2}, -\frac{9}{5}, 1.6, -2\frac{1}{2}$ **D** $-2\frac{1}{2}, -\frac{9}{5}, -0.\bar{2}, 0, 1.6$

Standards Practice

Objective 1.03



Model addition, subtraction, multiplication, and division of integers; record.

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 If dog food for Jake costs \$10 a month, how much will it cost to feed him for 10 years? **1** _____
- A** \$120 **B** \$150 **C** \$1,000 **D** \$1,200
- 2 Liz was trying to find two consecutive whole numbers with a product of 56. Which method could she use to find these numbers? **2** _____
- A** Divide 56 by 1, 2, 3, etc. until the answer is 1 more than the divisor.
B Divide 56 by 2 and take the number on each side of the answer.
C Find $\sqrt{56}$ and 1 more than $\sqrt{56}$.
D Solve the equation $2x + 1 = 56$.

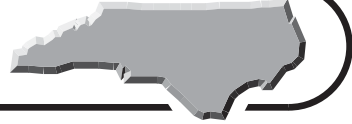
For Questions 3 and 4, use the table below that shows the number of visitors to various national areas in 2001.

Most Visited National Areas in 2001	
National Area	Approximate Number of Visitors
Blue Ridge Parkway	20,000,000
Golden Gate N.R.A.	13,000,000
Great Smoky Mts. N.P.	9,200,000
Lake Mead N.R.A.	8,400,000
Cape Cod Nat'l Seashore	4,400,000
Statue of Liberty	4,300,000
Grand Canyon N.P.	4,100,000

- 3 Which could you use to find the average number of visitors to these areas? **3** _____
- A** Add the number of visitors and divide by 2.
B Add the number of visitors.
C Add 20,000,000 and 4,100,000 and divide by 2.
D Add the number of visitors and divide by 7.
- 4 Which calculation would you use to find how many *more* people visited the Blue Ridge Parkway than Great Smoky Mountain National Park? **4** _____
- A** $20,000,000 + 9,200,000$ **B** $20,000,000 \div 9,200,000$
C $20,000,000 - 9,200,000$ **D** $20,000,000 \times 9,200,000$

Standards Practice

Objective 1.03 (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.

5 Ernie is piecing together 9-inch squares to make a quilt. He wants the quilt to be 90 inches wide and 108 inches long. To find how many squares he needs for the width, what would be the simplest operation for him to use?

- A addition
B subtraction
C multiplication
D division

5 _____

For Questions 6 and 7, use this table of costs of hang gliding lessons offered at Jockey's Ridge State Park.

Lessons	Cost
beginner	\$85
demo	\$65
ground introduction	\$35
advanced	\$75
2-day package	\$200

6 Leigh and two friends want to take beginners lessons. Which would you do to find the total cost for the three of them?

- A Add 3 and 85.
B Multiply 85 by 3.
C Add 85, 65 and 35.
D Add 200 and 85.

6 _____

7 Fredericka wants to sign up for the 2-day package instead of the beginner lesson one day and the advanced lesson the next day. Which expression would you use to find how much more money she will spend?

- A $200 - (85 + 75)$
B $200 + 85 + 75$
C $200 - 2(85)$
D $85 - 75$

7 _____

8 Meryl bought a skateboard for \$56 while Jeanine bought one for \$49. To find how much *more* Meryl paid for her skateboard than Jeanine, which operation would you use?

- A addition
B subtraction
C multiplication
D division

8 _____

9 Luther bought 5 rolls of film for \$2.89 each. To find the total cost of the film, which operation would you use?

- A addition
B subtraction
C multiplication
D division

9 _____

Standards Practice

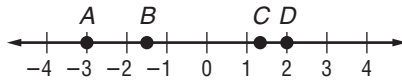
Objective 1.04



Compute with integers.

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 How much larger is the coordinate of D than the coordinate of A ? 1 _____



A 1
C 3

B 2
D 5

- 2 Merin was in a mathematics contest in which she had to do computation quickly without a calculator. Which method might she use to add $57 + 19 + 43 + 101$ quickly? 2 _____

A $57 + 43 = 100$, $19 + 101 = 120$, and $100 + 120 = 220$
B $57 + 101 = 158$, $19 + 43 = 52$, and $158 + 52 = 200$
C $57 + 19 = 76$, $76 + 101 = 177$, and $177 + 43 = 210$
D $57 + 43 = 100$, $100 + 19 = 119$, and $119 + 101 = 300$

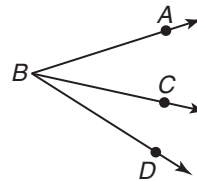
- 3 The record bluefish caught at Hattaras Inlet in 1972 weighed 31 pounds, 12 ounces. If an average serving of fish is 6 ounces, about how many servings would this fish provide? Round your answer to the nearest whole number. 3 _____

A 6
C 62

B 40
D 85

- 4 If $m\angle ABD = 50$ and $m\angle CBD = 20$, what is $m\angle ABC$? 4 _____

A 100
B 70
C 30
D 20



- 5 What is the product of -4 , -3 , and 2 ? 5 _____

A 24
C -5

B 14
D -24

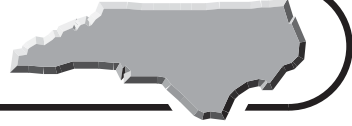
- 6 What is $-\frac{60}{15}$? 6 _____

A -6
C 4

B -4
D 6

Standards Practice

Objective 1.04 (continued)

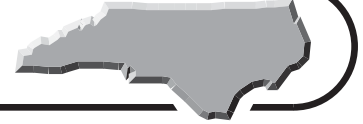


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 7** Samari rode his motorcycle half the distance from Lumberton to Wilmington, which are 70 miles apart. How many miles did he ride? **7** _____
A 25 **B** 30
C 35 **D** 40
- 8** Maurice bought 10 similar woodcarvings for a total of \$220. If they were all the same price, how much did he pay for each woodcarving? **8** _____
A \$11 **B** \$16
C \$22 **D** \$28
- 9** What does $3(2 + 5) - 6 \div 2$ equal? **9** _____
A 18 **B** 12
C 7.5 **D** 1.5
- 10** Shrimp costs \$9 per pound. How much will 5 pounds of shrimp cost? **10** _____
A \$14 **B** \$45
C \$54 **D** \$65
- 11** What is $-11 + 16$? **11** _____
A 7 **B** 5
C -5 **D** -27
- 12** What is $-2 - 2$? **12** _____
A 4 **B** 1
C 0 **D** -4
- 13** Which is correct? **13** _____
A $(-9)(4) = -5$ **B** $(-12) \div (-3) = -4$
C $(-15) \div 5 = -3$ **D** $(-8)(-2) = 4$
- 14** What does $40 - 2(3 + 14)$ equal? **14** _____
A 6 **B** 21
C 128 **D** 646

Standards Practice

Objective 1.05



Write and solve proportions.

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** A model of Hearst Tower, which has 50 stories, is 5 inches tall. If a model of the 60-story Bank of America Center were built to the same scale, how tall would it be? **1** _____
A 3 in. **B** 4 in. **C** 5 in. **D** 6 in.
- 2** Which proportion is equivalent to $\frac{a}{b} = \frac{c}{d}$? **2** _____
A $\frac{a}{c} = \frac{b}{d}$ **B** $\frac{a}{d} = \frac{b}{c}$
C $\frac{a}{c} = \frac{d}{b}$ **D** $\frac{a+b}{b} = \frac{c+b}{d}$
- 3** Kris can swim 6 lengths of the pool in 5 minutes. How long will it take her to swim 15 lengths? **3** _____
A 10 min **B** 12.5 min
C 14 min **D** 18 min
- 4** A fruit punch contains 4 ounces of grape juice and 8 ounces of ginger ale. Mary wants to make 60 ounces of this fruit punch. How many ounces of grape juice does she need? **4** _____
A 40 oz **B** 30 oz
C 20 oz **D** 15 oz
- 5** If it takes Randy 5 hours to drive 250 miles, how long will it take him to drive the 300 miles from Raleigh to Augusta at the same speed? **5** _____
A 2 h **B** 4 h **C** 6 h **D** 10 h
- 6** What is x if $\frac{x}{5} = \frac{4}{3}$? **6** _____
A $6\frac{2}{3}$ **B** 6
C 4 **D** $2\frac{2}{5}$
- 7** Two models of the Wright Flyer are available on the Internet. One has a wingspan of 4 inches and a length of 6 inches. The other has a wingspan of 10 inches. How long is the larger model? **7** _____
A 2.4 in. **B** 8 in. **C** 12 in. **D** 15 in.

Standards Practice

Objective 1.05 (continued)



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

8 Louise, a pet python, grew from 7.5 feet to 10.5 feet in 12 years. If she continues to grow at the same rate, about how long will she be in another 6 years? **8** _____

- A** 12 ft **B** 14 ft
C 15 ft **D** 16 ft

9 There are 84 squirrels in the park and $\frac{5}{7}$ of them are gray. How many gray squirrels are in the park? **9** _____

- A** 60 **B** 42
C 35 **D** 24

10 Rocky Mount and Fayetteville are $5\frac{1}{4}$ inches apart on a map. If the scale of the map is $\frac{1}{2}$ inch = 9 miles, about how far apart are these two cities? **10** _____

- A** 80 mi **B** 85 mi
C 90 mi **D** 95 mi

11 A picture that is 3 inches wide and 5 inches long is to be enlarged so that the new width is 8 inches. What will be the length of the enlargement? **11** _____

- A** $1\frac{7}{8}$ in. **B** 10 in.
C 12 in. **D** $13\frac{1}{3}$ in.

12 A plastic model of the battleship U.S.S. North Carolina is available on-line. If the scale is 1:570 and the real battleship is 728 feet long, about how long is the model? Round your answer to the nearest tenth of an inch. **12** _____

- A** 1.3 in. **B** 10.2 in.
C 15.3 in. **D** 19.1 in.

13 The upper falls of Linville Falls drop 50 feet and the lower falls drop 60 feet. If the upper falls on a model drop $2\frac{1}{2}$ inches, how many inches should the lower falls drop on the model? **13** _____

- A** 2 in. **B** 3 in.
C 6 in. **D** 8 in.

Standards Practice

Objective 1.06



Estimate and solve problems using ratio, proportion, and percent including discounts, taxes, commissions, and simple interest.

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** Mt. Mitchell is 6,684 feet high. Mt. McKinley is 20,320 feet high. Mt. McKinley is about how many times taller than Mt. Mitchell? Round your answer to the nearest whole number. **1** _____

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

- 2** One fruit snack contains 55 milligrams of sodium, which is about 2 percent of the recommended daily amount for an adult. How many milligrams of sodium are recommended daily? **2** _____

A 110 mg **B** 555 mg
C 1,100 mg **D** 2,750 mg

- 3** On a map the angle formed by the road from Goldsboro to Wilson and the road from Goldsboro to Smithfield measures approximately 70° . If the angle between U.S. 220 and I-85 at Greensboro is about half as great, which is an estimate of the measure of this angle? **3** _____

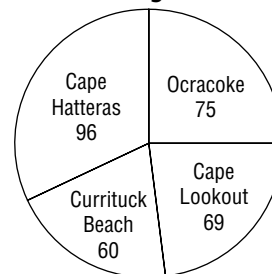
A 140 **B** 90 **C** 60 **D** 35

- 4** There are 8 bears, 6 elephants, and 10 tigers at the zoo. What is the ratio of bears to tigers? **4** _____

A 1:3 **B** 2:5
C 3:4 **D** 4:5

- 5** A group of 300 tourists were asked to pick their favorite North Carolina lighthouse. The results are shown in the circle graph. What percent of the tourists chose Cape Lookout lighthouse? **5** _____

Favorite Lighthouses



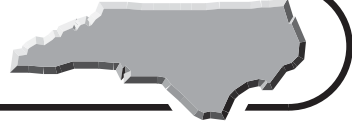
A 13%
B 23%
C 47%
D 77%

- 6** Tim made 7 out of 10 free throws. How many more will he have to make in a row to raise his average to 90%? **6** _____

A 2 **B** 10 **C** 15 **D** 20

Standards Practice

Objective 1.06 (continued)



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

- 7** Sugar Mountain Tubing Park has a snow tubing run of 700 feet, while Ski Beech has a 350-foot run. What is the ratio of the length of the run at Sugar Mountain to the one at Ski Beech? **7** _____
- A** 2:1 **B** 4:1
C 1:4 **D** 1:2
- 8** Shengi earns \$6 per hour at the bicycle shop plus 5 percent commission on everything he sells. If he works 24 hours in a 2-week period and receives a check for \$544, how much were his sales? **8** _____
- A** \$20 **B** \$5,120
C \$8,000 **D** \$10,880
- 9** Suppose you have \$1,000 in a savings account. If the bank pays 3% simple interest, how much interest will your money earn in 3 years? **9** _____
- A** \$300 **B** \$90
C \$30 **D** \$27
- 10** Maria bought a gallon of milk for \$2.89. How much was the 4 percent sales tax on the milk? **10** _____
- A** \$0.01 **B** \$0.12
C \$0.72 **D** \$1.16
- 11** Meryl bought a \$48 sweater at Sell-Right Department Store for 10% off. Jeannie bought the same sweater at Berry Discount Store for \$42.95. Who paid less for the sweater and how much less? **11** _____
- A** Jeannie paid \$0.97 less than Meryl.
B Meryl paid \$0.95 less than Jeannie.
C Meryl paid \$0.25 less than Jeannie.
D Jeannie paid \$0.25 less than Meryl.
- 12** Andrew wants to leave a 15% tip at the restaurant where he took his friends to lunch. His bill is \$39.93. About how much should he leave for the tip? Round your answer to the nearest dollar. **12** _____
- A** \$1 **B** \$4
C \$6 **D** \$8

Standards Practice

Objective 1.07



Use geometric models to develop the meaning of the square of a number and its positive square root; investigate and estimate square root, checking the results with a calculator.

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 What is the area of a square that has a side of length x inches? **1** _____

- A** $2x \text{ in}^2$ **B** $x^2 \text{ in}^2$
C $4x \text{ in}^2$ **D** $x^4 \text{ in}^2$

2 What does $\sqrt{49}$ equal? **2** _____

- A** 3.5 **B** 7
C 7 or -7 **D** 24.5

3 Which is a reasonable estimate for $\sqrt{17}$? **3** _____

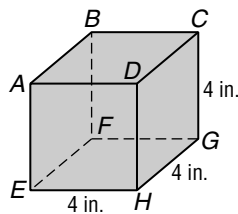
- A** 8.5 **B** 6.8
C 5.2 **D** 4.1

4 If $a = \sqrt{b}$, what does a^2 equal? **4** _____

- A** b^4 **B** b^2
C b **D** b^3

5 What is the area of square $ABCD$? **5** _____

- A** 8 in^2
B 12 in^2
C 16 in^2
D 64 in^2



6 Jill is going to graph $\sqrt{150}$ on a number line. Between which two numbers will she mark the point? **6** _____

- A** 12 and 13 **B** 13 and 14
C 14 and 15 **D** 15 and 16

7 If $(x + 2)^2 = 25$, what is a possible value for $x + 2$? **7** _____

- A** 3 **B** 5
C 12.5 **D** 625

Standards Practice

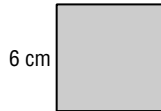
Objective 1.07 (continued)



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

8 What is the area of the square?

- A** 12 cm²
- B** 18 cm²
- C** 24 cm²
- D** 36 cm²



8 _____

9 Which whole number is the value of $\sqrt{65}$ closest to?

- A** 10
- B** 9
- C** 8
- D** 6

9 _____

10 What is the inverse operation of squaring a number?

- A** taking the square root
- B** multiplication
- C** division
- D** subtracting the square

10 _____

11 Which statement is true?

- A** $\sqrt{38} > 6$
- B** $\sqrt{120} > 11$
- C** $\sqrt{97} > 10$
- D** $\sqrt{10} < 3$

11 _____

12 If the area of a square is 100 square centimeters, how many centimeters long is each side?

- A** 10 cm
- B** 20 cm
- C** 25 cm
- D** 50 cm

12 _____

13 Between which whole numbers is $\sqrt{73}$?

- A** 72 and 74
- B** 36 and 37
- C** 8 and 9
- D** 5 and 6

13 _____

14 If $x^2 = 9$, then x could equal which number?

- A** 81
- B** 18
- C** 4.5
- D** 3

14 _____

Standards Practice

Objective 1.08



Analyze and select appropriate operations, models, strategies and methods to solve a variety of multi-step problems using positive rational numbers, integers, and their inverses. Use calculators and computers where appropriate.

