

Preparing for the North Carolina Geometry End-of-Course (EOC) Test Practice and Sample Test Workbook

Includes:

- North Carolina 2003 Course of Study Content Standards Covered on the Geometry EOC Test
- Formula Sheet
- 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.



Glencoe

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*Preparing for the North Carolina Geometry End-of-Course Test
Practice and Sample Test Workbook*

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Overview

The material in this booklet is designed to help you prepare for the North Carolina Geometry End-of-Course Test (EOC).

It contains:

- a Student Recording Chart,
- the competency goals tested on the EOC,
- a Diagnostic Test,
- practice for each competency goal, and
- a Sample Test.

How to Use This Book

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

Practice If you missed one or two of the questions for a particular competency goal, you could probably use some extra practice with that goal. The Student Recording Chart lists practice pages for each competency goal. 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 47 to 56.

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

Strand	Number and Operations		
Standard	1.01	1.02	1.03
Test Questions	1 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 31 <input type="checkbox"/> 43 <input type="checkbox"/> 50 <input type="checkbox"/>	3 <input type="checkbox"/> 9 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 45 <input type="checkbox"/> 48 <input type="checkbox"/>	4 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> 23 <input type="checkbox"/> 46 <input type="checkbox"/> 47 <input type="checkbox"/>
Need Practice?			
Practice Pages	11–14	15–18	19–22

Strand	Geometry			
Standard	2.01	2.02	2.03	2.04
Test Questions	15 <input type="checkbox"/> 17 <input type="checkbox"/> 32 <input type="checkbox"/> 35 <input type="checkbox"/> 39 <input type="checkbox"/>	11 <input type="checkbox"/> 24 <input type="checkbox"/> 26 <input type="checkbox"/> 27 <input type="checkbox"/> 28 <input type="checkbox"/> 30 <input type="checkbox"/>	10 <input type="checkbox"/> 18 <input type="checkbox"/> 20 <input type="checkbox"/> 33 <input type="checkbox"/> 36 <input type="checkbox"/> 37 <input type="checkbox"/>	34 <input type="checkbox"/> 38 <input type="checkbox"/> 40 <input type="checkbox"/> 41 <input type="checkbox"/> 42 <input type="checkbox"/>
Need Practice?				
Practice Pages	23–26	27–30	31–34	35–38

Strand	Algebra	
Standard	3.01	3.02
Test Questions	2 <input type="checkbox"/> 12 <input type="checkbox"/> 16 <input type="checkbox"/> 44 <input type="checkbox"/> 49 <input type="checkbox"/>	5 <input type="checkbox"/> 8 <input type="checkbox"/> 19 <input type="checkbox"/> 25 <input type="checkbox"/> 29 <input type="checkbox"/>
Need Practice?		
Practice Pages	39–42	43–46

Competency Goals Tested on the EOC

COMPETENCY GOAL 1: The learner will perform operations with real numbers to solve problems.	
1.01	Use the trigonometric ratios to model and solve problems <i>involving right triangles</i> .
1.02	Use length, area, and volume of geometric figures to solve problems. Include arc length, area of sectors of circles; lateral area, surface area, and volume of three-dimensional figures; and perimeter, area, and volume of composite figures.
1.03	Use length, area, and volume to model and solve problems involving probability.
COMPETENCY GOAL 2: The learner will use geometric and algebraic properties of figures to solve problems and write proofs.	
2.01	Use logic and deductive reasoning to draw conclusions and solve problems.
2.02	Apply properties, definitions, and theorems of angles and lines to solve problems and write proofs.
2.03	Apply properties, definitions, and theorems of two-dimensional figures to solve problems and write proofs: a) Triangles. b) Quadrilaterals. c) Other Polygons. d) Circles.
2.04	Develop and apply properties of solids to solve problems.
COMPETENCY GOAL 3: The learner will transform geometric figures in the coordinate plane algebraically.	
3.01	Describe the transformation (translation, reflection, rotation, dilation) of polygons in the coordinate plane in simple algebraic terms.
3.02	Use matrix operations (addition, subtraction, multiplication, scalar multiplication) to describe the transformation of polygons in the coordinate plane.

Formulas

The following information is for your reference in solving some of the problems on the test.

Area of a Trapezoid $A = \frac{1}{2}h(b_1 + b_2)$

Trig Ratios $\sin x = \frac{\text{opposite side}}{\text{hypotenuse}}$

Area of an Equilateral Triangle $A = \frac{s^2}{4}\sqrt{3}$

$\cos x = \frac{\text{adjacent side}}{\text{hypotenuse}}$

Distance $D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$\tan x = \frac{\text{opposite side}}{\text{adjacent side}}$

Midpoint $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

Circle $(x - h)^2 + (y - k)^2 = r^2$

Cylinder Lateral Area (right) $L = 2\pi rh$

Total Area (right) $T = 2\pi r(h + r)$

Volume $V = \pi r^2 h$

Sphere Surface Area $A = 4\pi r^2$

Volume $V = \frac{4}{3}\pi r^3$

Cone, where ℓ is the slant height

Lateral Area (right) $L = \pi r\ell$

Total Area (right) $T = \pi r(\ell + r)$

Volume $V = \frac{1}{3}\pi r^2 h$

Prism, where p is the perimeter of the base and B is the area of the base

Lateral Area (right) $L = ph$

Total Area (right) $T = L + 2B$

Volume $V = Bh$

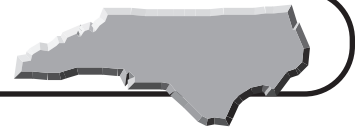
Pyramid, where p is the perimeter of the base, B is the area of the base, and ℓ is the slant height