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** Manuel made the following deposits into his savings account during July: \$50, \$72, \$225, \$11.25, \$65, \$15.75. If the balance in his account was \$346 on July 1, what was the balance on August 1? Assume that he did not withdraw any money from his account during this time. **1** _____

A \$3,458 **B** \$785
C \$439 **D** -\$93

- 2** Kyle made a blueberry pie. He gave $\frac{1}{4}$ of the pie to his brother, $\frac{1}{4}$ to his father, and $\frac{1}{8}$ to his younger sister. What fraction of the pie was left? **2** _____

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

For Questions 3–5, use the table. It shows how many in a group of 20 classmates said they would buy a concert ticket if the price of a ticket were set at various amounts.

Ticket Price	Total People Who Would Buy a Ticket at This Price
\$10	15
\$15	12
\$20	8
\$25	6

- 3** How much should the tickets cost in order to generate the most income? **3** _____

A \$10 **B** \$15
C \$20 **D** \$25

- 4** How much would the maximum income be from the group surveyed? **4** _____

A \$150 **B** \$160
C \$180 **D** \$200

- 5** If these 20 classmates are representative of all 500 students in their school, about how many students at the school would attend the concert if the tickets cost \$15? **5** _____

A 300 **B** 250
C 200 **D** 120

Standards Practice

Objective 1.08 (continued)



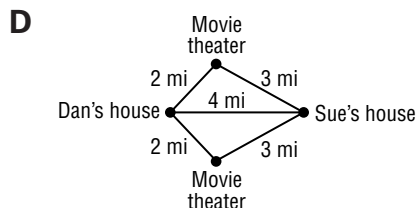
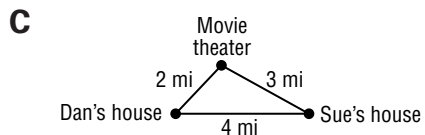
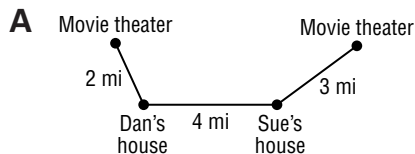
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 6** Kihoon's alarm clock went off at 6:10 A.M., but he did not get up. After that the snooze alarm buzzed every 5 minutes. If Kihoon got up at 6:56 A.M., how many times did the snooze alarm buzz? **6** _____
- A** 7 **B** 8 **C** 9 **D** 10

- 7** Ian was delivering a truckload of 26,000 pounds of grape jelly to Norfolk. He drove from Chattanooga to Cherokee, a distance of 149 miles, in 3 hours. About what was his average speed in miles per hour? **7** _____
- A** 60 mi/h **B** 58 mi/h **C** 50 mi/h **D** 45 mi/h

- 8** The Graveyard of the Atlantic exhibit at the North Carolina Aquarium has a 285,000-gallon tank that contains over 450 fish. About how many gallons of water is this per fish? Round your answer to the nearest 10 gallons. **8** _____
- A** 40 gal **B** 630 gal
C 6,300 gal **D** 128,250,000 gal

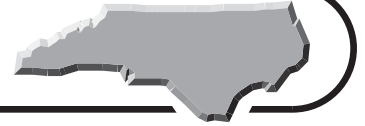
- 9** Dan and Sue are meeting at the movie theater, which is 2 miles from Dan's house and 3 miles from Sue's house. If Dan and Sue live 4 miles apart, which of these diagrams could be used to show all possible locations of the movie theater? **9** _____



- 10** Miguel has \$5 more than Bob and together they have \$27. Which method could you use to find how much money Bob has? **10** _____
- A** Divide 27 by 2, then add 5.
B Subtract 5 from 27, then divide by 2.
C List pairs of consecutive numbers that add up to 27.
D Add 5 to 27, then divide by 2.

Standards Practice

Objective 2.01



Construct perpendicular and parallel lines.

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 How many lines can be constructed parallel to a given line through a point not on the line? 1 _____

A 0

B 1

C 2

D infinitely many

2 For two lines to be perpendicular, what must be the measure of the angles they form? 2 _____

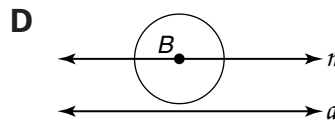
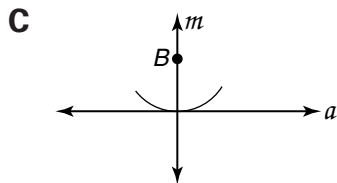
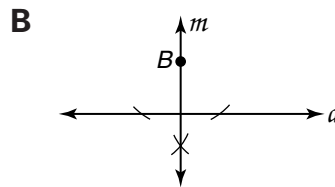
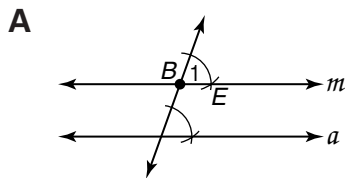
A 45

B 60

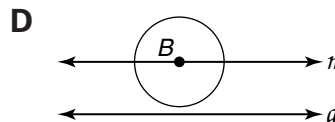
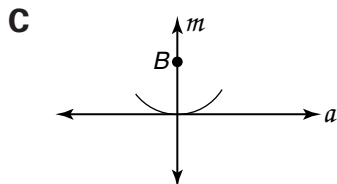
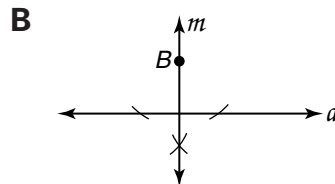
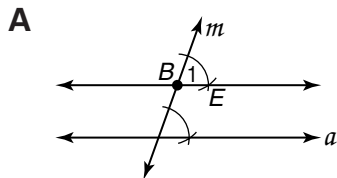
C 90

D 180

3 Which is a correct construction of a line m parallel to line a through point B ? 3 _____



4 Which is a correct construction of a line m through point B perpendicular to line a ? 4 _____



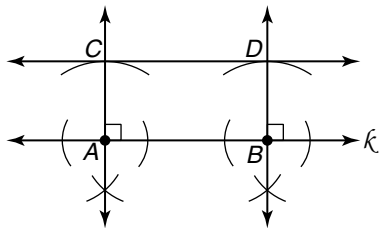
Standards Practice

Objective 2.01 (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.

- 5 What do you need to know to be sure that \overline{CD} is parallel to line k ? 5 _____

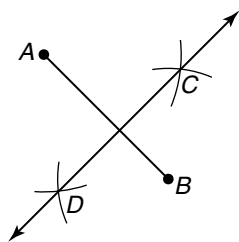


- A $AC = \frac{1}{2}AB$
 B $BD = AB$
 C $BA = AC$
 D $AC = BD$

- 6 What is a line called if it contains the midpoint of a segment and is perpendicular to the segment? 6 _____

- A altitude
 B angle bisector
 C parallel bisector
 D perpendicular bisector

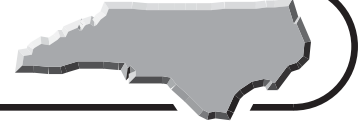
- 7 Alfie wanted to construct the perpendicular bisector of \overline{AB} . The diagram shows what his construction looked like. What was his mistake? 7 _____



- A The arcs he made from A and B do not have the same radius.
 B The line he drew through the intersection points of the arcs was not straight.
 C The intersection points of the arcs should have been on the same side of the line through A and B .
 D He should have drawn six arcs instead of four.

Standards Practice

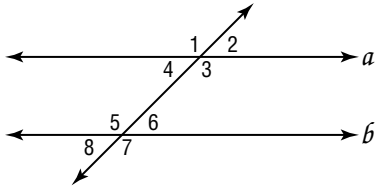
Objective 2.02



Identify the congruent and supplementary relationships of the angles formed by cutting parallel lines by a transversal.

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.

For Questions 1–3, use the figure below that shows parallel lines a and b .



- 1 Which pair of angles are congruent? 1 _____
- A** $\angle 1$ and $\angle 2$ **B** $\angle 2$ and $\angle 7$
C $\angle 2$ and $\angle 5$ **D** $\angle 2$ and $\angle 6$
- 2 Which pair of angles are congruent? 2 _____
- A** $\angle 2$ and $\angle 3$ **B** $\angle 3$ and $\angle 5$
C $\angle 3$ and $\angle 6$ **D** $\angle 3$ and $\angle 8$
- 3 Which pair of angles are supplementary? 3 _____
- A** $\angle 4$ and $\angle 5$ **B** $\angle 2$ and $\angle 4$
C $\angle 4$ and $\angle 6$ **D** $\angle 4$ and $\angle 8$
- 4 If two parallel lines are cut by a transversal, which angles must be congruent? 4 _____
- A** interior angles on the same side of the transversal
B exterior angles on the same side of the transversal
C alternate interior angles
D adjacent angles
- 5 If two parallel lines are cut by a transversal, which angles must be supplementary? 5 _____
- A** interior angles on the same side of the transversal
B vertical angles
C alternate interior angles
D corresponding angles

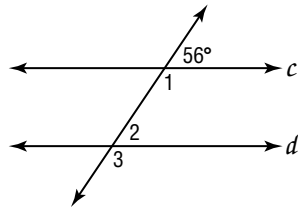
Standards Practice

Objective 2.02 (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.

For Questions 6–8, use the figure, which shows parallel lines c and d .



6 What is the measure of $\angle 1$?

- A 56
C 124

- B 90
D 180

6 _____

7 What is the measure of $\angle 2$?

- A 56
C 124

- B 90
D 180

7 _____

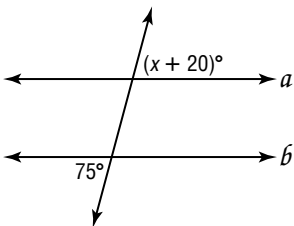
8 What is the measure of $\angle 3$?

- A 56
C 124

- B 90
D 180

8 _____

9 Lines a and b are parallel. What is the value of x ?

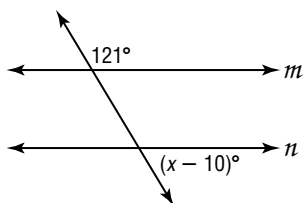


- A 55
C 95

- B 75
D 105

9 _____

10 Lines m and n are parallel. What is the value of x ?



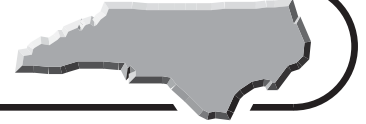
- A 59
C 121

- B 69
D 131

10 _____

Standards Practice

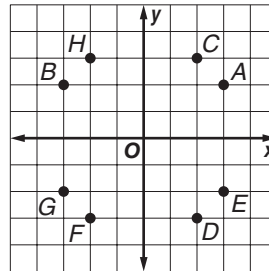
Objective 2.03



Locate, give the coordinates of, and graph plane figures which are the results of translations or reflections in all quadrants of the coordinate plane.

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.

For Questions 1 and 2, use the points on the graph at the right.



1 Which point is the image of A after a reflection over the x -axis?

- A** B
C E

- B** C
D G

1 _____

2 Which point is the image of A after a reflection over the y -axis?

- A** B
C E

- B** C
D G

2 _____

3 What are the coordinates of the image of $X(-2, 3)$ reflected over the x -axis?

- A** $(-2, -3)$
C $(2, 3)$

- B** $(2, -3)$
D $(3, -2)$

3 _____

4 What is the image of $(-2, 1)$ reflected over the line $x = 6$?

- A** $(2, 1)$
C $(11, -2)$

- B** $(-2, 11)$
D $(14, 1)$

4 _____

5 If $R'(4, 3)$ is the image of $R(4, -1)$ after a reflection, which is the line of reflection?

- A** $x = 4$
C $y = 2$

- B** $y = 1$
D $x = 2$

5 _____

6 If $T'(-4, -4)$ is the image of $T(0, 2)$ after a translation, which describes the translation?

- A** left 4 units, down 6 units
B left 4 units, down 4 units
C right 4 units, up 6 units
D right 6 units, up 4 units

6 _____

Standards Practice

Objective 2.03 (continued)



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

7 Which is the image of $K(6, -1)$ after the translation $(x, y) \rightarrow (x + 1, y - 5)$? 7 _____

- A $K'(7, 4)$ B $K'(7, -6)$ C $K'(5, 4)$ D $K'(5, -6)$

8 If $P'(3, 5)$ is the image of P after the translation $(x, y) \rightarrow (x - 4, y + 3)$, what are the coordinates of P ? 8 _____

- A $(7, 2)$ B $(7, 8)$ C $(-1, 8)$ D $(-1, 2)$

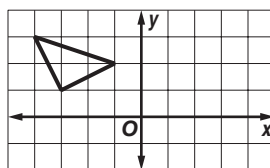
9 Which figure shows a triangle and its image after a translation? 9 _____

<p>A</p>	<p>B</p>
<p>C</p>	<p>D</p>

10 What is the image of $B(-2, 1)$ after $(x, y) \rightarrow (x + 2, y - 4)$? 10 _____

- A $(-4, -3)$ B $(-4, 5)$ C $(0, -3)$ D $(0, 5)$

11 Which figure shows the image of the triangle shown at the right after a reflection over the y -axis?

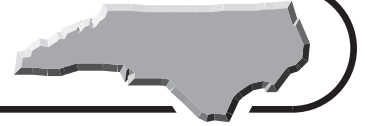


11 _____

<p>A</p>	<p>B</p>
<p>C</p>	<p>D</p>

Standards Practice

Objective 2.04



Use models to investigate the concept of the Pythagorean Theorem.

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.

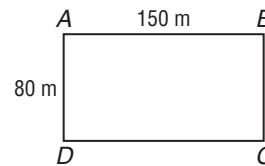
- 1 A television screen is 48 inches wide and 36 inches tall. How long is a diagonal of the screen?

A 40 in. **B** 56 in.
C 60 in. **D** 84 in.

1 _____

- 2 Gina is walking from A to C . How much shorter is the walk directly across the rectangular field from A to C than around the outside from A to B to C ?

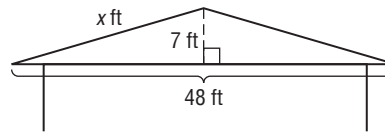
A 170 m
B 120 m
C 80 m
D 60 m



2 _____

- 3 What is the length x of each side of the roof of the house shown in the figure? Round your answer to two decimal places.

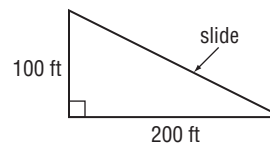
A 48.51 ft **B** 25.00 ft
C 22.96 ft **D** 5.57 ft



3 _____

- 4 A water slide drops 100 feet over a horizontal distance of 200 feet as shown in the figure. Which expression could you use to find the length of the slide?

A $100 + 200$
B $\sqrt{100^2 + 200^2}$
C $\sqrt{200 + 100}$
D $\sqrt{100 \cdot 200}$



4 _____

- 5 How long is the hypotenuse of a right triangle if the legs have lengths 3 inches and 4 inches?

A 1 in. **B** 5 in.
C 7 in. **D** 25 in.

5 _____

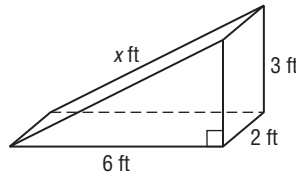
Standards Practice

Objective 2.04 (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.

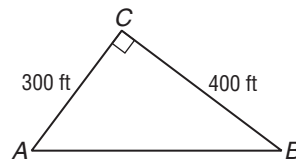
- 6 Dante is building a ramp for his dog to get into the back of his station wagon as shown in the figure below. About how long is the ramp? Round your answer to the nearest tenth.



6 _____

- A 4.6 ft
B 5.2 ft
C 6.7 ft
D 9.0 ft

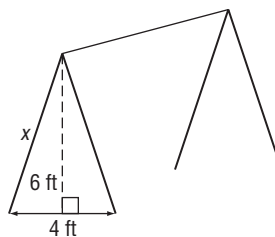
- 7 The figure below shows Murphy's triangular lot. What is the length of side \overline{AB} ?



7 _____

- A 100 ft
B 500 ft
C 700 ft
D 1,200 ft

- 8 Renu has a swing in her backyard. The braces for the swing meet at a vertex 6 feet above the ground. The feet of the braces are 4 feet apart, as shown in the figure. What is the length x of each brace to the nearest tenth?



8 _____

- A 5.7 ft
B 6.3 ft
C 7.2 ft
D 12.0 ft

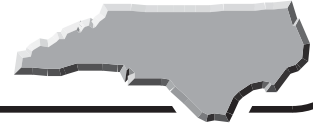
- 9 Which are the lengths of the sides of a right triangle?

- A 12 ft, 16 ft, 30 ft
B 5 in., 6 in., 8 in.
C 9 m, 40 m, 41 m
D 20 cm, 30 cm, 40 cm

9 _____

Standards Practice

Objective 2.05

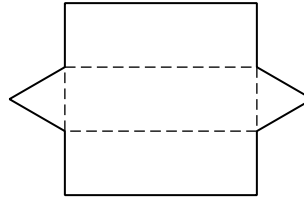


Build models of three-dimensional figures given end, side, and top views.

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.

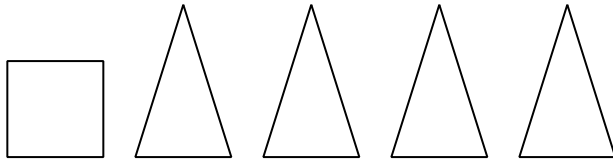
- 1 Sydna cut out the shape shown and folded it on the dashed lines. What figure did she form?

- A triangular prism
- B triangular pyramid
- C cube
- D cone



1 _____

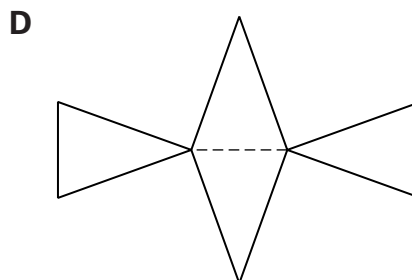
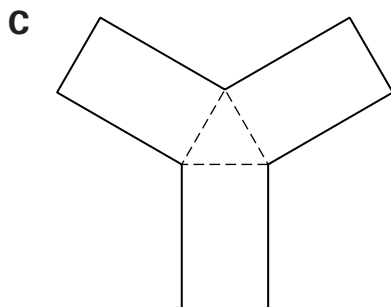
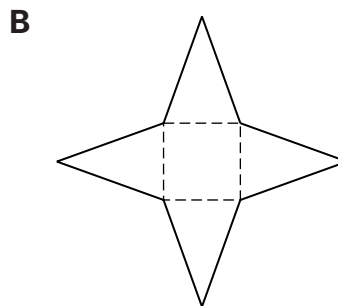
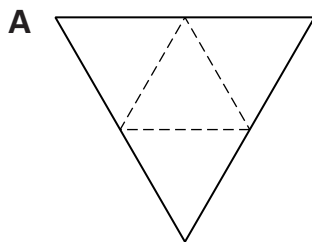
- 2 Charlene cut out the cardboard shapes shown. She made a solid by taping together sides with the same measure. What figure did she make?



- A cube
- B triangular pyramid
- C square pyramid
- D square prism

2 _____

- 3 Which shape could you fold on the dashed lines to form a triangular pyramid?



3 _____

Standards Practice

Objective 2.05 (continued)

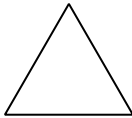


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 4 What is the name of the figure with the given top, front, and side views? 4 _____



top view



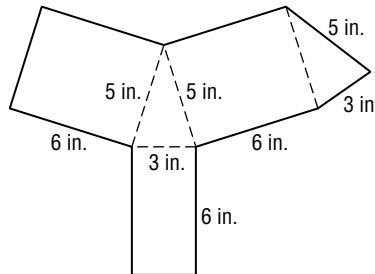
front view



side view

- A rectangular prism
- B rectangular pyramid
- C triangular pyramid
- D triangular prism

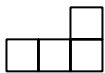
- 5 If the shape shown at the right is cut out and folded on the dashed lines, it will form a triangular prism. Which would be the base of the prism?



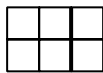
5 _____

- A rectangle, 3 inches by 6 inches
- B isosceles triangle with sides 5 inches, 5 inches, and 3 inches
- C rectangle, 5 inches by 6 inches
- D hexagon with sides 3 inches, 5 inches, 6 inches, 5 inches, 3 inches, and 6 inches

- 6 What is the least number of cubes that could be used to build the figure having the front, top, and side views shown? 6 _____



front view



top view



left side



right side

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

Standards Practice

Objective 2.06



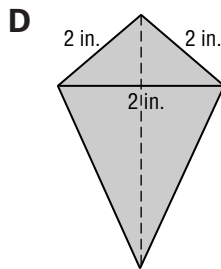
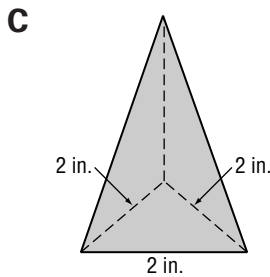
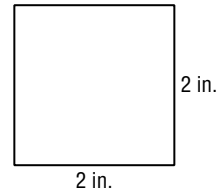
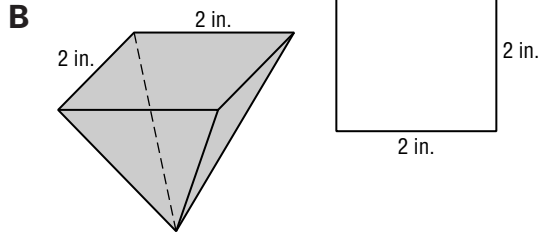
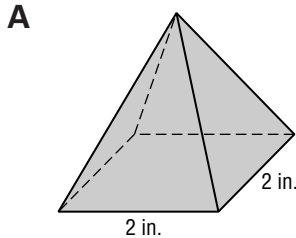
Draw end, side, and top views of three-dimensional figures given models; use appropriate technology.

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

1 Which could be the side view of a cylinder sitting on one of its bases? **1** _____

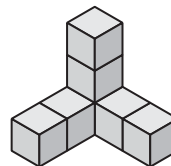
- A circle
- B triangle
- C trapezoid
- D rectangle

2 The shape shown is the top view of which figure? **2** _____



3 Which is the top view of the solid figure? **3** _____

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



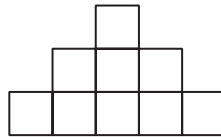
Standards Practice

Objective 2.06 (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.

For Questions 4 and 5, use the given side view of a building.



4 _____

- 4 If each floor of the building is 12 feet high and each square in the figure corresponds to a square whose actual dimensions are 24 feet by 24 feet, how many floors are in this building?

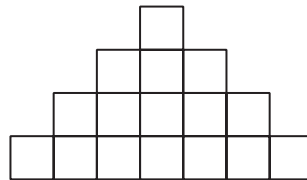
A 3
B 6
C 12
D 24

- 5 Which could be a front view of this building?

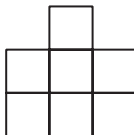
5 _____



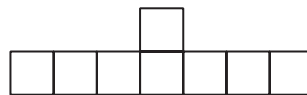
B



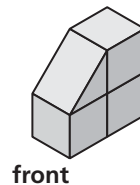
C



D



For Questions 6 and 7, use the solid figure shown at the right.



6 _____

- 6 Which is the front view?



B



C



D



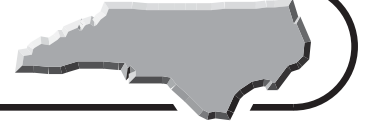
- 7 If you painted the square sections on the top, front, back, and sides of the figure, how many sections would you paint?

7 _____

A 9
B 10
C 11
D 12

Standards Practice

Objective 2.07



Use models to find the surface area of rectangular solids and cylinders.

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** A cereal box is 12 inches high, 3 inches deep, and 8 inches wide. The nutritional value information takes up 8 square inches and the name information takes up 48 square inches on the box. How much surface area is left for puzzles and other information?

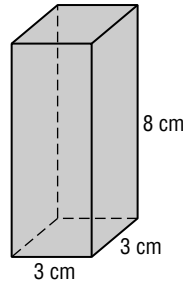
1 _____

- A** 56 in^2
B 232 in^2
C 256 in^2
D 312 in^2

- 2** What is the lateral area of the prism?

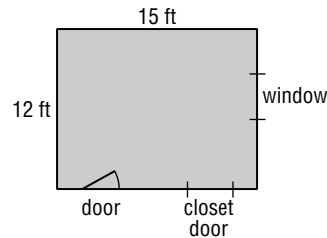
2 _____

- A** 72 cm^2
B 96 cm^2
C 105 cm^2
D 114 cm^2



For Questions 3 and 4, use the following information.

Juan's bedroom is 12 feet by 15 feet. The ceilings are 8 feet high.



- 3** What is the total area of the two walls that have no windows or doors?

3 _____

- A** 35 ft^2
B 216 ft^2
C 396 ft^2
D $1,440 \text{ ft}^2$

- 4** One gallon of paint costs \$12.99 and covers 300 square feet, how much will it cost Juan to put two coats of paint on the two walls in Question 3 and the ceiling of his room? No partial cans of paint may be purchased. Do not include tax.

4 _____

- A** \$77.94
B \$51.96
C \$38.97
D \$25.98

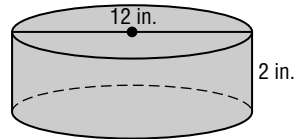
Standards Practice

Objective 2.07 (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.

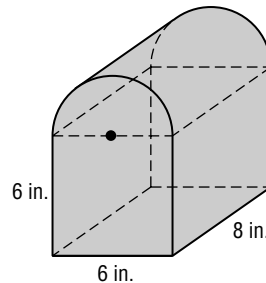
- 5** Rachel is making covers for three round pillows. One of the pillows is shown in the figure at the right. About how much fabric does she need for all three pillows? Round your answer to the nearest whole number.



5 _____

- A** 905 in^2 **B** 565 in^2
C 452 in^2 **D** 302 in^2

- 6** Tyler is building a birdhouse. The last thing he has to do is cut an opening for the birds to enter through. What is the surface area of the incomplete birdhouse? Round your answer to the nearest square inch.



6 _____

- A** 264 in^2
B 320 in^2
C 401 in^2
D 471 in^2

- 7** What is the lateral area of a cylindrical water tank that is 10 meters tall and has a diameter of 3 meters?

7 _____

- A** $15\pi \text{ m}^2$
B $30\pi \text{ m}^2$
C $45\pi \text{ m}^2$
D $60\pi \text{ m}^2$

- 8** If the surface area of a cube is 96 square inches, what is the area of one face?

8 _____

- A** 24 in^2
B 16 in^2
C 12 in^2
D 4 in^2

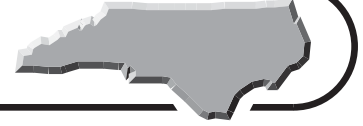
- 9** If the surface area of a cylinder is 192π square feet and the radius is 6 feet, what is the height?

9 _____

- A** 10 ft **B** 13 ft
C 16 ft **D** $21\frac{1}{3}$ ft

Standards Practice

Objective 2.08



Use models to find the volume of prisms and cylinders.

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.

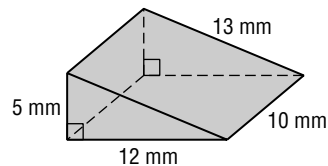
- 1** What is the volume of a cylindrical can that has a radius of 3.3 centimeters and a height of 10 centimeters? Round your answer to the nearest cubic centimeter.

A 104 cm³ **B** 109 cm³
C 342 cm³ **D** 412 cm³

1 _____

- 2** What is the volume of this right triangular prism?

A 7,800 mm³
B 600 mm³
C 360 mm³
D 300 mm³



2 _____

For Questions 3 and 4, use the following information.

Stuart was washing clothes when the washing machine quit working. The cylindrical tub had 8 inches of water left in it when the machine stopped. The tub has a diameter of 24 inches.

- 3** About how many cubic inches of water were left in the washing machine tub? Round your answer to the nearest 10 cubic inches.

A 14,470 in³ **B** 3,620 in³
C 1,210 in³ **D** 600 in³

3 _____

- 4** Stuart had a plastic rectangular container 3 inches by 4 inches by 6 inches to use to bail the water out of the broken washing machine. About how many times would he need to fill this container to empty the water out of the tub? Round your answer to the nearest ten.

A 200 **B** 100
C 50 **D** 10

4 _____

- 5** If the volume of a rectangular box is 216 cubic feet, the width is 6 feet, and the length is 12 feet, what is the height?

A 12 ft **B** 6 ft
C 3 ft **D** 1.5 ft

5 _____

Standards Practice

Objective 2.08 (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.

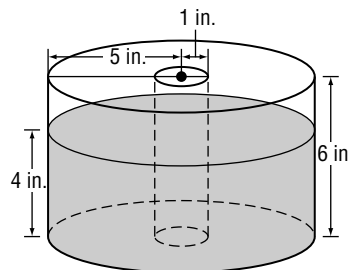
For Questions 6 and 7, use this information. An aquarium on Roanoke Island is shaped like a square prism. It is 17 feet deep, and the base measures 90 feet on each side.

- 6 What is the volume of the aquarium? 6 _____
- A 137,700 ft³ B 68,850 ft³
 C 4,804 ft³ D 1,530 ft³
- 7 If the volume of 1 gallon of water is about 0.13 cubic foot, approximately how many gallons of water does this aquarium hold? Round your answer to the nearest whole number. 7 _____
- A 11,769 gal B 17,900 gal
 C 529,615 gal D 1,059,231 gal

For Questions 8 and 9, use this situation. Brandon wants to add 3 inches of topsoil to his flower garden. The garden is rectangular, 18 feet by 12 feet.

- 8 How many cubic feet of soil does Brandon need? 8 _____
- A 54 ft³ B 72 ft³
 C 216 ft³ D 648 ft³
- 9 Suppose the gardening center in Pinetree sells topsoil for \$69 per cubic yard, plus a \$25 delivery charge. How much will the soil cost, including delivery? 9 _____
- A \$3,751 B \$1,267
 C \$414 D \$163

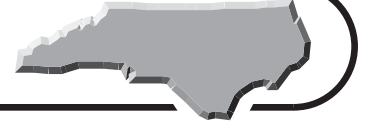
- 10 The diagram shows a tube pan used for baking cakes. The radius of the inside tube is 1 inch, and the radius of the pan is 5 inches. If there are 4 inches of batter in the pan, approximately how many cubic inches of batter are in the pan? 10 _____



- A 50 in³
 B 214 in³
 C 302 in³
 D 452 in³

Standards Practice

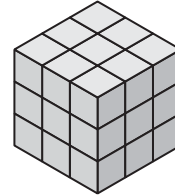
Objective 2.09



Calculate the volume of rectangular solids.

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.

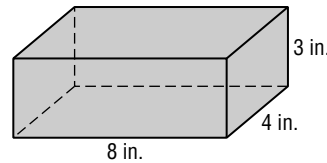
- 1** A large cube is built from small cubes, as shown in the diagram. What is the volume of the large cube if each small cube has a volume of 1 cubic unit?



1 _____

- A** 3 units³
B 9 units³
C 27 units³
D 81 units³

For Questions 2 and 3, use the diagram of an ice cream carton shown at the right.



- 2** What is the volume of the ice cream?

2 _____

- A** 136 in³
B 96 in³
C 68 in³
D 56 in³

- 3** Suppose the carton of ice cream serves 16 people. How many cubic inches are in each serving?

3 _____

- A** 4
B 5
C 6
D 8

- 4** What is the volume of a cube whose edges are 6 feet long?

4 _____

- A** 216 ft³
B 144 ft³
C 36 ft³
D 18 ft³

- 5** A shoe box is 12 inches long, 4 inches wide, and 4 inches high. What is the volume of the box?

5 _____

- A** 20 in³
B 112 in³
C 192 in³
D 224 in³

Standards Practice

Objective 2.09 (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 The volume of a number cube is 1 cubic centimeter. How long is each edge? **6** _____

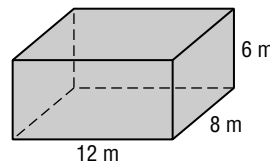
- A** 0.5 cm
- B** 0.75 cm
- C** 1 cm
- D** 2 cm

7 A rectangular prism with a volume of 100 cubic yards has a length of 15 yards and a height of 5 yards. What is the width of the prism? **7** _____

- A** $1\frac{1}{3}$ yd
- B** 5 yd
- C** $6\frac{2}{3}$ yd
- D** 25 yd

8 What is the volume of this rectangular prism?

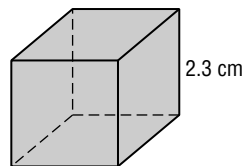
- A** 576 m^3
- B** 432 m^3
- C** 216 m^3
- D** 26 m^3



8 _____

9 What is the volume of the cube?

- A** 15.87 cm^3
- B** 13.8 cm^3
- C** 12.167 cm^3
- D** 5.29 cm^3



9 _____

10 A desk drawer is 20 inches long, 16 inches wide, and 4 inches deep. What is the volume of the drawer? **10** _____

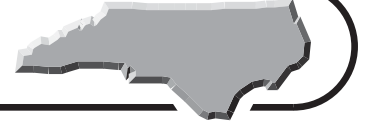
- A** $1,280\text{ in}^3$
- B** 928 in^3
- C** 464 in^3
- D** 40 in^3

11 What is the volume of a rectangular prism that is 12 inches high, 3 inches wide, and 8 inches tall? **11** _____

- A** 156 in^3
- B** 288 in^3
- C** 312 in^3
- D** 529 in^3

Standards Practice

Objective 2.10



Recognize the effect on the area and perimeter when one or two dimensions of a plane figure are changed.