Lateral Area (regular) $L = \frac{1}{2}\ell p$

Total Area (regular) $T = L + B$

Volume $V = \frac{1}{3}Bh$

Diagnostic Test



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

- 1** Give the exact value for $\sin 45^\circ$. **1.01**

1 _____

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

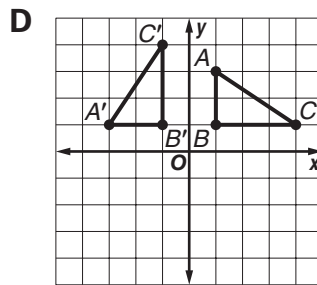
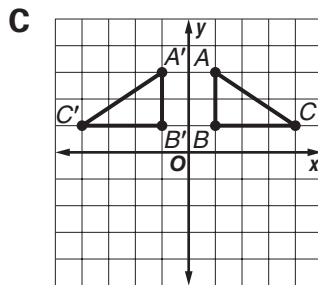
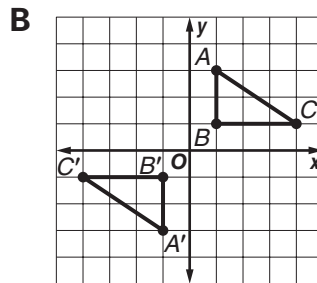
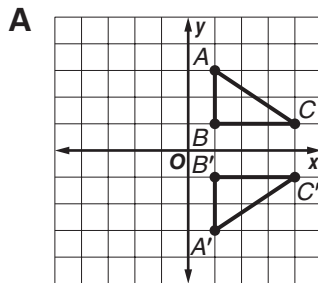
B $\frac{1}{2}$

C $\frac{\sqrt{2}}{2}$

D $\frac{\sqrt{3}}{2}$

- 2** Which of the following shows a reflection of $\triangle ABC$ over the y -axis? **3.01**

2 _____



- 3** David has a cylindrical can with a radius of 8 inches and a height of 10 inches that he wants to use for a wastebasket in his room. He wants to paint the can a solid color and then paint Duke University's mascot on the side. What is the lateral area of the can? **1.02**

3 _____

A 80π square inches

B 160π square inches

C 288π square inches

D 640π square inches

- 4** Jaydine was in an archery competition with some of her friends at North Carolina State University. The target they were shooting at had a bull's-eye with a radius of 5 centimeters, and the outside circle had a radius of 90 centimeters. What is the probability that an arrow shot hitting the target randomly will hit the bull's-eye? **1.03**

4 _____

A $\frac{1}{648}$

B $\frac{1}{405}$

C $\frac{1}{324}$

D $\frac{1}{18}$

- 5** What is the matrix for a transformation that is a reflection over the line $y = x$? **3.02**

5 _____

A $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

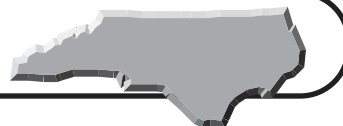
B $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

C $\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$

D $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$

Go on

Diagnostic Test (continued)



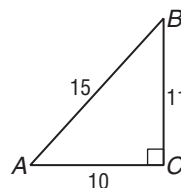
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

Use the figure for Questions 6 and 7.

6 Find $\cos A$. **1.01**

- A** $\frac{10}{15}$
C $\frac{10}{11}$

- B** $\frac{11}{15}$
D $\frac{11}{10}$



6 _____

7 Find $\tan B$. **1.01**

- A** $\frac{10}{15}$
C $\frac{10}{11}$

- B** $\frac{11}{15}$
D $\frac{11}{10}$

7 _____

8 The polygon *MATH* is represented by the matrix $\begin{bmatrix} 0 & -1 & 0 & 1 \\ 3 & 0 & -3 & 0 \end{bmatrix}$.

What is the image of *MATH* under a dilation of 3? **3.02**

A $\begin{bmatrix} 3 & 2 & 3 & 4 \\ 6 & 3 & 0 & 3 \end{bmatrix}$

B $\begin{bmatrix} -9 & 0 & 9 & 0 \\ 0 & -1 & 0 & 1 \end{bmatrix}$

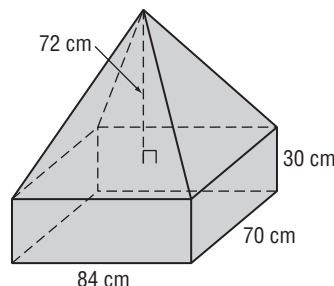
C $\begin{bmatrix} 3 & 0 & -3 & 0 \\ 0 & -1 & 0 & 1 \end{bmatrix}$

D $\begin{bmatrix} 0 & -3 & 0 & 3 \\ 9 & 0 & -9 & 0 \end{bmatrix}$

8 _____

9 Marvin has a container that is the shape of a rectangular prism and a rectangular pyramid combined. He wants to know the volume of the container. Find the volume, rounding the answer to the nearest cubic centimeter. **1.02**

- A** 176,400 cubic centimeters
B 317,520 cubic centimeters
C 423,360 cubic centimeters
D 599,760 cubic centimeters



9 _____

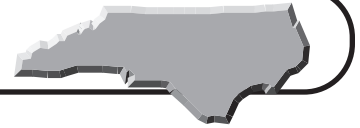
10 The lengths of two sides of a triangle are 16 centimeters and 10 centimeters. The length of the third side must be between what two lengths? **2.03**

- A** 6 centimeters and 26 centimeters
B 6 centimeters and 16 centimeters
C 10 centimeters and 16 centimeters
D 10 centimeters and 26 centimeters

10 _____



Diagnostic Test (continued)



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

- 11** Sara is explaining to her friend how she knows three line segments are congruent. She knows that $\overline{AB} \cong \overline{CD}$ and that $\overline{CD} \cong \overline{EF}$. What property can Sara use to prove that $\overline{AB} \cong \overline{EF}$? **2.02** **11** _____

A Reflexive Property
B Substitution Property
C Symmetric Property
D Transitive Property

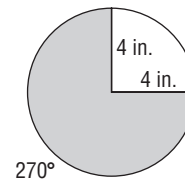
- 12** What are the coordinates of the image of (a, b) after a reflection over the x -axis? **3.01** **12** _____

A $(-a, b)$
B $(a, -b)$
C $(-a, -b)$
D (a, b)

Use the figure to answer Questions 13 and 14.