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 ratio of corresponding sides of two similar triangles is $\frac{3}{4}$. What is the ratio of the perimeters of the triangles? **1** _____
- A** $\frac{9}{4}$ **B** $\frac{1}{1}$ **C** $\frac{3}{4}$ **D** $\frac{9}{16}$
- 2 The ratio of corresponding sides of two similar triangles is $\frac{3}{4}$. What is the ratio of the areas of the triangles? **2** _____
- A** $\frac{9}{4}$ **B** $\frac{4}{3}$ **C** $\frac{3}{4}$ **D** $\frac{9}{16}$
- 3 A square has an area of 49 square inches. If each side length were doubled, what would be the square's new area? **3** _____
- A** 28 in²
B 98 in²
C 196 in²
D 2,401 in²
- 4 A rectangle is 4 centimeters wide and has a perimeter of 26 centimeters. If the length were halved, what would be the rectangle's new perimeter? **4** _____
- A** $\sqrt{13}$
B 13
C 15
D 17
- 5 If the radius of a circle is doubled, how is the circumference changed? **5** _____
- A** multiplied by 2
B multiplied by 4
C divided by 2
D divided by 4
- 6 If the radius of a circle is multiplied by 5, how is the area changed? **6** _____
- A** multiplied by 5
B multiplied by 25
C divided by 5
D divided by 25

Standards Practice

Objective 2.10 (continued)



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

7 If the length of a rectangle is multiplied by 3 and the width remains the same, how is the area changed? **7** _____

- A** increased by 3 square units **B** multiplied by 3
C divided by 3 **D** decreased by 3 square units

8 If the length of a rectangle is multiplied by 3 and the width is multiplied by 2, how is the area changed? **8** _____

- A** multiplied by 2 **B** multiplied by 3
C multiplied by 5 **D** multiplied by 6

9 If the width of a rectangle is multiplied by 2 and the length is multiplied by 2, how is the perimeter changed? **9** _____

- A** increased by 4 units **B** multiplied by 4
C increased by 2 units **D** multiplied by 2

10 If the width of a rectangle is multiplied by 2 and the length is multiplied by 2, how is the area changed? **10** _____

- A** increased by 4 square units **B** multiplied by 4
C increased by 2 square units **D** multiplied by 2

11 If the length of a side of a square is multiplied by 4, how is the perimeter changed? **11** _____

- A** multiplied by 2 **B** multiplied by 4
C multiplied by 8 **D** multiplied by 16

12 If the length of a side of a square is multiplied by 4, how is the area changed? **12** _____

- A** multiplied by 2 **B** multiplied by 4
C multiplied by 8 **D** multiplied by 16

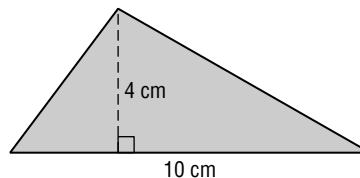
13 If the height of the triangle in the figure is decreased to 2 centimeters, what happens to the area of the triangle? **13** _____

- A** It is decreased from 40 to 20 square centimeters.

- B** It is decreased from 40 to 10 square centimeters.

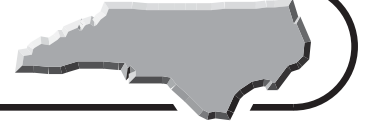
- C** It is decreased from 20 to 5 square centimeters.

- D** It is decreased from 20 to 10 square centimeters.



Standards Practice

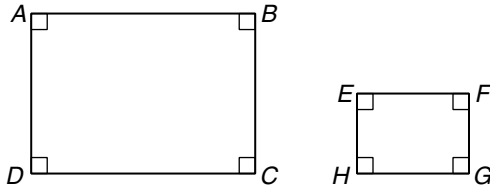
Objective 2.11



Use proportions to express relationships between corresponding parts of similar figures.

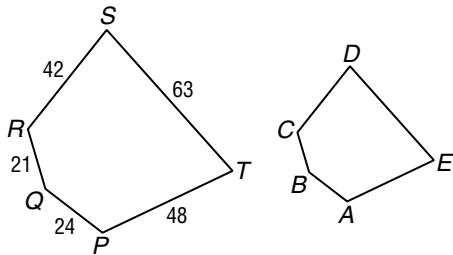
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

For Questions 1 and 2, use the similar rectangles $ABCD$ and $EFGH$ shown in the figure.



- 1 If $AD = 4$, $DC = 6$, and $EH = 2$, what is HG ? 1 _____
- A** 1 **B** 2 **C** 3 **D** 4
- 2 If $AD = 5$ and $DC = 7$, which ratio is equal to $HG:EH$? 2 _____
- A** 5:7 **B** 7:5 **C** 2:5 **D** 2:7

For Questions 3 and 4, use similar pentagons $PQRST$ and $ABCDE$.



- 3 If $CD = 28$, what is AE ? 3 _____
- A** 28 **B** 32 **C** 40 **D** 42
- 4 If $AB = 8$, what is CD ? 4 _____
- A** 10 **B** 12 **C** 14 **D** 15
- 5 If $\triangle ABC$ is similar to $\triangle DEF$, which equation must be true? 5 _____
- A** $\frac{AB}{DE} = \frac{EF}{BC}$ **B** $\frac{AB}{DE} = \frac{EF}{BC}$
- C** $\frac{AB}{DE} = \frac{BC}{DF}$ **D** $\frac{AB}{DE} = \frac{BC}{EF}$

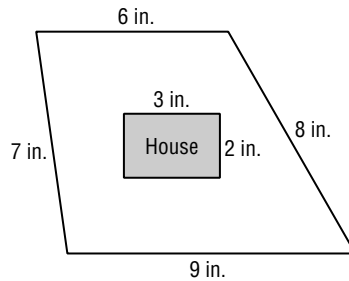
Standards Practice

Objective 2.11 (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.

For Questions 6 and 7, use the scale drawing of a house and lot in Wilkes County. The scale is 1 inch = 15 feet.



6 What is the perimeter of the lot?

- A 30 in.
B 54.56 ft
C 200 ft
D 450 ft

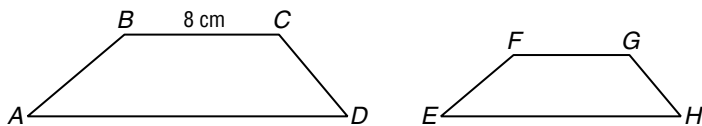
6 _____

7 What is the area of the floor of the house?

- A 90 ft²
B 600 ft²
C 1,350 ft²
D 20,250 ft²

7 _____

For Questions 8–11, use similar trapezoids $ABCD$ and $EFGH$.



8 If $FG = 6$ and $EH = 9$, what is AD ?

- A 9 cm
B 10 cm
C 12 cm
D 14 cm

8 _____

9 If $CD = 4$ and $FG = 5$, what is GH ?

- A 1.5
B 2
C 2.5
D 3

9 _____

10 If $AB = 6$ and $EF = 3$, what is FG ?

- A 4
B 5
C 5.5
D 6

10 _____

11 If $AD = 12$, what is $FG:EH$?

- A 1:3
B 3:2
C 3:4
D 2:3

11 _____

Standards Practice

Objective 3.01



Evaluate algebraic expressions.

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 What does $2(3x - 4)$ equal when $x = 5$? 1 _____
- A** -10 **B** 21
C 22 **D** 26

For Questions 2 and 3, use the formula $F = \frac{9}{5}C + 32$ relating Celsius temperature C and Fahrenheit temperature F .

- 2 What Fahrenheit temperature is equivalent to 0° Celsius? 2 _____
- A** -32°F **B** 20°F
C 32°F **D** 100°F

- 3 About what Celsius temperature is equivalent to 75° Fahrenheit? Round your answer to the nearest degree. 3 _____
- A** 24°C **B** 59°C
C 77°C **D** 167°C

- 4 The formula for the height h of an object thrown straight up into the air at a velocity of 75 meters per second after a time of t seconds is $h = 75t - 4.9t^2$. How high is the object after 3 seconds? 4 _____
- A** 33.9 m **B** 180.9 m
C 210.3 m **D** 220.1 m

- 5 The sum of the measures of the interior angles of a polygon is $(n - 2)180$, where n is the number of sides of the polygon. What is the sum of the measures of the interior angles of a hexagon? 5 _____
- A** 540 **B** 720
C 1,078 **D** 1,080

- 6 What is the value of $5x + 2y$ if $x = 4$ and $y = -3$? 6 _____
- A** 3 **B** 14
C 15 **D** 26

- 7 What is the value of $-x + y + 2$ if $x = -4$ and $y = 1$? 7 _____
- A** -3 **B** -1
C 5 **D** 7

Standards Practice

Objective 3.01 (continued)



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

- 8** What is the value of $x^2 + 2x$ if $x = -3$? **8** _____
A 15 **B** 3
C -3 **D** -15
- 9** What is the value of $4xy - 2y^2$ if $x = 3$ and $y = -2$? **9** _____
A -56 **B** -32
C -16 **D** -8
- 10** What is the value of $3xy^2$ if $x = 2$ and $y = 4$? **10** _____
A 576 **B** 288
C 96 **D** 24
- 11** What is the value of $7 - (2x + y)$ if $x = 4$ and $y = -3$? **11** _____
A 12 **B** 8
C 2 **D** -4
- 12** What is the value of $2x - (4 - 3y)$ if $x = 5$ and $y = -2$? **12** _____
A 0 **B** 8
C 9 **D** 12
- 13** What is the value of $2a + b - \frac{b}{4}$ if $a = 7$ and $b = 8$? **13** _____
A 4 **B** 15
C 20 **D** 28
- 14** What is the value of $2x - 3y$ if $x = 5$ and $y = 6$? **14** _____
A -30 **B** -11
C -8 **D** 8
- 15** What does $2x + 7y - x - 2y$ equal when $x = 2$ and $y = 3$? **15** _____
A 7 **B** 17
C 20 **D** 36
- 16** Given the formula $h = 16t^2 + 4t - 6$, what is h when t equals 3? **16** _____
A 2,310 **B** 162
C 150 **D** 54

Standards Practice

Objective 3.02



Model and solve simple equations and inequalities and graph their solutions; use appropriate technology.

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.

As a homework assignment, you use a table showing lengths and prices of eight different kayak trips offered by an outfitter company. You write an equation for a line that fits the data in the table. Your equation is $y = 10.5x + 10.875$, where x is the number of hours and y is the price. Use this equation for Questions 1 and 2.

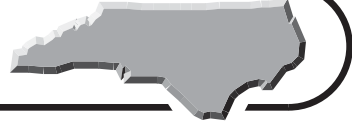
- 1 Using your equation, about how much would you expect to pay for a 4-hour kayak trip from this outfitter company? Round your answer to the nearest dollar. 1 _____
- A \$25 B \$53
C \$65 D \$85
- 2 Using your equation, which is the most reasonable length for a trip that costs \$37 from this outfitter company? Round your answer to the nearest tenth. 2 _____
- A 2.0 h B 2.5 h
C 3.0 h D 4.5 h
- 3 Use the formula $A = \ell w$. Solve for ℓ . 3 _____
- A Aw B $A - w$
C $\frac{w}{A}$ D $\frac{A}{w}$

For Questions 4 and 5, use the formula $y = 1.24x - 16$. It represents the Fahrenheit wind chill temperature y for an actual Fahrenheit temperature of x degrees when the speed of the wind is 10 miles per hour.

- 4 What is the Fahrenheit wind chill temperature when the actual temperature is 10° Fahrenheit? Round your answer to the nearest degree. 4 _____
- A -16°F B -4°F C 4°F D 21°F
- 5 When the Fahrenheit wind chill temperature is 20° , approximately what is the actual temperature? Round your answer to the nearest degree. 5 _____
- A 45°F B 41°F C 29°F D 9°F


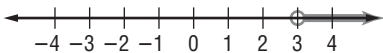
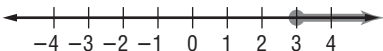

Standards Practice

Objective 3.02 (continued)



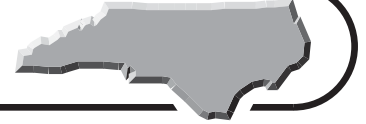
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

For Questions 6 and 7, use the formula $A = 2.50x + 5.00y$. It represents the amount of money A made at the school musical if x student tickets are sold for \$2.50 each and y adult tickets are sold for \$5 each.

- 6** How much will the school make if 100 adult tickets and 300 student tickets are sold? **6** _____
A \$1,250 **B** \$1,750
C \$2,000 **D** \$2,500
- 7** How many student tickets must the school sell if they sell 200 adult tickets and need to make \$2,000 to cover the expenses of the musical? **7** _____
A 400 **B** 300
C 200 **D** 100
- 8** What is the solution of $-\frac{2}{3}x = 6$? **8** _____
A -2 **B** -4
C -9 **D** -12
- 9** Which is the solution of $x + 6 < 9$? **9** _____
A $x < 54$ **B** $x < 18$
C $x < 15$ **D** $x < 3$
- 10** Which ordered pair is a solution of the inequality $y \leq x - 3$? **10** _____
A (-4, 7) **B** (3, 2)
C (1, 4) **D** (0, -4)
- 11** Which is the solution of $-2x > 10$? **11** _____
A $x < -5$ **B** $x > -5$
C $x > 12$ **D** $x < -20$
- 12** Which is the graph of $x \leq 3$? **12** _____
A  **B** 
C  **D** 

Standards Practice

Objective 3.03



Write or model a simple linear equation or inequality to solve a given problem; use appropriate technology.

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** Bari can plant 3 tomato plants in an hour. Which table gives the relationship between the time in hours and the number of tomato plants Bari can plant?

1 _____

A

Time	Plants
1	3
2	5
3	7

B

Time	Plants
1	3
2	4
3	5

C

Time	Plants
1	3
2	6
3	12

D

Time	Plants
1	3
2	6
3	9

For Questions 2 and 3, use the table below that shows the time it takes Carlos to ride his bike various distances.

Distance (mi)	5	10	25	30
Time (h)	0.5	1	2.5	3

- 2** Which equation gives the distance d , in miles, in terms of the time t , in hours?

2 _____

A $t = 5d$

B $t = 10d$

C $d = 5t$

D $d = 10t$

- 3** At this rate, how long should it take Carlos to ride his bike from Greensboro to Winston-Salem, a distance of 26 miles?

3 _____

A 2.6 h

B $3\frac{1}{2}$ h

C $4\frac{1}{3}$ h

D 26 h

- 4** Suppose y varies directly with x and $y = 6$ when $x = 2$. Which equation relates x and y ?

4 _____

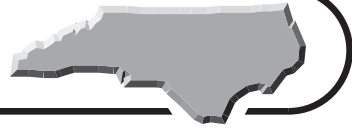
A $y = 3x$

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

C $y = 4x$

D $y = \frac{1}{4}x$

Standards Practice



Objective 3.03 (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.

5 Depth can be measured in feet or in fathoms. The number of feet d in f fathoms is given by the equation $d = 6f$. How many feet below the surface of the water is a scuba diver if he is at a depth of 8 fathoms? **5** _____

A 64 ft

B 48 ft

C 14 ft

D $\frac{3}{4}$ ft

6 Given the equation $5x + 2y = 12$, what is y when $x = 6$? **6** _____

A 28

B $\frac{1}{2}$

C 0

D -9

7 Which function gives the values shown in the table? **7** _____

A $y = 2x + 3$

B $y = \frac{1}{2}x + 6$

C $y = -2x + 11$

D $y = -\frac{1}{2}x + 8$

x	y
2	7
5	13
8	19

8 If Rachel had 2 more quarters, she would have 10 quarters. Which equation could you solve to find the number of quarters x that Rachel has now? **8** _____

A $x + 2 = 10$

B $x - 2 = 10$

C $2x = 10$

D $\frac{x}{2} = 10$

9 The sum of two consecutive whole numbers is at least 52. Which inequality describes this situation? **9** _____

A $x + x + 2 \geq 52$

B $x + x + 2 \leq 52$

C $x + x + 1 \geq 52$

D $x + x + 1 \leq 52$

10 A bowl of fruit contains peaches, pears, and plums. There are 3 times as many peaches as pears and 5 more plums than pears. If there are a total of 25 pieces of fruit in the bowl, which equation could be used to find x , the number of pears? **10** _____

A $3x + 5 = 25$

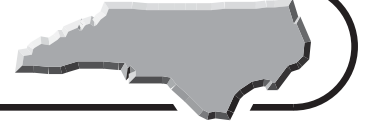
B $8x = 25$

C $3x + x + 10 = 25$

D $3x + x + (x + 5) = 25$

Standards Practice

Objective 3.04

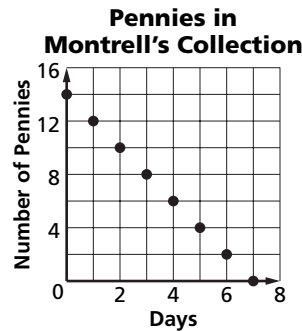


Write a problem given a simple linear equation or inequality.

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 How can you express the equation $6(n + 1) = 20$ in words? 1 _____
- A One more than 6 times a number is 20.
 B Six times the sum of a number and 1 is 20.
 C Six times the difference of a number and 1 is 20.
 D Six more than the sum of 1 and a number is 20.

- 2 Which situation could this graph represent? 2 _____
- A the number of pennies Montrell has if he gives away 2 every day
 B the number of pennies Montrell has if his mother gives him 2 every day
 C the number of pennies Montrell has if he gives away 2 the first day, 4 the next day, 8 the day after that, and so on
 D the number of pennies Montrell has if he gets none and gives none away



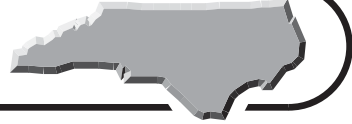
- 3 How can you express the equation $2n + 3 = 7$ in words? 3 _____
- A Three more than twice a number is 7.
 B Three is 7 greater than twice a number.
 C Twice a number decreased by 3 is 7.
 D The product of 2 and the sum of a number and 3 is 7.

- 4 The equation $x + (x - 5) = 20$ could represent which situation? 4 _____
- A Bill has \$5 more than \$20.
 B Bill has \$5 less than Jimmy, and Bill has \$20.
 C Bill has \$5 less than Jimmy. Together they have \$20.
 D The sum of Bill's money and Jimmy's money is 5 less than \$20.

- 5 The equation $d = 60t$ could represent which situation? 5 _____
- A If Juan travels 60 miles at a speed of t miles per hour, then he travels for d hours.
 B Juan travels d miles if he travels 60 hours at 60 miles per hour.
 C If Juan travels 60 miles in t hours, then he is traveling d miles per hour.
 D If Juan travels at 60 miles per hour for t hours, he travels d miles.

Standards Practice

Objective 3.04 (continued)

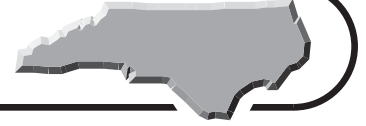


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 6** What could y represent in the equation $y = 25x$? **6** _____
- A** the sales tax on x dollars if the tax rate is 5 percent
 - B** the number of hours to travel x miles at 25 miles per hour.
 - C** The value in cents of x quarters
 - D** the speed necessary to travel 25 miles in x hours
- 7** What could y represent in the equation $y = 1.04x$? **7** _____
- A** the final cost of an item, including 4 percent tax, if the price before tax is x dollars
 - B** the amount of tax on an item that costs x dollars if the tax rate is 4 percent
 - C** the distance traveled by a plane flying at 104 miles per hour for x hours
 - D** the final cost of an item that costs x dollars if you get a 4 percent discount
- 8** How can you express the inequality $y < 2x + 8$ in words? **8** _____
- A** A number y is greater than twice x increased by 8.
 - B** A number y is less than twice x increased by 8.
 - C** A number y is less than twice x decreased by 8.
 - D** A number y is 8 more than twice x .
- 9** The inequality $7b < 100$ could represent which situation? **9** _____
- A** The total cost of b hats at \$7 each is more than \$100.
 - B** The total cost of b hats at \$7 each is increased by \$100.
 - C** The total cost of b hats at \$7 each is decreased by \$100.
 - D** The total cost of b hats at \$7 each is less than \$100.
- 10** What could T represent in the equation $325x + 500y = T$? **10** _____
- A** the total number of books if there are x books with 325 pages each and y books with 500 pages each
 - B** the total number of pages if there are x books with 325 pages each and y books with 500 pages each
 - C** the total number of tickets sold if there are 325 tickets at x dollars each and 500 tickets at y dollars each
 - D** The total cost in dollars of x tickets priced at \$3.25 and y tickets priced at \$5.00

Standards Practice

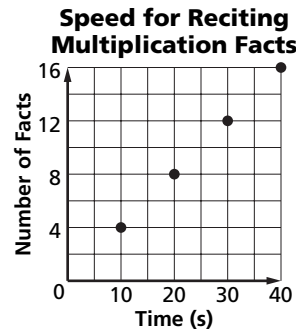
Objective 3.05



Describe, extend, analyze and create a wide variety of patterns to investigate relationships and solve problems; use appropriate technology.

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.

For Questions 1 and 2, use the graph at the right. It shows the number of multiplication facts that Jay can recite in a given time.



- 1 How many multiplication facts would you expect Jay to be able to recite in 60 seconds?

A 20
B 24
C 28
D 32

1 _____

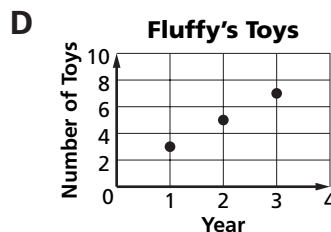
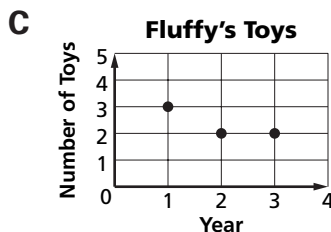
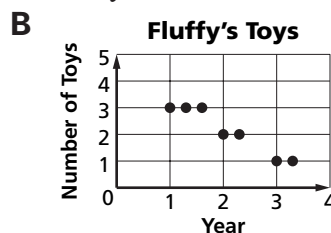
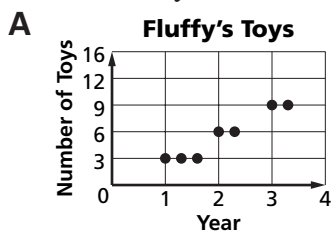
- 2 How long would you expect it to take Jay to recite 40 multiplication facts?

A 16 s
B 60 s
C 80 s
D 100 s

2 _____

- 3 Fluffy the kitten had 3 toys when she was 1 year old. Each year Fluffy gets 2 more toys for her birthday. Which graph could represent the number of toys that Fluffy has on her birthdays?

3 _____



Standards Practice

Objective 3.05 (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.

4 What is the next number in the pattern 7, 11, 15, 19, ...?

A 20

B 21

C 23

D 25

4 _____

5 What is the next number in the pattern 1, 1, 2, 6, 24, 120, ...?

A 224

B 240

C 480

D 720

5 _____

6 What is the next number in the pattern 1, 1, 2, 3, 5, 8, ...?

A 11

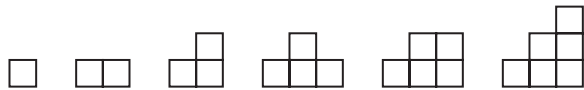
B 12

C 13

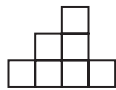
D 15

6 _____

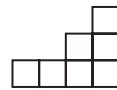
7 What is the next figure in the pattern shown below?



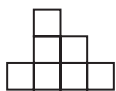
A



B



C



D



7 _____

8 What is the rule for the pattern 26, 23, 20, 17, 14, ...?

A Start with 26; subtract 3 from each term to get the next term.

B Add 3 to the preceding term.

C Go to 14; add 3 to each term to get the preceding term.

D Multiply the preceding term by 3.

8 _____

9 Which equation describes how the values of x and y are related?

A $y = 6x$

B $y = 2x + 3$

C $y = 7 - x$

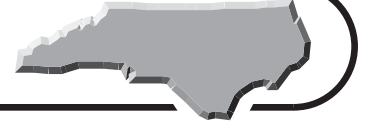
D $y = x + 5$

x	y
1	6
2	7
3	8

9 _____

Standards Practice

Objective 4.01



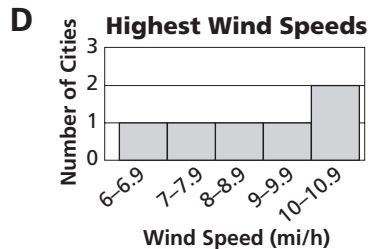
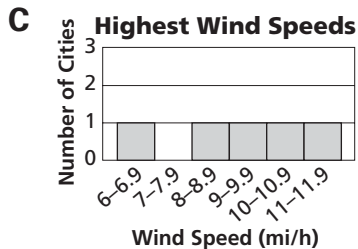
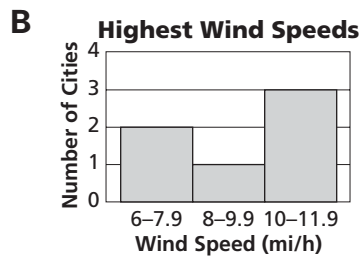
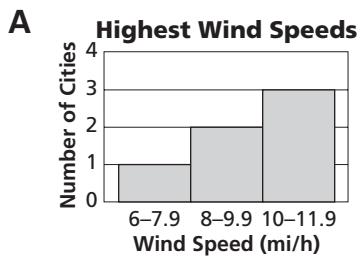
Interpret and construct histograms.

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.

For Questions 1–3, use the table of highest wind speeds recorded for a randomly selected day in six cities.

City	Highest Wind Speed (mi/h)
Cape Hattaras	10.9
Chicago	10.4
Honolulu	11.3
Los Angeles	6.0
New York City	9.3
San Francisco	8.7

1 Which histogram illustrates this data? _____



2 The average wind speed in Cape Hattaras is how many *more* miles per hour than the average wind speed in San Francisco? _____

- A** 0.5 **B** 1.6 **C** 2.2 **D** 4.9

3 If you use only the histogram and not the table, what can you say about the median highest wind speed? _____

- A** It was in the range of 8 to 9.9 miles per hour
B It was more than 10 miles per hour.
C It was between 8 and 9 miles per hour.
D It was exactly 8 miles per hour.

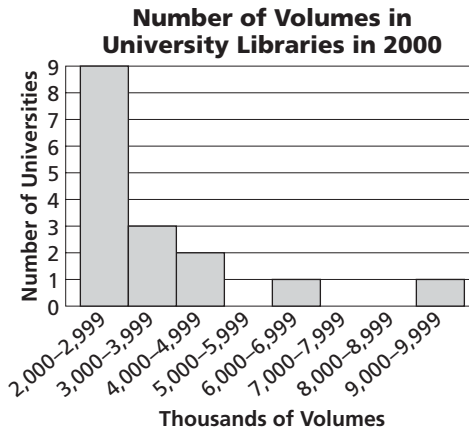
Standards Practice

Objective 4.01 (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.

For Questions 4–6, use the histogram at the right.



4 How many universities have between 2,000,000 and 4,000,000 volumes?

- A 12 B 9
C 3 D 2

4 _____

5 How many universities have between 7,500,000 and 8,500,000 volumes?

- A 0 B 1
C 2 D 3

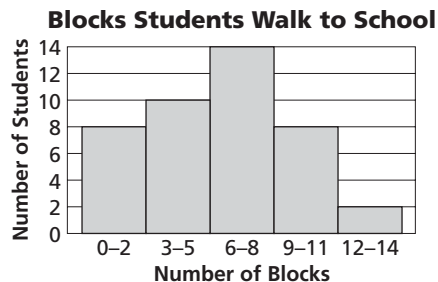
5 _____

6 How many universities have 3 million or more volumes?

- A 1 B 2
C 4 D 7

6 _____

For Questions 7–9, use the histogram showing the distance that students walk to school.



7 How many students are represented on this histogram?

- A 5 B 14
C 25 D 42

7 _____

8 None of the students walks 3 or 4 blocks to school. How many students walk 5 blocks?

- A 2 B 5
C 10 D 16

8 _____

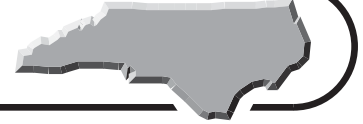
9 What could be the mode for the number of blocks the students walk to school?

- A 2 B 5
C 7 D 10

9 _____

Standards Practice

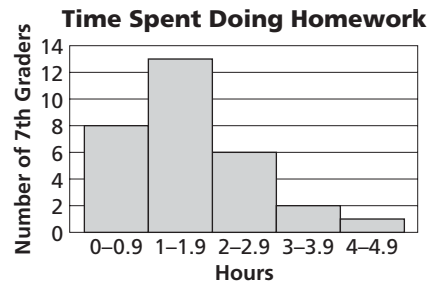
Objective 4.02



Compare and relate bar graphs and histograms.

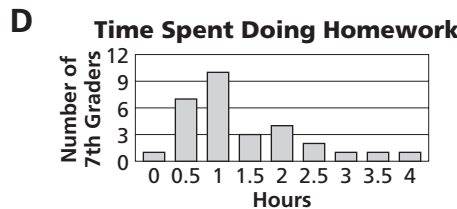
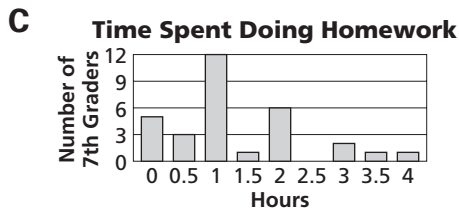
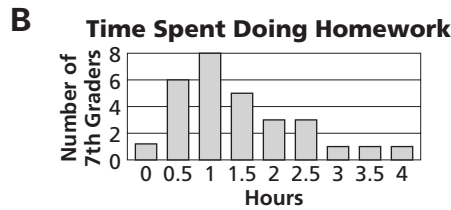
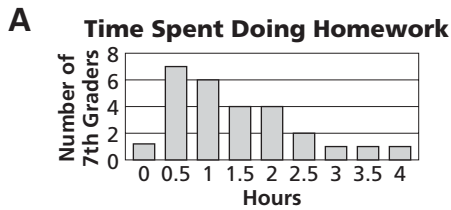
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

For Questions 1–3, use this histogram, which shows the average number of hours 7th graders spent doing homework per day.



1 _____

1 Which bar graph could be based on the same data as the histogram?



2 What is the greatest number of 7th graders that could have reported spending $2\frac{1}{2}$ hours per day on homework?

2 _____

- A** 2 **B** 6 **C** 13 **D** 30

3 How many 7th graders were included in this data?

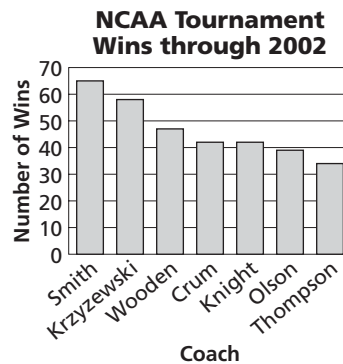
3 _____

- A** 5 **B** 13 **C** 25 **D** 30

4 How can you tell that this bar graph is not a histogram?

4 _____

- A** The horizontal axis does not show numerical intervals of equal width.
B A histogram has fewer bars than are shown in the graph.
C The first bar in a histogram must touch the vertical axis.
D The bars of a histogram must always increase in height.



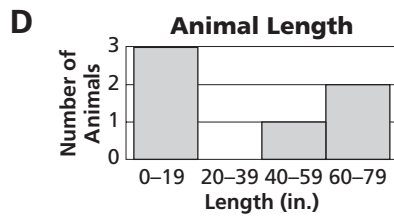
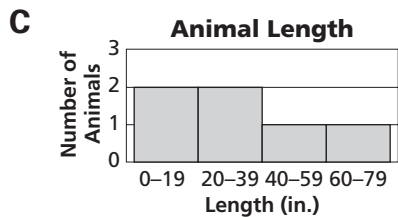
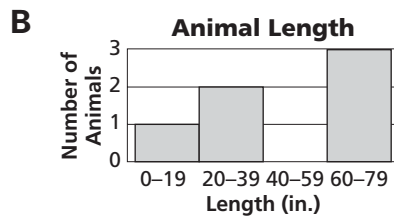
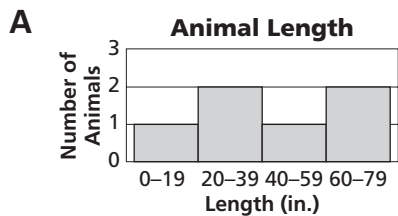
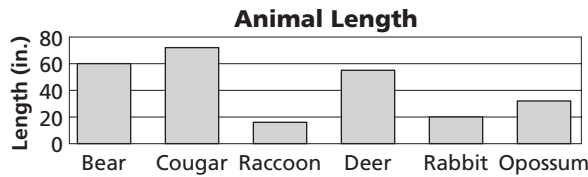
Standards Practice

Objective 4.02 (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.

5 Which histogram could be made using the information in this bar graph? 5 _____



6 Refer to the graphs in Question 5. Which is true? 6 _____

- A The histogram gives the exact lengths of the animals.
- B The bar graph gives the exact lengths of the animals.
- C The bar graph groups the lengths into intervals.
- D The histogram shows which animal is the longest.

For Questions 7 and 8, use this table showing the year that North Carolina adopted each of the given state symbols.

State Symbol	Year Adopted
dogwood	1941
cardinal	1943
pine tree	1963
gray squirrel	1969
honeybee	1973
eastern box turtle	1979
milk	1987
shad boat	1987
plott hound	1989
sweet potato	1995

7 Suppose you want to make a bar graph for the data. How many bars would be on your graph? 7 _____

- A 10
- B 9
- C 5
- D 3

8 A friend of yours wants to make a histogram for the data. If the first interval is 1940–1959, how many intervals will she need? 8 _____

- A 10
- B 5
- C 4
- D 3

Standards Practice

Objective 4.03



Construct circle graphs using ratios, proportions, and percents.