- 13** Find the arc length of the shaded sector. **1.02**

A 2π inches
B 6π inches
C 12π inches
D 16π inches



13 _____

- 14** Find the area of the shaded sector. **1.02**

A 3π square inches
B 6π square inches
C 12π square inches
D 16π square inches

14 _____

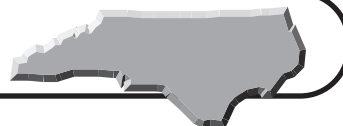
- 15** If point M is between A and B and $AM = 6$ and $MB = 11$, then what conclusion can be made? **2.01**

A $AM - MB = 5$
B $AB = 5$
C $AB < 16$
D $AB > 16$

15 _____

Go on

Diagnostic Test (continued)

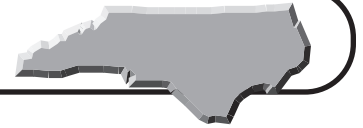


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 16** A preimage is reflected to form an image. What is true about the image? **16** _____
A It is similar and congruent to the preimage. **3.01**
B It is similar but not congruent to the preimage.
C It is congruent but not similar to the preimage.
D It is neither similar nor congruent to the preimage.
- 17** Which is the converse of the following statement: “If I go to Meredith College, then I will live on campus.” **2.01** **17** _____
A If I do not live on campus, then I will go to Meredith College.
B If I live on campus, then I will not go to Meredith College.
C If I go to Meredith College, then I will not live on campus.
D If I live on campus, then I will go to Meredith College.
- 18** Find the measure of an angle of a regular octagon. **2.03** **18** _____
A 95°
B 108°
C 120°
D 135°
- 19** Quadrilateral $KLMN$ has vertices $K(1, 5)$, $L(0, 2)$, $M(2, 0)$, and $N(5, 2)$. Use matrix multiplication to find the image $K'L'M'N'$ over the x -axis. **19** _____
A $\begin{bmatrix} 5 & 2 & 0 & 2 \\ 1 & 0 & 2 & 5 \end{bmatrix}$ **3.02**
B $\begin{bmatrix} 5 & 2 & 0 & 2 \\ -1 & 0 & -2 & -5 \end{bmatrix}$
C $\begin{bmatrix} 1 & 0 & 2 & 5 \\ -5 & -2 & 0 & -2 \end{bmatrix}$
D $\begin{bmatrix} -1 & 0 & -2 & -5 \\ -5 & -2 & 0 & -2 \end{bmatrix}$
- 20** A parallelogram $CARY$ has vertices $C(-3, -1)$, $A(1, -1)$, and $R(2, 1)$. What could be the coordinates of point Y ? **2.03** **20** _____
A $Y(-2, 1)$
B $Y(-2, -1)$
C $Y(1, 2)$
D $Y(1, -2)$



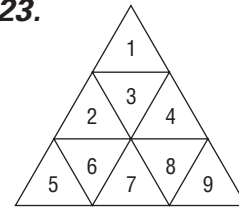
Diagnostic Test (continued)



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

Use the following information for Questions 21–23.

Nine equilateral triangles are connected as shown. A rock is thrown and randomly lands somewhere on the figure.



- 21** What is the probability it will land on an even number? **1.03**

21 _____

A $\frac{1}{9}$

B $\frac{2}{9}$

C $\frac{4}{9}$

D $\frac{2}{3}$

- 22** What is the probability it will land on an odd number? **1.03**

22 _____

A $\frac{2}{9}$

B $\frac{1}{3}$

C $\frac{4}{9}$

D $\frac{5}{9}$

- 23** What is the probability it will *not* land on 1 or 9? **1.03**

23 _____

A $\frac{2}{9}$

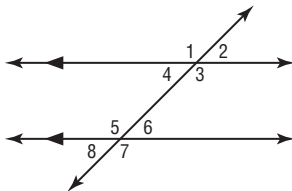
B $\frac{4}{9}$

C $\frac{5}{9}$

D $\frac{7}{9}$

- 24** Which of the following is the reason that $\angle 3 \cong \angle 5$? **2.02**

24 _____



- A** If two parallel lines are cut by a transversal, then corresponding angles are congruent.
- B** If two parallel lines are cut by a transversal, then alternate exterior angles are congruent.
- C** If two parallel lines are cut by a transversal, then same side interior angles are supplementary.
- D** If two parallel lines are cut by a transversal, then alternate interior angles are congruent.

- 25** If $A = (1, 2)$, $B = (1, 4)$, and $C = (3, 4)$, find the image of $\triangle ABC$ under a counterclockwise rotation of 90° about the origin. **3.02**

25 _____

A $\begin{bmatrix} -2 & -2 & -4 \\ -1 & -1 & -3 \end{bmatrix}$

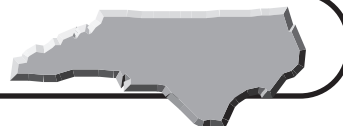
B $\begin{bmatrix} -2 & -4 & -4 \\ 1 & 1 & 3 \end{bmatrix}$

C $\begin{bmatrix} -1 & -1 & -3 \\ -2 & -4 & -4 \end{bmatrix}$

D $\begin{bmatrix} 2 & 4 & 4 \\ -1 & -1 & -3 \end{bmatrix}$



Diagnostic Test (continued)



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

Use the following information for Questions 26–28.

The coordinates of points L and X are 16 and 40, respectively. Q is the midpoint of \overline{LX} , and R is the midpoint of \overline{LQ} .

26 Find the coordinate of Q . **2.02**

- A** 6
C 24

- B** 22
D 28

26 _____

27 Find the length of \overline{LQ} . **2.02**

- A** 12
C 16

- B** 14
D 28

27 _____

28 Find the length of \overline{LR} . **2.02**

- A** 3
C 12

- B** 6
D 22

28 _____

29 What is the matrix that will translate quadrilateral $MNRS$

$\begin{bmatrix} 1 & 2 & 4 & 3 \\ 0 & -3 & -1 & 5 \end{bmatrix}$ so that N' is at $(1, -1)$? **3.02**

A $\begin{bmatrix} -1 & -1 & -1 & -1 \\ 2 & 2 & 2 & 2 \end{bmatrix}$

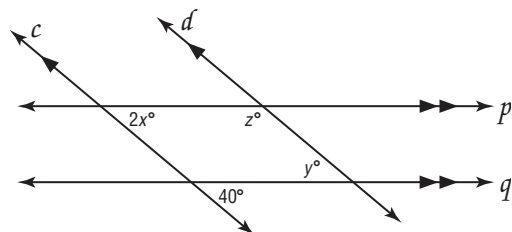
B $\begin{bmatrix} -2 & -2 & -2 & -2 \\ 1 & 1 & 1 & 1 \end{bmatrix}$