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.

For Questions 1 and 2, use the table below. It shows Felton's results when he asked 120 children what their favorite toy was.

Favorite Toy	stuffed animal	doll	truck	computer game	tricycle	ball
Number	20	24	10	36	18	12

1 Which sector on a circle graph showing this data would be twice as big as another? **1** _____

- A** Computer Games would be twice as big as Tricycles.
B Dolls would be twice as big as Trucks.
C Tricycles would be twice as big as Balls.
D Trucks would be twice as big as Stuffed Animals.

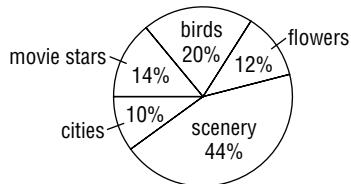
2 About how many degrees of a circle graph would you use for the part representing stuffed animals? Round your answer to the nearest degree. **2** _____

- A** 17° **B** 20° **C** 56° **D** 60°

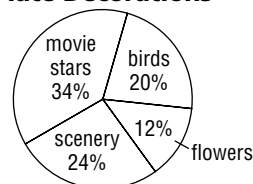
3 Nadia collects china plates. She has 50 plates decorated as listed in the table at the right. Which circle graph shows this data? **3** _____

Plate Decoration	Number of Plates
birds	10
flowers	6
scenery	12
cities	5
movie stars	17

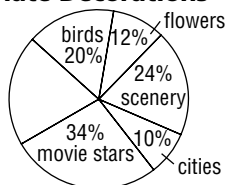
A Plate Decorations



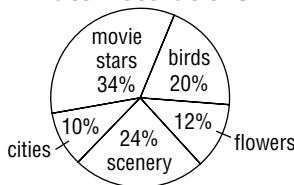
B Plate Decorations



C Plate Decorations



D Plate Decorations



Standards Practice

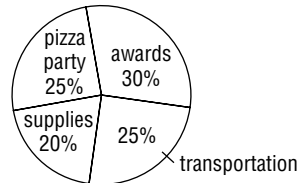
Objective 4.03 (continued)



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.

For Questions 4–6, use the circle graph. The chess club at Central Junior High School sold candy as a fundraiser. Each of the 20 club members made a \$15 profit for the club from the candy sale. The club used the money raised as shown in this graph.

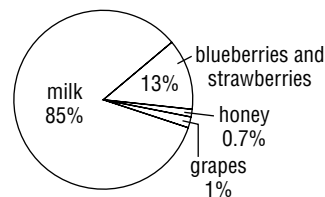
Chess Club Expenditures



- 4 How much did the chess club spend for their pizza party? 4 _____
A \$25 **B** \$60
C \$75 **D** \$90
- 5 How much *more* did the chess club spend for transportation than for supplies? 5 _____
A \$15 **B** \$30
C \$45 **D** \$60
- 6 The chess club needs to buy 10 awards. What is the average price they can spend for each award? 6 _____
A \$3 **B** \$9
C \$15 **D** \$90

For Questions 7 and 8, use the circle graph. It compares income from four groups of North Carolina food products.

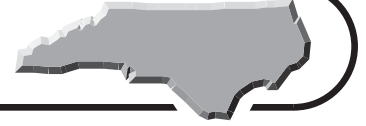
Income



- 7 If the total income from these products was 268 million dollars, about how much was from blueberries and strawberries? 7 _____
A \$3 million
B \$35 million
C \$75 million
D \$200 million
- 8 About how much *more* was the income from grapes than from honey? 8 _____
A \$1 million
B \$20 million
C \$50 million
D \$200 million

Standards Practice

Objective 4.04



Create, compare, contrast, and evaluate both orally and in writing, different graphic representations of the same data.

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.

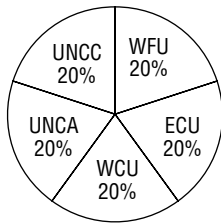
For Questions 1–3, use the table of the number of students and faculty in 2001–2002.

University	Number of Students	Number of Faculty
Wake Forest Univ. (WFU)	6,216	550
East Carolina Univ. (ECU)	19,412	1,096
Western Carolina Univ. (WCU)	6,863	513
UNC Asheville (UNCA)	3,247	300
UNC Charlotte (UNCC)	18,308	1,020

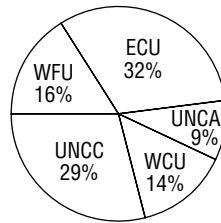
1 Which is a correct graph based on the data?

1 _____

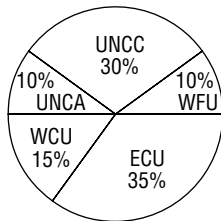
A Number of Students



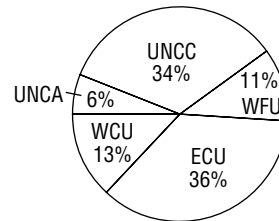
B Number of Students



C Number of Students



D Number of Students



2 Rehan was making a histogram to show the number of faculty at these schools. He used 0–499 for the first interval. What will his third interval be?

2 _____

A 500–599

B 500–999

C 1,000–1,099

D 1,000–1,499

3 Angelina was making a circle graph to compare the number of faculty at these schools. About how many degrees would she use for the UNC Charlotte part? Round your answer to the nearest degree.

3 _____

A 106°

B 60°

C 53°

D 31°

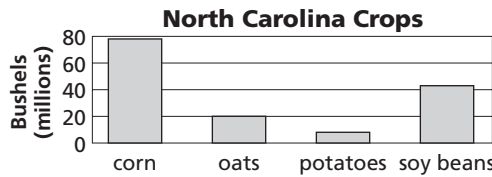
Standards Practice

Objective 4.04 (continued)



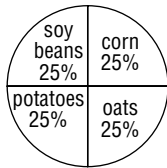
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

4 This bar graph shows the number of bushels of crops harvested in North Carolina in 2001. Which circle graph shows the same data?

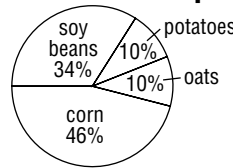


4 _____

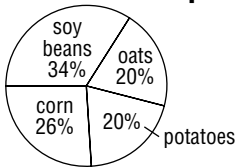
A North Carolina Crops



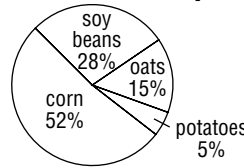
B North Carolina Crops



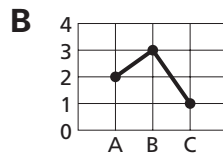
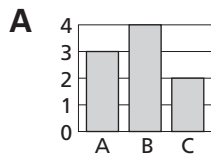
C North Carolina Crops



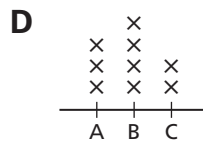
D North Carolina Crops



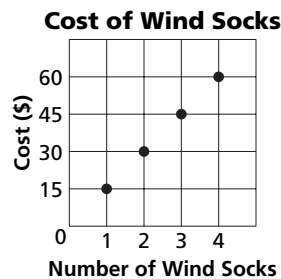
5 Which of these is a line graph?



5 _____



6 Katie bought wind socks at a Kitty Hawk store. This graph shows the cost of the wind socks before tax. How much did she have to pay for 9 wind socks?



6 _____

- A** \$75
- B** \$90
- C** \$120
- D** \$135

Standards Practice

Objective 4.05



Identify appropriate uses of different measures of central tendency.

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.

For Questions 1–3, use the data below. They are the depths in feet of shipwrecks off the North Carolina coast.

25, 20, 20, 20, 65, 30, 85, 100, 90, 120.

1 What is the median depth of the shipwrecks?

- A 20 ft B 47.5 ft
C 57.5 ft D 70 ft

1 _____

2 What is the mean depth of the shipwrecks?

- A 20 ft B 47.5 ft
C 57.5 ft D 70 ft

2 _____

3 What is the mode of the depths of the shipwrecks?

- A 20 ft B 47.5 ft
C 57.5 ft D 70 ft

3 _____

For Questions 4–6, use this table of lighthouse heights.

Lighthouse	Height (ft)
Currituck	162
Bodie Island	165
Ocracoke	65
Cape Hatteras	193
Cape Lookout	165

4 What is the mode?

- A 165 ft
B 150 ft
C 128 ft
D 65.5 ft

4 _____

5 What is the mean?

- A 165 ft B 150 ft
C 128 ft D 65.5 ft

5 _____

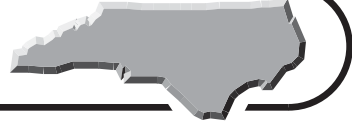
6 What is the median?

- A 165 ft B 150 ft
C 128 ft D 65.5 ft

6 _____

Standards Practice

Objective 4.05 (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.

For Questions 7–9, use the table below of America’s seafood consumption per person in 2001.

Seafood	Pounds Consumed per Person in 2001
shrimp	3.4
tuna	2.9
salmon	2.0
catfish	1.2
cod	0.6

7 About what is the average (mean) number of pounds of these types of seafood consumed per person in 2001? Round your answer to the nearest tenth of a pound. 7 _____

- A** 1.5 lb **B** 2.0 lb
C 2.8 lb **D** 3.0 lb

8 What is the median number of pounds of these types of seafood consumed? 8 _____

- A** 1.5 lb **B** 2.0 lb
C 2.8 lb **D** 3.0 lb

9 The population of Greenville is about 60,000. Based on this table, how many pounds of salmon did the people of Greenville consume during 2001? 9 _____

- A** 30,000 lb
B 60,000 lb
C 120,000 lb
D 180,000 lb

10 This table shows points scored by professional basketball players during their careers as of January 2003. If Battier was removed from this set of data, how would the mean change?

- A** It would stay the same.
B It would increase by over 4,000.
C It would increase by about 1,000.
D It would decrease by about 2,000.

Player	Number of Points
Abdul-Jabbar	38,387
Malone	35,505
Jordan	31,435
Chamberlain	31,419
Olajuwon	26,946
Barkley	23,757
Battier	1,444

10 _____

Standards Practice

Objective 4.06

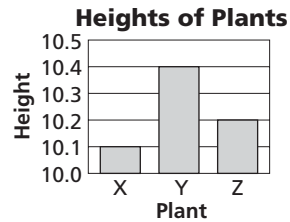


Recognize and identify misuses of statistical and numerical data.

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 Why is the graph at the right misleading?

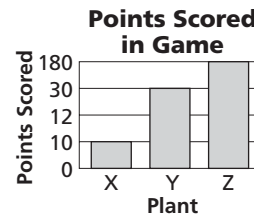
- A The bars are too wide.
- B The vertical axis does not use equal intervals.
- C This is a bar graph.
- D The unit for the heights is not given.



1 _____

2 Why is the graph at the right misleading?

- A The vertical axis does not include 0.
- B The vertical axis is not numbered sequentially.
- C This is a bar graph.
- D The bars are too wide.



2 _____

3 Mr. Jones told his supervisor that more students in his class had received A's on the test than any other grade and that the average grade was a C. The grades are shown in the table below. Which is a more accurate statement about these grades?

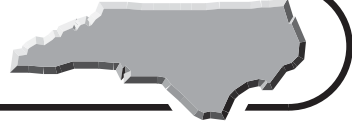
Letter Grade	Numerical Score	Frequency
A	90–100	5
B	80–89	0
C	70–79	0
D	60–69	4
E	0–59	4

3 _____

- A Almost $\frac{2}{3}$ of the students got a grade lower than C.
- B Five students scored 100.
- C The mode was a D.
- D The median was a B.

Standards Practice

Objective 4.06 (continued)

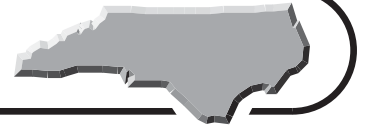


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 4** Bailey, a beagle, had 8 puppies. Which is a correct conclusion? **4** _____
- A** All beagles have 8 puppies.
 - B** Two-thirds of all dogs have 8 puppies.
 - C** The odds of a dog having 8 puppies are 1:2.
 - D** Some dogs have 8 puppies.
- 5** Luigi was doing a survey to find out which store in the mall was preferred by teenagers. He went inside Store A and asked all the teenagers in the store what their favorite store was. Why was his survey biased? **5** _____
- A** He only asked teenagers who were in Store A.
 - B** He asked people who were not teenagers.
 - C** He only surveyed people on Saturday.
 - D** He only asked people who were wearing blue.
- 6** Students were asked in a school newspaper article to come to a meeting after school to participate in a survey about their favorite extracurricular activities. Why would this not result in a random sample? **6** _____
- A** Not all students would be equally likely to attend the meeting.
 - B** Most students would not be interested in attending the meeting.
 - C** There might be more boys than girls in the survey.
 - D** Only older students would attend the meeting.
- 7** A parent noticed that last year the local school district spent \$138,000 on computer equipment and software. She said that the district should save money by spending \$100,000 less each year on computer-related items. Which of the reasons listed is the best reason for doubting that she had a good suggestion? **7** _____
- A** The \$138,000 might have been spent early in the school year instead of throughout the year.
 - B** The amount of money spent on textbooks might have been more than the amount spent on computer-related items.
 - C** The school might have been upgrading its computers and might usually spend much less on computer-related items.
 - D** The parent did not think about how much students use computers during the school year.

Standards Practice

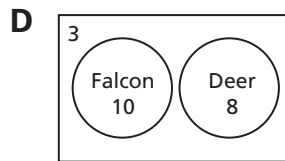
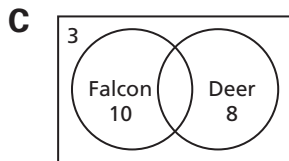
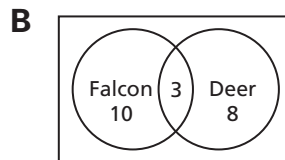
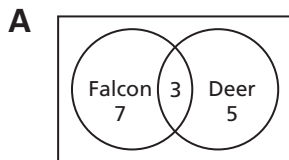
Objective 4.07



Find all possible outcomes of simple experiments using such methods as lists, tree diagrams, frequency distribution tables, and the Fundamental Counting Principle.

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 Fifteen sixth graders went hiking. Ten saw a falcon and 8 saw a deer. Which Venn diagram would help you find how many students saw both a falcon and a deer? 1 _____



For Questions 2 and 3, use the table at the right that shows numbers that a class of first graders picked when they were asked to pick a number from 1 to 5.

Number	Tally
1	
2	
3	
4	
5	

- 2 How many possible outcomes were there? 2 _____
A 5 **B** 7
C 15 **D** 25
- 3 What number was chosen most often? 3 _____
A 1 **B** 2
C 3 **D** 5
- 4 Three coins are tossed at the same time. How many outcomes are possible? 4 _____
A 2 **B** 3
C 6 **D** 8
- 5 Five students are going to sit in five chairs that are lined up from left to right. In how many ways can the first and second chairs be filled? 5 _____
A 2 **B** 5
C 10 **D** 20

Standards Practice

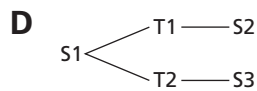
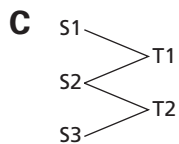
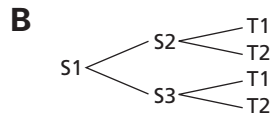
Objective 4.07 (continued)



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** Nelson has three sport coats (S1, S2, and S3) and two ties (T1 and T2) to choose from to wear to a party. Which diagram could he use to find how many different outfits he could put together?

6 _____



- 7** How many pairs of figures can be selected from the four below?

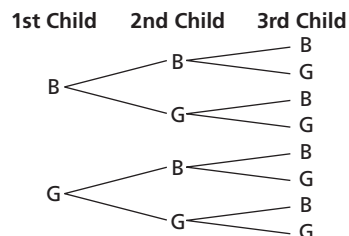
7 _____



- A** 2
B 6
C 8
D 16

- 8** A young married couple would like to have three children. They are hoping to have two girls and one boy. The tree diagram shows the possibilities. In how many ways would it be possible to have two girls and one boy?

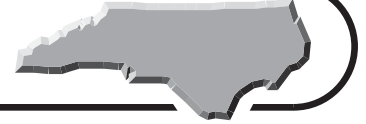
8 _____



- A** 1
B 2
C 3
D 4

Standards Practice

Objective 4.08



Compute and apply simple permutations and combinations.