C $\begin{bmatrix} 2 & 2 & 2 & 2 \\ 1 & 1 & 1 & 1 \end{bmatrix}$

D $\begin{bmatrix} 1 & 1 & 1 & 1 \\ -2 & -2 & -2 & -2 \end{bmatrix}$

29 _____

30 Find the values of x , y , and z . **2.02**

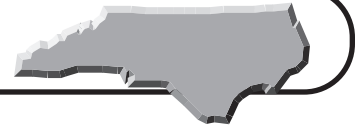


- A** $x = 10, y = 20, z = 120$
B $x = 10, y = 40, z = 160$
C $x = 20, y = 20, z = 120$
D $x = 20, y = 40, z = 140$

30 _____



Diagnostic Test (continued)



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

- 31** Dyson is building a new home in Southern Pines. He has a 30-foot extension ladder, which is safe if the angle it makes with the ground is between 65° and 80° . If he places the ladder against a vertical wall of the home, what is the farthest height to the nearest tenth of a foot that this ladder could reach and still be safe? **1.01**

A 5.2 feet **B** 12.7 feet
C 27.2 feet **D** 29.5 feet

31 _____

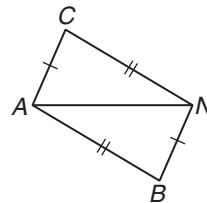
- 32** If Dennis barbeques chicken on the grill and his son bakes cookies, then they will have some friends from Burlington for dinner. Dennis did barbeque chicken. They did not have some friends for dinner. Which statement must be true? **2.01**

A Dennis' son did not bake cookies.
B Dennis did not barbeque chicken on the grill.
C Dennis did barbeque chicken, and his son did bake cookies.
D Dennis' son did bake cookies, or he had some friends for dinner.

32 _____

- 33** Which theorem or postulate can be used to prove that $\triangle CAN$ is congruent to $\triangle BNA$? **2.03**

A SSS
B ASA
C AAS
D SAS



33 _____

- 34** Find the lateral area of a right pentagonal prism with a height of 12 centimeters and base edges of length 6 centimeters, 5 centimeters, 4.7 centimeters, 5.3 centimeters, and 4 centimeters. **2.04**

A 150 square centimeters
B 250 square centimeters
C 300 square centimeters
D 600 square centimeters

34 _____

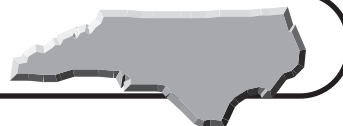
- 35** If a triangle has one obtuse angle, then what must be true about the other two angles? **2.01**

A One is a right angle, and one is an acute angle.
B They are both obtuse angles.
C They are both right angles.
D They are both acute angles.

35 _____



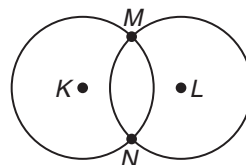
Diagnostic Test (continued)



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

Use the following information for Questions 36 and 37.

Circle K and circle L are congruent circles that intersect at M and N . \overline{MN} is the common chord of the circles.



36 What kind of quadrilateral is $KMLN$? **2.03**

- A** rectangle **B** rhombus **C** square **D** trapezoid

36 _____

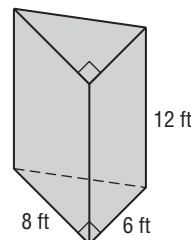
37 If $KM = 17$ and $KL = 30$, find the length of \overline{MN} . **2.03**

- A** 8 **B** 13 **C** 16 **D** 17

37 _____

38 Kelsey has a container shaped like a triangular prism, and she wants to fill it with memorabilia. Find the volume of the triangular prism. **2.04**

- A** 288 cubic feet
B 312 cubic feet
C 336 cubic feet
D 576 cubic feet



38 _____

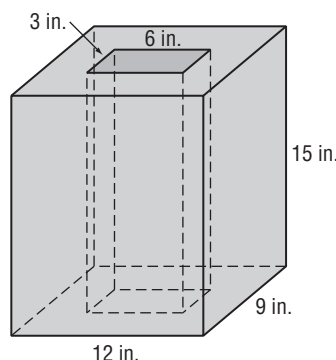
39 If Alan runs 5 miles in the morning and he walks 2 miles in the afternoon, then he will reward himself with a treat. Alan did run 5 miles in the morning. He did not reward himself with a treat. Which statement must be true? **2.01**

- A** Alan did reward himself with a treat, or he did walk 2 miles in the afternoon.
B Alan did not run 5 miles in the morning.
C Alan did run 5 miles in the morning, and he did walk 2 miles in the afternoon.
D Alan did not walk 2 miles in the afternoon.

39 _____

40 Ryan is building a flower container which he wants to place around a rectangular shaped post for his mailbox. The dimensions of the container are shown. What is the volume of Ryan's flower container? **2.04**

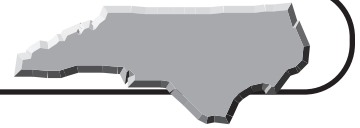
- A** 270 cubic inches
B 1,350 cubic inches
C 1,602 cubic inches
D 1,620 cubic inches



40 _____

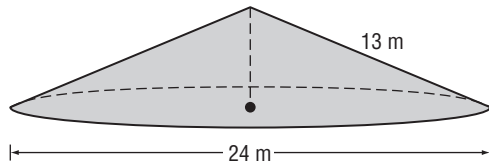
Go on

Diagnostic Test (continued)



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

Use the figure to answer Questions 41 and 42.



41 Find the area of the base of the cone. **2.04**

41 _____

- A** 144π square meters
- B** 156π square meters
- C** 312π square meters
- D** 576π square meters

42 Find the volume of the cone. **2.04**

42 _____

- A** 156π cubic meters
- B** 240π cubic meters
- C** 624π cubic meters
- D** 720π cubic meters

43 When the sun is 25° up from the horizon, a tree near Lake Norman casts a shadow 14.5 feet long. To the nearest hundredth, how tall is the tree?

43 _____

- A** 6.13 feet
- B** 6.76 feet
- C** 13.14 feet
- D** 31.10 feet

1.01

44 $\triangle MNS$ has vertices $M(3, 1)$, $N(5, 2)$, and $S(7, -3)$. Find the vertices of the image $M'N'S'$ after a counterclockwise rotation of 90° about the origin. **3.01**

44 _____

- A** $M'(-1, 3)$, $N'(-2, 5)$, $S'(3, 7)$
- B** $M'(1, 3)$, $N'(2, 5)$, $S'(-3, 7)$
- C** $M'(-1, -3)$, $N'(-2, -5)$, $S'(3, -7)$
- D** $M'(3, -1)$, $N'(5, -2)$, $S'(7, 3)$

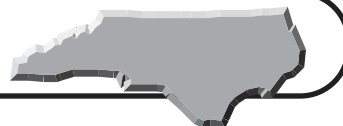
45 The surface area of a cylinder is 90π square centimeters. If $h = 12$ centimeters, find r . **1.02**

45 _____

- A** 1.5 centimeters
- B** 2 centimeters
- C** 3 centimeters
- D** 6 centimeters



Diagnostic Test (continued)



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

Use the following information for Questions 46 and 47.

Every 10 minutes a bus pulls up to a hotel in Charlotte and waits for 3 minutes while passengers get on and off. Then the bus leaves. A person walks out of the hotel front door at a random time.

46 What is the probability that the bus is there? **1.03** **46** _____

A $\frac{1}{5}$

B $\frac{3}{10}$

C $\frac{7}{10}$

D $\frac{4}{5}$

47 What is the probability that the bus is *not* there? **1.03** **47** _____

A $\frac{1}{5}$

B $\frac{3}{10}$

C $\frac{7}{10}$

D $\frac{4}{5}$

48 The volume of a cylinder is 64π cubic meters. If the radius is equal to the height, find the height. **1.02** **48** _____

A 2 meters

B 4 meters

C 8 meters

D 16 meters

49 Tyler drew a quadrilateral on a coordinate grid for his art class at UNC-Wilmington with points labeled $G(-4, -3)$, $H(-4, 1)$, $I(2, 3)$, $J(3, -1)$. He decided to translate this quadrilateral 4 units right and 5 units down and call the image $G'H'I'J'$. What are the coordinates of the image? **3.01** **49** _____

A $G'(-8, 2)$, $H'(-8, 6)$, $I'(-2, 8)$, $J'(-1, 4)$

B $G'(0, 2)$, $H'(0, 6)$, $I'(6, 8)$, $J'(7, 4)$

C $G'(0, -8)$, $H'(0, -4)$, $I'(6, -2)$, $J'(7, -6)$

D $G'(-16, -15)$, $H'(-16, 5)$, $I'(8, 15)$, $J'(6, -5)$

50 From eye level, 160 centimeters off the ground, about 440 meters away from an office building in Charlotte, a person has to look up at an angle of 30° to see the top of the building. How tall is the building to the nearest meter? **1.01** **50** _____

A 222 meters

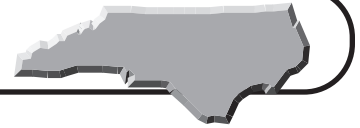
B 252 meters

C 254 meters

D 256 meters



Standards Practice

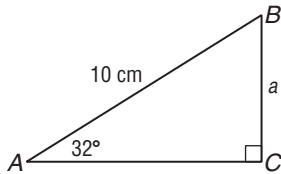


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

STANDARD 1.01 Use the trigonometric ratios to model and solve problems involving right triangles.

- 1 Find a to the nearest tenth.

1 _____



- A** 5.3 centimeters **B** 5.6 centimeters
C 6.2 centimeters **D** 8.5 centimeters

- 2 A road in the foothills of the Blue Ridge Mountains rises 350 meters in a distance of 3,000 meters along the road. Find the measure of the angle that the road makes with the horizontal to the nearest degree.

2 _____

- A** 5° **B** 7°
C 9° **D** 83°

- 3 The leg opposite the 50° angle in a right triangle measures 8 inches. Find the length of the hypotenuse to the nearest tenth of an inch.

3 _____

- A** 5.1 inches **B** 6.1 inches
C 10.4 inches **D** 12.4 inches

- 4 A tree casts a 26-meter shadow when the angle of elevation of the sun measures 42° . To the nearest meter, how tall is the tree?

4 _____

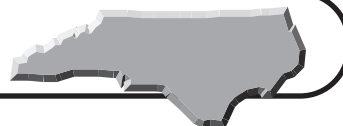
- A** 17 meters **B** 19 meters
C 23 meters **D** 25 meters

- 5 A diagonal of a rectangle measures 5 centimeters. It makes an angle of 71° with a side of the rectangle. Find the length and width of the rectangle to the nearest tenth of a centimeter.

5 _____

- A** 1.6 centimeters, 0.2 centimeters
B 2.9 centimeters, 0.9 centimeters
C 4.7 centimeters, 0.6 centimeters
D 4.7 centimeters, 1.6 centimeters

Standards Practice



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

STANDARD 1.01 (continued)

6 Find the measure of angle A to the nearest degree if $\tan A = 0.6523$. **6** _____

- A** 1° **B** 33°
C 41° **D** 49°

7 Find the measure of angle A to the nearest degree if $\sin A = 0.9872$. **7** _____

- A** 1° **B** 9°
C 80° **D** 81°

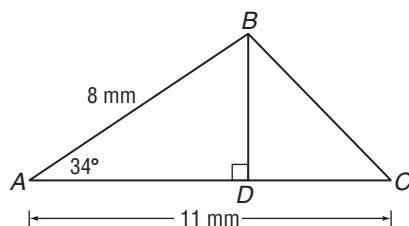
8 Two sides of an isosceles triangle each measure 10 centimeters, and the vertex angle measures 40° . Find the length of the altitude to the base to the nearest tenth. **8** _____

- A** 3.4 centimeters **B** 3.6 centimeters
C 6.8 centimeters **D** 9.4 centimeters

9 A ramp is 60 meters long. It rises at a vertical distance of 8 meters. Find the measure of the angle of elevation to the nearest degree. **9** _____

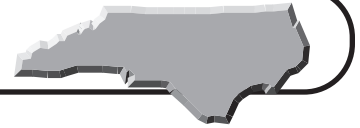
- A** 7° **B** 8°
C 52° **D** 82°

10 Two sides of a triangle measure 8 millimeters and 11 millimeters. The included angle measures 34° . Find the measure of the altitude to \overline{AC} to the nearest tenth. **10** _____



- A** 4.5 millimeters **B** 5.4 millimeters
C 6.6 millimeters **D** 14.3 millimeters

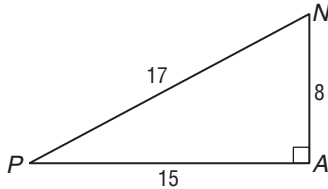
Standards Practice



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

STANDARD 1.01 (continued)

Use the figure to answer Questions 11–13.