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** You want to line up 4 posters from left to right on a class bulletin board. You have 6 posters to choose from. How many poster displays are possible? **1** _____
A 360 **B** 30 **C** 24 **D** 15
- 2** A box contains 6 balls of different colors. The colors are red, blue, yellow, green, orange, and black. If you take two balls from the box without looking, how many color combinations are possible? **2** _____
A 360 **B** 30 **C** 24 **D** 15
- 3** In how many ways can a committee of 4 be chosen from 10 people? **3** _____
A 40 **B** 210 **C** 256 **D** 5,040
- 4** In how many ways can the German Club select a president, vice president, secretary, and treasurer from their 12 members? **4** _____
A 11,880 **B** 495 **C** 256 **D** 48
- 5** How many 5-digit numbers can be made from the digits 1, 2, 3, 4, and 5, if each number can be used only once? **5** _____
A 5 **B** 25 **C** 120 **D** 3,125
- 6** How many 3-letter arrangements can be made from the letters in the word ANT, if each letter can be used only once? **6** _____
A 2 **B** 3 **C** 6 **D** 9
- 7** What do you call an arrangement where the order of the things matters? **7** _____
A combination **B** permutation
C selection **D** assignment
- 8** Suppose you are going to use the digits 3, 4, 5, 6, 7, and 8 to make 2-digit numbers. Digits cannot be repeated in the same 2-digit number. How many even numbers can you make? **8** _____
A 3 **B** 6 **C** 12 **D** 15

Standards Practice

Objective 4.08 (continued)

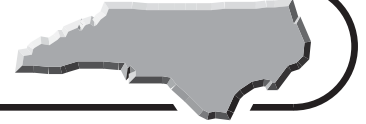


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 9** How many committees of 3 can be formed from a group of 10 students if Marita, one of the students, must be on the committee? **9** _____
A 720 **B** 120
C 90 **D** 36
- 10** In how many ways can a teacher choose 2 students from a class of 20 to be group leaders? **10** _____
A 40 **B** 190
C 380 **D** 400
- 11** In how many different orders can you phone 3 people to invite them to a party? **11** _____
A 3 **B** 6
C 9 **D** 7
- 12** Which expression can you use to find the number of ways you can select and hang 3 pictures from left to right if you have 7 pictures to choose from? **12** _____
A $7 \cdot 6 \cdot 5$ **B** $10 \cdot 7$
C 7^3 **D** 10^7
- 13** Four boys and four girls are candidates for the spelling bee team for their school. One boy and one girl will be selected at random to be the team. Which expression can you evaluate to find how many teams are possible? **13** _____
A 8^8 **B** 4^4
C 4^2 **D** 8^2
- 14** In how many ways can 6 books be lined up on a shelf? **14** _____
A 46,656 **B** 720
C 30 **D** 6
- 15** Which is a permutation of the letters A, B, C, and D, taken 3 at a time? **15** _____
A AAA **B** ABCD
C CDC **D** CAB
- 16** A combination lock on a suitcase uses a 3-digit combination. Each digit can be any of the digits from 0 to 9. How many combinations are possible? **16** _____
A 10^3 **B** 3^{10}
C 7^3 **D** 3^7

Standards Practice

Objective 4.09



Find the probability of independent events.

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

For Questions 1 and 2, suppose an assortment of candy contains 6 mints, 8 milk chocolates, 4 dark chocolates, and 7 toffees.

1 If one piece of candy is chosen at random, what is the probability that it is a mint? **1** _____

- A** $\frac{3}{5}$ **B** $\frac{1}{4}$ **C** $\frac{6}{25}$ **D** $\frac{3}{50}$

2 If 5 pieces of candy are chosen without replacement, what is the probability that all are dark chocolate? **2** _____

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

3 A resort advertises sunshine 330 days out of 365 days of the year. What is the probability that it will *not* be sunny on a given day? **3** _____

- A** $\frac{66}{73}$ **B** $\frac{7}{20}$ **C** $\frac{33}{100}$ **D** $\frac{7}{73}$

For Questions 4 and 5, use the following information.

A pair of black bears lives in Pisgah National Forest. The male bear weighs 600 pounds and the female weighs 150 pounds. They have 2 cubs that weigh 11 pounds and 15 pounds.

4 If 1 bear is chosen at random from this family, what is the probability that it weighs less than 50 pounds? **4** _____

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

5 If 2 bears are chosen at random from this family, what is the probability that the sum of their weights is 161 pounds? **5** _____

- A** $\frac{1}{2}$ **B** $\frac{1}{4}$ **C** $\frac{1}{6}$ **D** $\frac{1}{12}$

6 What is the probability of getting 2 heads when 2 fair coins are tossed? **6** _____

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

Standards Practice

Objective 4.09 (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.

For Questions 7 and 8, use the table below that shows the number of states in the United States that have each bird as their state bird.

State Bird	cardinal	western meadowlark	mocking-bird	robin	bluebird	common loon	Baltimore oriole
Number of States	7	6	5	3	2	1	1

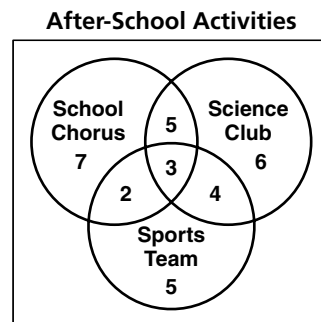
7 If a state having one of these state birds is chosen at random, what is the probability that the state bird is the cardinal? 7 _____

- A $\frac{7}{25}$ B $\frac{7}{50}$ C $\frac{6}{25}$ D $\frac{7}{18}$

8 If a state having one of these state birds is chosen at random, what is the probability that the state bird is *not* a common loon? 8 _____

- A $\frac{1}{25}$ B $\frac{6}{25}$ C $\frac{4}{5}$ D $\frac{24}{25}$

For Questions 9 and 10, use the Venn diagram. It shows the after-school activities of a group of high school students.



9 If one student is chosen at random, what is the probability that he or she is on a sports team and in the science club? 9 _____

- A $\frac{1}{8}$ B $\frac{7}{32}$
C $\frac{15}{32}$ D $\frac{9}{16}$

10 If one student is chosen at random, what is the probability that he or she is in the school chorus and *not* on a sports team? 10 _____

- A $\frac{17}{32}$ B $\frac{15}{32}$ C $\frac{3}{8}$ D $\frac{7}{32}$

11 What is the probability of getting a sum of 6 when two number cubes are tossed? 11 _____

- A $\frac{5}{12}$ B $\frac{5}{36}$ C $\frac{1}{6}$ D $\frac{1}{36}$

Standards Practice

Objective 4.10



Identify/explain the relationship between experimental results and theoretical probability.

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 Armen tossed a coin 50 times. He recorded 20 heads and 30 tails. He calculated the probability that he had tossed a head to be $\frac{2}{5}$. This an example of what type of probability? **1** _____

A experimental **B** theoretical
C symbolic **D** numerical

- 2 Any time you toss a fair coin, the probability of getting heads is $\frac{1}{2}$. This is an example of what type of probability? **2** _____

A experimental **B** theoretical
C symbolic **D** numerical

For Questions 3 and 4, use the table that shows the results Raymond got when he tossed a die 30 times.

Number	Tally
1	
2	
3	
4	
5	
6	

- 3 What is the experimental probability of getting a 3? **3** _____

A $\frac{1}{4}$ **B** $\frac{1}{5}$
C $\frac{1}{6}$ **D** $\frac{2}{15}$

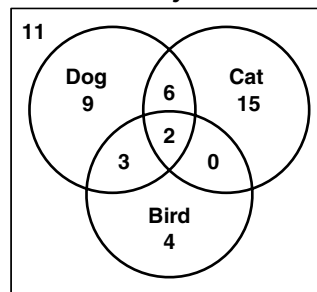
- 4 What is the theoretical probability of getting a 3 when a die is tossed? **4** _____

A $\frac{1}{4}$ **B** $\frac{1}{5}$ **C** $\frac{1}{6}$ **D** $\frac{2}{15}$

- 5 This Venn diagram shows how many 7th graders have dogs, cats, and/or birds as pets. From the diagram, Terry calculated that the probability of a 7th grader owning only a cat is $\frac{3}{10}$. Which is true? **5** _____

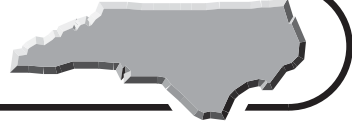
A 30% of all people in the U.S. have a cat.
B 30% of the students in Terry's school have a cat.
C 30% of these 7th graders have only a cat.
D 30% of next year's 7th graders will have a cat.

Pets Owned by 7th Graders



Standards Practice

Objective 4.10 (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.

For Questions 6–8, suppose you have a box that contains 12 plastic chips. There are 3 red, 3 blue, 3 yellow, and 3 green chips. You draw a chip, note its color, replace it, and mix the chips for the next draw.

- 6** If you draw from the box 100 times, how many times would you expect to draw a blue chip? **6** _____
- A** 12 **B** 20 **C** 25 **D** 50

- 7** If you draw from the box 100 times and 36 times get a blue chip, which statement is true? **7** _____
- A** There must be more than 3 blue chips in the box.
B The experimental probability of a blue chip is less than the theoretical probability.
C The experimental probability of a blue chip is the same as the theoretical probability.
D The experimental probability of a blue chip is greater than the theoretical probability.

- 8** If you draw from the box 100 times and the chip is red 36 times, what is the experimental probability that it is red? **8** _____
- A** $\frac{1}{3}$ **B** $\frac{1}{4}$ **C** $\frac{9}{25}$ **D** $\frac{3}{25}$

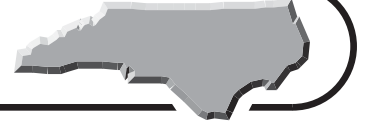
For Questions 9 and 10, suppose Ed tossed two number cubes 36 times. His results are shown in the table.

Sum of Number Cubes	2	3	4	5	6	7	8	9	10	11	12
Frequency	2	3	2	7	5	4	6	2	1	1	3

- 9** For which sum is the experimental probability equal to the theoretical probability? **9** _____
- A** 2 **B** 5 **C** 6 **D** 12
- 10** What is the experimental probability of getting a sum of 12? **10** _____
- A** $\frac{1}{4}$ **B** $\frac{1}{6}$ **C** $\frac{1}{12}$ **D** $\frac{1}{36}$

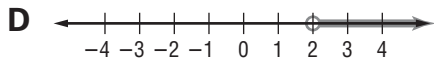
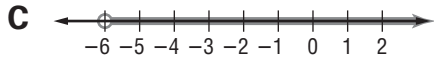
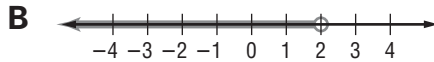
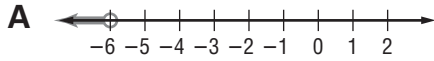
Sample Test

Test 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.

- 1 Which is the graph of $x - 4 > -2$? 1 _____



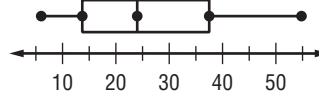
- 2 What is the range of the data in the box-and-whisker plot? 2 _____

A 23

B 50

C 55

D 60



- 3 Jan tossed a coin 5 times, divided the number of times heads came up by 5, and used the result to state the experimental probability of getting heads. Darlene followed a similar procedure, but she used 900 tosses. Which statement can you feel most confident is true? 3 _____

A Darlene got an experimental probability greater than the one Jan got.

B Darlene got an experimental probability less than the one Jan got.

C Jan's experimental probability is equal to the theoretical probability.

D Darlene's experimental probability is closer to the theoretical probability than Jan's.

- 4 The windchill temperature in High Point was 12°F . The windchill temperature then dropped 15 degrees. What was the windchill temperature after the drop? 4 _____

A 27°F

B 3°F

C -3°F

D -27°F

- 5 Which equation can you use to represent the sentence *two more than 3 times a number is 5*? 5 _____

A $2 - 3n = 5$

B $3n + 2 = 5$

C $2 + 3 + n = 5$

D $2(3n) = 5$



Sample Test (continued)

Test Practice



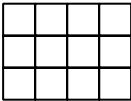
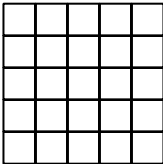
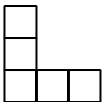
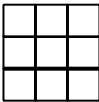
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

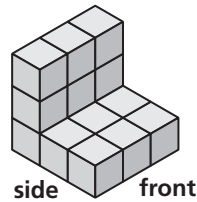
6 $\sqrt{95}$ is between which two whole numbers?

- A 47 and 48
- B 25 and 26
- C 11 and 12
- D 9 and 10

6 _____

7 Which is the front view of the figure?

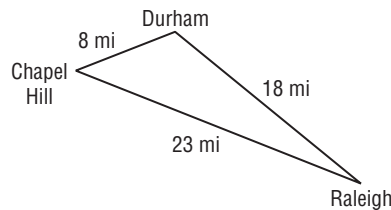
- A 
- B 
- C 
- D 



7 _____

8 The distances between three cities are shown on the figure. To find the number of miles from Raleigh to Chapel Hill by way of Durham, which expression would you use?

- A $23 - 8$
- B $18 + 5$
- C $18 + 8$
- D $23 + 8$



8 _____

9 Luigi bought 11 candy bars at the drug store. The number of candy bars with peanuts was 4 less than twice the number of plain chocolate bars. Which equation could you use to find how many of each kind he bought if x represents the number of plain chocolate bars?

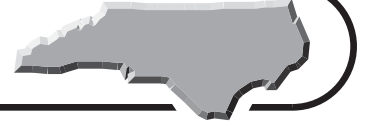
- A $x + (2x - 4) = 11$
- B $2x - 4 = 11$
- C $x + (2x + 4) = 11$
- D $x + (x + 11) = 4$

9 _____



Sample Test (continued)

Test Practice

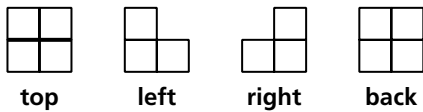


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 10 Victor has 6 oranges to give to 3 friends. Which expression could you use to find how many oranges each person will get? **10** _____

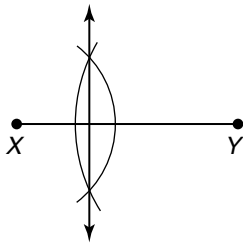
A $6 - 3$
 B $\frac{6}{3}$
 C 6×3
 D $6 + 3$

- 11 Which is a front view of the figure that has the top, side, and back views shown below? **11** _____



A  B 
 C  D 

- 12 The figure shows the drawing Johanna made when she was trying to construct the perpendicular bisector of \overline{XY} . What can she do to correct her work? **13** _____



A She can use the smaller compass opening from point X for both arcs.
 B She can use the larger compass opening from point Y for both arcs.
 C She can place the compass point at the same point for both arcs.
 D She can make a new drawing that uses a longer line segment.



Sample Test (continued)

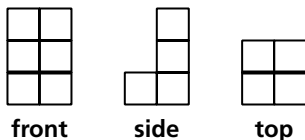
Test Practice

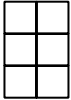
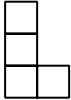




Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 13** Which problem can you solve by finding the solution of the equation $2(30) + 2x = 80$? **13** _____
- A** Find the perimeter x of a square with area 80.
B Find the length x of each side of a square with perimeter 80.
C Find the width x of a rectangle with length 30 and area 80.
D Find the width x of a rectangle with length 30 and perimeter 80.
- 14** The graph of $-\frac{5}{3}$ is located between the points for which two numbers on a number line? **14** _____
- A** -5 and -3 **B** -2 and -1
C -1 and 0 **D** 0 and 1
- 15** Mrs. Smith has 30 students in her seventh grade class. Three new students transfer into her class. Which operation would you use to find the number of students in Mrs. Smith's class now? **15** _____
- A** addition **B** subtraction
C multiplication **D** division

For Questions 16 and 17, use the front, side, and top views of a figure shown below.



- 16** Which could be a back view of the figure? **16** _____
- A**  **B** 
C  **D** 
- 17** What is the least number of cubes needed to build the figure? **17** _____
- A** 6
B 8
C 10
D 12



Sample Test (continued)

Test 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.

18 What can you do to a number in the pattern to find the next number? **18** _____

$$\frac{1}{4}, -\frac{1}{2}, 1, -2, 4, \dots$$

A Square the number.

B Divide by -2 .

C Multiply by 2 .

D Multiply by -2 .

19 Suppose you translate the point at $(-2, 1)$ by moving the point 3 units to the right and 2 units up. What are the coordinates of the image? **19** _____

A $(0, 4)$

B $(-4, -2)$

C $(1, 3)$

D $(-5, -1)$

20 There are sometimes 1.5×10^6 people in the Times Square area on New Year's Eve. What is this number in standard notation? **20** _____

A 375,000

B 1,500,000

C 6,000,000

D 15,000,000

21 Which situation could the inequality $0.05x + 0.10y > 5$ represent? **21** _____

A The value of x nickels and y dimes is greater than \$5.

B The value of x nickels and y dimes is less than \$5.

C The value of x nickels and y dollars is greater than \$5.

D The number of nickels and dimes is less than 5.

22 Renee wants to construct a line parallel to a given line ℓ . Which idea can she use? **22** _____

A Construct a line m perpendicular to ℓ , then another line perpendicular to m .

B Draw a line that intersects ℓ , and bisect two of the angles that are formed.

C Construct the perpendicular bisectors of two segments on line ℓ .