11 What is $\sin P$?

11 _____

A $\frac{8}{17}$

B $\frac{8}{15}$

C $\frac{15}{17}$

D $\frac{15}{8}$

12 What is $\cos P$?

12 _____

A $\frac{8}{17}$

B $\frac{8}{15}$

C $\frac{15}{17}$

D $\frac{15}{8}$

13 What is $\tan N$?

13 _____

A $\frac{8}{15}$

B $\frac{15}{17}$

C $\frac{17}{15}$

D $\frac{15}{8}$

14 A 25-foot ladder is placed against a vertical wall of the Mint Museum in Charlotte. The base of the ladder is 7 feet from the base of the wall. If the top of the ladder slips 4 feet, how many feet will the base of the ladder slide?

14 _____

A 4 feet

B 5 feet

C 8 feet

D 15 feet

15 If the sine of an angle is about 0.7071, what is the measure of the angle to the nearest degree?

15 _____

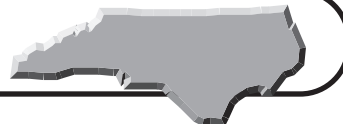
A 30°

B 45°

C 60°

D 90°

Standards Practice



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

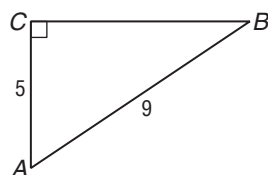
STANDARD 1.01 (continued)

- 16** Juan is flying his kite on the football field. There is 70 meters of string between Juan and his kite. The string makes an angle of 38° with the ground. Find to the nearest meter how far above the ground the kite is flying.

A 43 meters **B** 55 meters
C 89 meters **D** 114 meters

16 _____

- 17** Find the measure of angle B to the nearest degree.



A 29° **B** 34°
C 56° **D** 61°

17 _____

- 18** Find $\sin 30^\circ$ to the nearest tenth.

A 0.5 **B** 0.7
C 0.9 **D** 1.0

18 _____

- 19** Find $\cos 60^\circ$ to the nearest tenth.

A 0.5 **B** 0.7
C 0.9 **D** 1.0

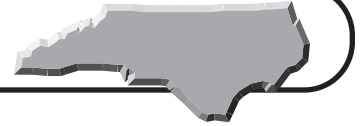
19 _____

- 20** An airplane pilot notes that the angle of depression to Raleigh-Durham International Airport measures 62° when the plane is above a point 7.5 kilometers from the airport. Find the altitude of the plane to the nearest tenth of a kilometer.

A 3.5 kilometers **B** 4.0 kilometers
C 6.6 kilometers **D** 14.1 kilometers

20 _____

Standards Practice



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

STANDARD 1.02 Use length, area, and volume of geometric figures to solve problems. Include arc length, area of sectors of circles; lateral area, surface area, and volume of three-dimensional figures; and perimeter, area, and volume of composite figures.

- 1** A circle has a radius of 15 centimeters. Find the area of a 30° sector to the nearest hundredth. **1** _____

A 3.93 square centimeters **B** 58.90 square centimeters
C 117.75 square centimeters **D** 706.86 square centimeters

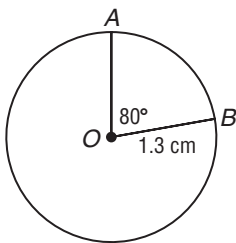
- 2** Find the area of a parallelogram with base 12 feet long and a height of 4 feet. **2** _____

A 16 square feet **B** 32 square feet
C 48 square feet **D** 96 square feet

- 3** Jenna is framing a rectangular picture of Duke University that is 15 inches by 11 inches. What is the perimeter of her picture? **3** _____

A 4 inches **B** 26 inches
C 52 inches **D** 165 inches

- 4** In circle O , $OB = 1.3$ centimeters, and the measure of angle AOB is 80° . Find the length of \widehat{AB} to the nearest tenth. **4** _____

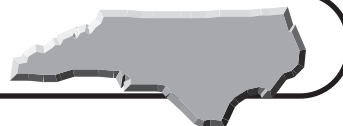


A 0.9 centimeters **B** 1.2 centimeters
C 1.8 centimeters **D** 5.9 centimeters

- 5** Zaomi bought a dresser that was 4 feet long, 5 feet wide, and 6 feet high. Find the volume of the dresser. **5** _____

A 15 cubic feet **B** 26 cubic feet
C 60 cubic feet **D** 120 cubic feet

Standards Practice



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

STANDARD 1.02 (continued)

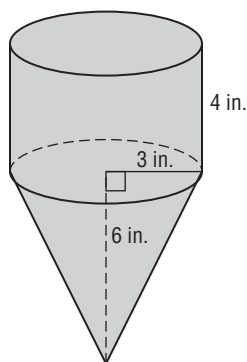
- 6** Ahmad is biking from North Carolina State University campus in Raleigh to the UNC campus in Chapel Hill. His bike wheels have a diameter of 22 inches. If his wheels turn 300 revolutions in a minute, to the nearest hundred *feet* how far will the bike have traveled in one minute? **6** _____

A 900 feet **B** 1,700 feet
C 3,500 feet **D** 9,500 feet

- 7** Find the radius of a circle with an area of 196π square centimeters. **7** _____

A 14 centimeters **B** 28 centimeters
C 84 centimeters **D** 196 centimeters

- 8** Perry is going to pour sand into this container. How much sand will the container hold? **8** _____



A 18π cubic inches **B** 36π cubic inches
C 54π cubic inches **D** 90π cubic inches

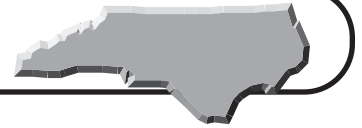
- 9** Find the circumference of a circle with an area of 144π square meters to the nearest meter. **9** _____

A 27 meters **B** 38 meters
C 75 meters **D** 452 meters

- 10** In circle R with radius $RB = 5$ inches, the measure of angle BRM is 30° . Find the length of \widehat{BM} to the nearest tenth of an inch. **10** _____

A 0.7 inches **B** 1.3 inches
C 2.0 inches **D** 2.6 inches

Standards Practice



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

STANDARD 1.02 (continued)

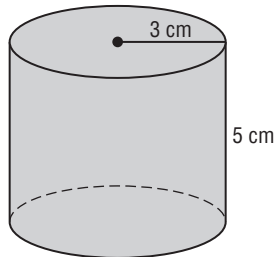
- 11** A penny has a diameter of approximately 18 millimeters. Find the area of the penny to the nearest square millimeter. **11** _____

A 28 square millimeters **B** 57 square millimeters
C 254 square millimeters **D** 1,017 square millimeters

- 12** Find the area in square inches of a 40° sector of a circle that has a radius of 4 inches. Round to the nearest tenth. **12** _____

A 2.8 square inches **B** 5.6 square inches
C 55.8 square inches **D** 452.16 square inches

Use the figure to answer Questions 13–15.



- 13** Find the lateral area of the cylinder. **13** _____

A 15π square centimeters **B** 30π square centimeters
C 45π square centimeters **D** 48π square centimeters

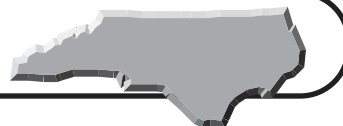
- 14** Find the surface area of the cylinder. **14** _____

A 15π square centimeters **B** 30π square centimeters
C 45π square centimeters **D** 48π square centimeters

- 15** Find the volume of the cylinder. **15** _____

A 15π cubic centimeters **B** 30π cubic centimeters
C 45π cubic centimeters **D** 48π cubic centimeters

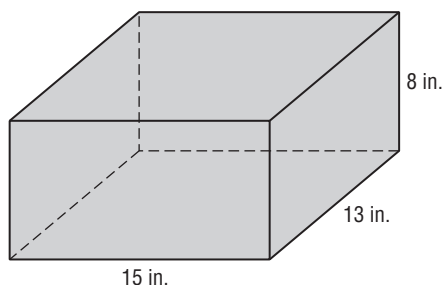
Standards Practice



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

STANDARD 1.02 (continued)

Use the rectangular prism to answer Questions 16 and 17.



16 Find the area of the face with the greatest area.

- A** 15 square inches **B** 120 square inches
C 195 square inches **D** 1,560 square inches

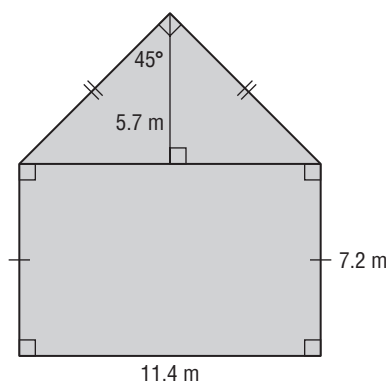
16 _____

17 Marta decides she wants to paint the entire rectangular prism. She will need enough paint to cover how many square inches?

- A** 224 square inches **B** 448 square inches
C 838 square inches **D** 1,560 square inches

17 _____

Use the figure to answer Questions 18 and 19.



18 Find the perimeter of the pentagon to the nearest tenth.

- A** 34.5 meters
B 41.9 meters
C 53.0 meters
D 64.3 meters

18 _____

19 Find the area of the pentagon to the nearest tenth.

- A** 32.2 square meters **B** 81.4 square meters
C 89.4 square meters **D** 114.6 square meters

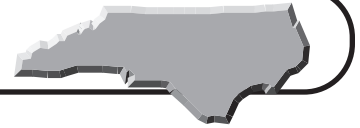
19 _____

20 Find the diameter of a circle with an area of 169π square feet.

- A** 12 feet **B** 13 feet
C 84.5 feet **D** 169 feet

20 _____

Standards Practice



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

STANDARD 1.03 Use length, area, and volume to model and solve problems involving probability.

- 1** Jeremiah has a rectangular board game that is 24 inches by 16 inches. He spilled some water on his board, and a square of side length 5 inches was ruined. When moving his pieces on the board at random, what is the probability that he will land on the ruined area? **1** _____

A $\frac{25}{384}$ **B** $\frac{20}{80}$ **C** $\frac{80}{20}$ **D** $\frac{384}{25}$

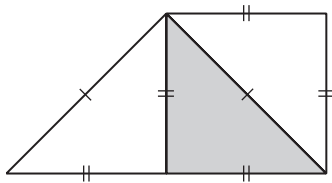
- 2** Eduardo just completed a jigsaw puzzle that contained 40 pieces with identical area. Eduardo placed the last 10 pieces into the puzzle. His friend Guadalupe placed the first 30 pieces. If Eduardo points to a puzzle piece at random, what is the probability that he touches one of the pieces he placed? **2** _____

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

- 3** In Olympic archery, the target's bull's-eye has a radius of 4 centimeters, and the radius of the outside circle is 80 centimeters. What is the probability that an arrow shot hitting the target randomly hits the bull's-eye? **3** _____

A $\frac{1}{800}$ **B** $\frac{1}{400}$ **C** $\frac{1}{200}$ **D** $\frac{1}{20}$

Use the figure to answer Questions 4 and 5. Assume that you are throwing a dart that lands at random on the figure.



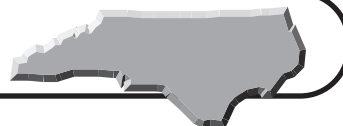
- 4** Find the probability of hitting the shaded area. **4** _____

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

- 5** Find the probability of hitting the area that is *not* shaded. **5** _____

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

Standards Practice



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

STANDARD 1.03 (continued)

- 6** For a school fundraiser, small cardboard cubes 2 inches on a side are sold for \$1 each. The buyers write their names and phone numbers on the cubes and then place them layer by layer in a large cardboard crate with a square base 3 feet wide. The crate is 5 feet tall. When the crate is filled halfway up its height, the crate is raised high in the air with a crane and turned upside down. A winning cube is chosen at random from the cubes falling to the ground. Mr. Burns bought 20 cubes. What is the probability that one of his cubes is the winner?

6 _____

A $\frac{1}{243}$

B $\frac{1}{486}$

C $\frac{8}{45}$

D $\frac{16}{45}$

- 7** Find the probability of hitting the shaded area if you throw a dart that lands at random on this design.

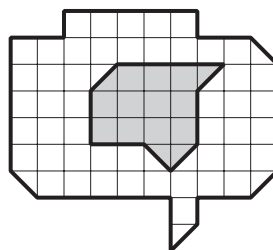
7 _____

A $\frac{1}{5}$

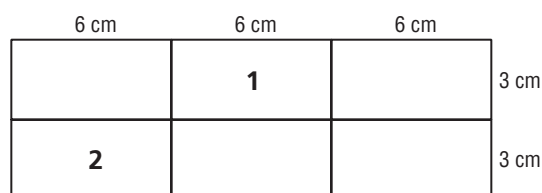
B $\frac{13}{63}$

C $\frac{14}{65}$

D $\frac{1}{4}$



Use the figure to answer Questions 8–10. Suppose you throw a dart that randomly lands on this design.