D Use a centimeter ruler to mark any two points 1 centimeter from ℓ , and draw a line through the points.

23 Which number sentence is true? **23** _____

A $\frac{7}{12} > \frac{2}{3}$

B $\frac{7}{12} < \frac{2}{3}$

C $\frac{7}{12} = \frac{2}{3}$

D $\frac{7}{12} + \frac{2}{3} = \frac{9}{15}$

24 Earth is about 93 million miles from the Sun. What is this distance in scientific notation? **24** _____

A 9.3×10^1 mi

B 9.3×10^4 mi

C 9.3×10^6 mi

D 9.3×10^7 mi



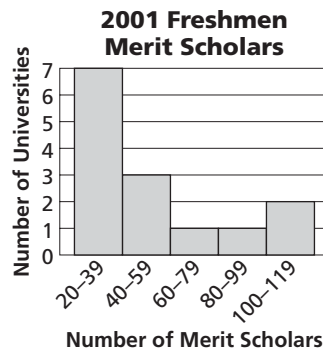
Sample Test (continued)

Test 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.

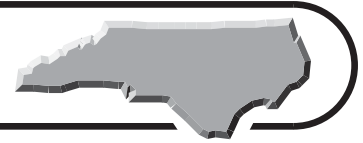
For Questions 25–27, use the histogram at the right. It is based on data from a survey about the number of freshmen Merit Scholars at various universities, including Duke, in 2001.



- 25** What is the least possible number of Merit Scholars in the universities? **25** _____
- A** 800 **B** 600
C 100 **D** 20
- 26** Duke University had 90 Merit Scholars in the 2001 freshman class. How many of these other schools had more Merit Scholars in their freshman classes than Duke? **26** _____
- A** 100 **B** 14
C 2 **D** 1
- 27** How many universities are represented on this histogram? **27** _____
- A** 7 **B** 10
C 14 **D** 120
- 28** What is the image of the point $A(-3, -2)$ if it is reflected over the x -axis? **28** _____
- A** $A'(-3, 2)$ **B** $A'(3, -2)$
C $A'(3, 2)$ **D** $A'(2, 3)$
- 29** Uthara's plane is scheduled to take off from Charlotte at 2:30 P.M. Uthara needs to be at the airport $1\frac{1}{2}$ hours early to check in and go through security. The airport is a half-hour ride from her house, and she needs an hour to pack her suitcase. What is the latest time that she should start packing her suitcase? **29** _____
- A** 10:30 A.M. **B** 11:30 A.M.
C 12:00 noon **D** 12:30 P.M.
- 30** In how many ways can a committee of 3 people be selected from a group of 6 people? **30** _____
- A** 120 **B** 20
C 18 **D** 3

Go on

Sample Test (continued)



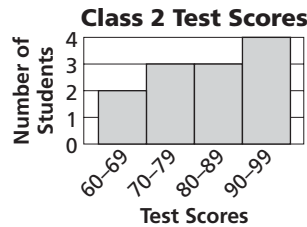
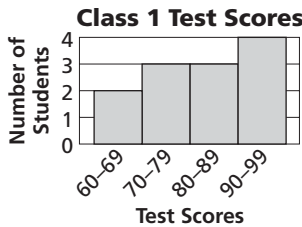
Test Practice

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.

31 Class 1 and Class 2 took the same test and received the scores shown in the table. The histograms are based on the test score data. Which is a correct statement comparing how the two classes did on the test?

31 _____

Test Scores	
Class 1	99, 99, 98, 98, 89, 89, 88, 79, 78, 77, 69, 68
Class 2	90, 90, 90, 90, 81, 80, 80, 70, 70, 70, 68, 69



- A** The classes did equally well because the histograms are the same.
- B** Class 1 did better because it had the higher mean and median.
- C** Class 2 did better because its mode was higher.
- D** Class 2 did better because the range was greater.

32 If the pattern in the table continues, how many diagonals will an octagon have?

32 _____

Polygon	Triangle	Quadrilateral	Pentagon	Hexagon	Heptagon
Number of Diagonals	0	2	5	9	14

- A** 16
- B** 18
- C** 20
- D** 24

33 Ruth Ann bought 100 shares of Smoky Mountain Company stock for \$30 per share. She sold these shares 3 years later for a total of \$3,250. How much was her gain or loss?

33 _____

- A** gain of \$250
- B** loss of \$250
- C** gain of \$3,250
- D** loss of \$3,000

34 If the radius of a circle is multiplied by 10, how is the area changed?

34 _____

- A** It is multiplied by 5.
- B** It is multiplied by 10.
- C** It is multiplied by 20.
- D** It is multiplied by 100.



Sample Test (continued)

Test 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.

35 What is the theoretical probability of getting a sum of 12 when two number cubes are tossed? **35** _____

A $\frac{1}{36}$

B $\frac{1}{12}$

C $\frac{1}{6}$

D $\frac{1}{4}$

36 The salaries of the executives at a company are \$120,000, \$115,000, \$112,000, \$97,000, and \$32,000. To encourage new people to join the company, which measure would the company publish? **36** _____

A median

B mean

C mode

D range

37 One card is chosen at random from a standard deck of 52 cards. What is the probability that it is a heart? **37** _____

A $\frac{1}{26}$

B $\frac{1}{13}$

C $\frac{1}{4}$

D $\frac{4}{13}$

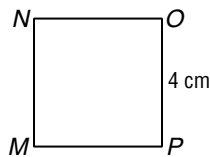
38 What is the length of \overline{OM} in square $MNOP$? Round to the nearest tenth of a centimeter.

A 8.0 cm

B 5.7 cm

C 4.0 cm

D 2.8 cm



38 _____

39 A donut shop sells donuts for \$0.35 each, 3 for \$1.00, 8 for \$2.50, or 15 for \$4.65. Which is the best buy? **39** _____

A 1 for 35 cents

B 3 for a dollar

C 8 for \$2.50

D 15 for \$4.65

40 Which number should be removed from the set 1, 1, 1, 3, 5, 6, and 9 so the mode will be 1, the median 2, and the mean 3.5? **40** _____

A 3

B 5

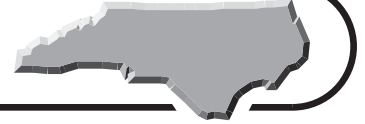
C 6

D 9



Sample Test (continued)

Test 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.

- 41** Willie has 20 classical compact discs, as shown in the table. If one compact disc is chosen at random, what is the probability it is by Brahms?

Composer	Number of CDs
Mozart	6
Beethoven	5
Tchaikovsky	7
Brahms	2

- A $\frac{1}{2}$
 B $\frac{1}{4}$
 C $\frac{1}{5}$
 D $\frac{1}{10}$

41 _____

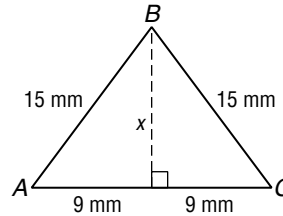
- 42** What is the volume of a cylinder if the radius is 4 centimeters and the height is 12 centimeters? Use 3.14 for π .

- A 602.88 cm³
 B 392.50 cm³
 C 301.44 cm³
 D 150.72 cm³

42 _____

- 43** What is the height x of $\triangle ABC$?

- A 17 mm
 B 12 mm
 C 10 mm
 D 6 mm



43 _____

- 44** The mall in Burlington advertises a 30% off sale. What was the regular price of a pair of jeans that are on sale for \$14.00?

- A \$14.30
 B \$16.20
 C \$18.00
 D \$20.00

44 _____

- 45** What is the length of each side of a cube if the volume is 27 cubic feet?

- A 9 ft
 B $6\frac{3}{4}$ ft
 C 5.2 ft
 D 3 ft

45 _____



Sample Test (continued)

Test 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.

For Questions 46–48, use the table at the right. It shows the prices for items available at a store on the Outer Banks.

Item	Price
flag	\$19.99
single line kite	\$12.99
box kite	\$22.99
specialty kite	\$62.99
stunt kite	\$135.00
windmill	\$52.99
water balloon launcher	\$12.99

46 What is the mode of the prices of these items?

- A \$12.99
- B \$22.99
- C \$45.71
- D \$135.00

46 _____

47 What is the mean price?

- A \$22.99
- B \$45.71
- C \$49.00
- D \$122.01

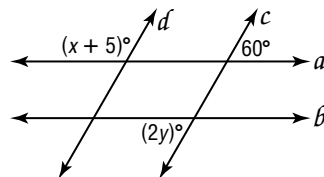
47 _____

48 What is the median price?

- A \$22.99
- B \$45.71
- C \$49.00
- D \$122.01

48 _____

For Questions 49 and 50, use the figure at the right. It shows four lines with $a \parallel b$ and $c \parallel d$.



49 Which equation could you use to find x ?

- A $x + 5 = 120$
- B $x + 5 + 120 = 180$
- C $x + 5 = 90$
- D $x + 5 - 120 = 180$

49 _____

50 Which equation could you use to find y ?

- A $2y = 120$
- B $2y = 90$
- C $2y + 120 = 180$
- D $2y - 120 = 180$

50 _____



Sample Test (continued)

Test Practice

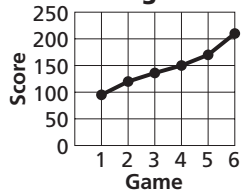


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

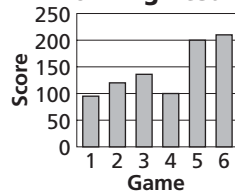
51 Which is a correct graph based on the bowling scores listed below? **51** _____

95, 122, 136, 150, 200, 210

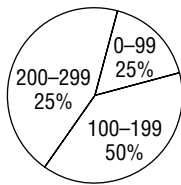
A **Bowling Results**



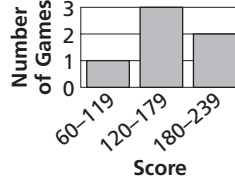
B **Bowling Results**



C **Bowling Results**



D **Bowling Results**



52 The Biltmore Estate has 250 rooms. Rich's house has 10 rooms. The number of rooms in Rich's house is what percent of the number of rooms in the Biltmore Estate? **52** _____

A 4%

B 10%

C 25%

D 40%

53 A carton containing a microwave oven measures 3 feet by 2 feet by 1.75 feet. What is the volume of the carton? **53** _____

A 10.5 ft^3

B 6.75 ft^3

C 5.25 ft^3

D 4.5 ft^3

54 What is the solution of $\frac{x-1}{3} = 4$? **54** _____

A 6

B 8

C 11

D 13

55 What is the value of $x^2 - 2x$ if $x = 4$? **55** _____

A 0

B 8

C 16

D 24

56 What is the volume of a cube if each side has length 10 meters? **56** _____

A 30 m^3

B 100 m^3

C 600 m^3

D $1,000 \text{ m}^3$

Go on

Sample Test (continued)

Test 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.

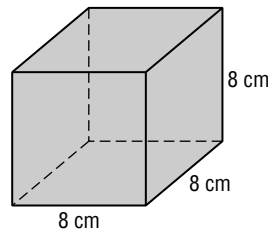
- 57** Olga asked 50 students to name their favorite kind of television show. The results are shown in the table. If Olga draws a circle graph for this data, how many degrees should she use for the part representing drama?

Type of Show	Number of Students
drama	15
comedy	20
musical	10
quiz game	5

57 _____

- A** 18°
B 90°
C 108°
D 150°

- 58** What is the surface area of the cube shown at the right?



58 _____

- A** 512 cm^2
B 384 cm^2
C 256 cm^2
D 128 cm^2

- 59** If a 36-foot tall pine tree casts a shadow 54 feet long, how long is the shadow of a 3-foot tall mailbox?

59 _____

- A** 2 ft
B 3 ft
C 4.5 ft
D 5 ft

- 60** What number should be included in the set of data 3, 5, 7, and 15 to make the mode of the set 5, the mean 7, and the median 5?

60 _____

- A** 1
B 3
C 5
D 7

- 61** A man has 7 photos and wants to select 2 of them to put in his wallet. How many selections are possible?

61 _____

- A** 21
B 42
C 2,520
D 5,040



Sample Test (continued)

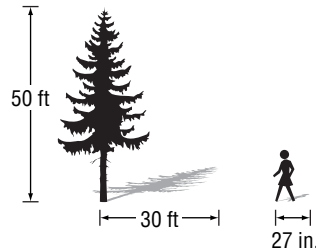
Test Practice



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.

- 66** A tree 50 feet tall casts a shadow 30 feet long. Mary's shadow is 27 inches long. How tall is Mary?

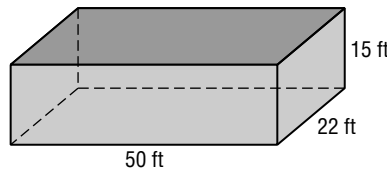
A 45 in.
B 48 in.
C 50 in.
D 56 in.



66 _____

- 67** A zoo has a rectangular enclosure for penguins, as shown in the figure. The front and one end of the enclosure are glass. What is the total area of the glass?

A 1,480 ft²
B 1,200 ft²
C 1,080 ft²
D 840 ft²



67 _____

- 68** Ericsson Stadium has a capacity of 73,500. If every seat was filled for each of the 8 Carolina Panthers home games, how many seats were sold during the season?

A 9,190
B 44,800
C 588,000
D 668,000

68 _____

- 69** What is x if $\frac{3}{5} = \frac{x}{20}$?

A 6
B 12
C 20
D $33\frac{1}{3}$

69 _____

- 70** Elwin was buying flowers for his girl friend for the middle school dance. He had to choose between roses, carnations, and daisies. The flowers could be white, yellow, or pink. He could buy a bouquet or a corsage. How many choices did he have?

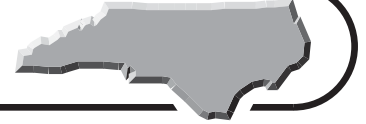
A 7
B 11
C 12
D 18

70 _____



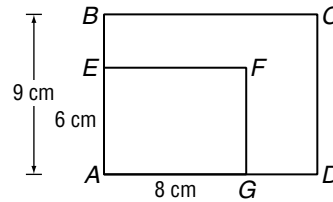
Sample Test (continued)

Test 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.

- 71** Rectangle $ABCD$ is similar to rectangle $AEFG$. If $AE = 6$ centimeters, $AB = 9$ centimeters, and $AG = 8$ centimeters, what is AD ?



71 _____

- A** 6.75 cm
B 11 cm
C 12 cm
D 15 cm

- 72** Which ordered pair is a solution of $y < \frac{2}{3}x + 1$?

72 _____

- A** $(-3, 0)$
B $(6, 5)$
C $(9, 10)$
D $(6, 4)$

- 73** A 12-ounce can of cola contains 140 Calories. How many Calories will be in a 16-ounce bottle of the same cola? Round your answer to the nearest Calorie.

73 _____

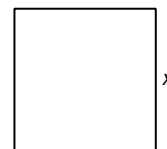
- A** 187
B 175
C 152
D 105

- 74** Airline A advertises that more than half the people who fly from Winston-Salem to Raleigh choose their airline over Airline B. Which piece of information would be most likely to make a consumer decide that the advertisement is misleading?

74 _____

- A** Airline B started flying between the two cities only last month.
B Airline B has many more flights than Airline A.
C Airline A has more new planes than airline B.
D Airline A advertises in newspapers but not on TV.

- 75** If the area of the square is 49 square centimeters, what is x ?



75 _____

- A** 24.5 cm
B 12.25 cm
C 7 cm
D 6 cm



Sample Test (continued)

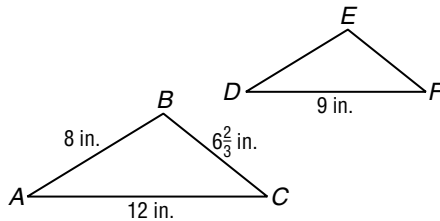
Test Practice



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.

- 76** If $\triangle ABC$ is similar to $\triangle DEF$, what is DE ?

A $1\frac{5}{12}$ in.
B 5 in.
C 6 in.
D $13\frac{1}{2}$ in.



76 _____

- 77** If the ratio of the circumferences of two circles is 1:4, what is the ratio of their areas?

A $\frac{1}{16}$
B $\frac{1}{8}$
C $\frac{1}{4}$
D $\frac{1}{2}$

77 _____

- 78** Mimi is building a deck for her house. The deck could be redwood or cedar, have a railing or not, and be square or rectangular. How many different style decks can choose from?

A 4
B 6
C 8
D 12

78 _____

- 79** What is the value of $8ab + 4a + b$ if $a = -1$ and $b = 3$?

A -25
B -17
C 6
D 15

79 _____

- 80** At 9:00 the angle between the hands on a grandfather clock is 90 degrees. If the minute hand is 8 inches long and the tips of the hands are 10 inches apart at 9:00, how long is the hour hand?

A $\sqrt{164}$ in.
B $\sqrt{46}$ in.
C 6 in.
D 2 in.

80 _____