- 8** Find the probability of hitting Rectangle 1.

8 _____

A $\frac{1}{6}$

B $\frac{1}{3}$

C $\frac{1}{2}$

D $\frac{2}{3}$

- 9** Find the probability of hitting Rectangle 1 or Rectangle 2.

9 _____

A $\frac{1}{12}$

B $\frac{1}{6}$

C $\frac{1}{3}$

D $\frac{1}{2}$

- 10** Find the probability of hitting a rectangle that is *not* numbered.

10 _____

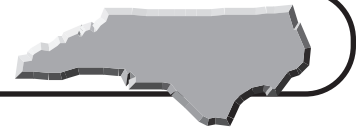
A $\frac{1}{6}$

B $\frac{1}{3}$

C $\frac{1}{2}$

D $\frac{2}{3}$

Standards Practice



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

STANDARD 1.03 (continued)

- 11** There are 5 chocolate chips in a cookie, each with a volume of $\frac{1}{20}$ cubic inch. The cookie has a volume of $\frac{7}{2}$ cubic inches. What is the probability of getting a chocolate chip when taking a piece at random the size of a chocolate chip from any part of the cookie? **11** _____

A $\frac{1}{70}$
C $\frac{7}{40}$

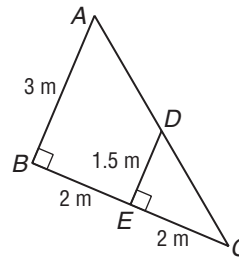
B $\frac{1}{14}$
D $\frac{7}{20}$

Use the figure to answer Questions 12 and 13.

- 12** A point is picked at random from inside $\triangle ABC$. What is the probability that the point is inside $\triangle DEC$? **12** _____

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

B $\frac{1}{4}$
D $\frac{3}{4}$



- 13** A point is picked at random from inside $\triangle ABC$. What is the probability that the point is outside $\triangle DEC$? **13** _____

A $\frac{1}{6}$

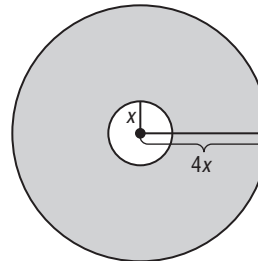
B $\frac{1}{4}$

C $\frac{1}{3}$

D $\frac{3}{4}$

Use the figure to answer Questions 14 and 15.

The radius of the larger circle is four times the radius of the smaller circle. A ladybug lands randomly in the large circle.



- 14** Find the probability that the ladybug will land in the inner circle. **14** _____

A $\frac{1}{16}$
C $\frac{13}{16}$

B $\frac{3}{16}$
D $\frac{15}{16}$

- 15** Find the probability that the ladybug will land in the shaded region. **15** _____

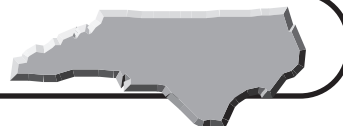
A $\frac{1}{16}$

B $\frac{3}{16}$

C $\frac{13}{16}$

D $\frac{15}{16}$

Standards Practice



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

STANDARD 1.03 (continued)

16 Sara, a student at Wake Forest University, is reading a page of her Calculus book. The page has a blurred spot on it which she cannot read that is 3 inches long and 2 inches wide. The print on the page covers an area that is 10 inches long and 8 inches wide. What is the probability that if she points to a spot on the printed area at random that it is blurred?

A $\frac{3}{40}$

B $\frac{5}{18}$

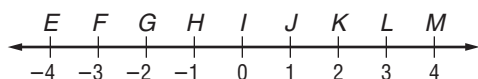
C $\frac{5}{9}$

D $\frac{10}{13}$

16 _____

Use the figure to answer Questions 17–20.

A point is randomly picked on \overline{EM} .



17 Find the probability that the point is on \overline{EH} and \overline{FI} .

A $\frac{1}{8}$

B $\frac{1}{7}$

C $\frac{1}{4}$

D $\frac{1}{2}$

17 _____

18 Find the probability that the point is on \overline{FL} and \overline{GM} .

A $\frac{1}{8}$

B $\frac{3}{8}$

C $\frac{5}{8}$

D $\frac{7}{8}$

18 _____

19 Find the probability that the point is on \overline{EG} or \overline{JM} .

A $\frac{1}{8}$

B $\frac{3}{8}$

C $\frac{5}{8}$

D $\frac{7}{8}$

19 _____

20 Find the probability that the point is on \overline{GH} or \overline{JL} .

A $\frac{1}{8}$

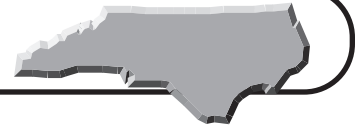
B $\frac{3}{8}$

C $\frac{5}{8}$

D $\frac{3}{4}$

20 _____

Standards Practice

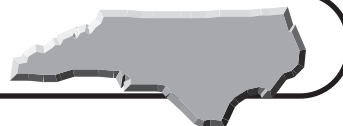


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

STANDARD 2.01 Use logic and deductive reasoning to draw conclusions and solve problems.

- 1 By the Symmetric Property, if $2 + 3 = 5$, then what is true? **1** _____
- A** $4 + 1 = 5$
 - B** $5 = 4 + 1$
 - C** $3 + 2 = 5$
 - D** $5 = 2 + 3$
- 2 If Jaylynn goes to Raleigh and she goes to the bank, then she will deposit some money. Jaylynn did go to Raleigh. Jaylynn did not deposit money. Which statement must be true? **2** _____
- A** Jaylynn went to Raleigh and she went to the bank.
 - B** Jaylynn did deposit some money or she went to the bank.
 - C** Jaylynn did not go to the bank.
 - D** Jaylynn did not go to Raleigh.
- 3 State the converse of the following statement: "If Sarah goes to school, then she is not sick." **3** _____
- A** If Sarah is not sick, then she goes to school.
 - B** If Sarah is sick, then she goes to school.
 - C** If Sarah is not sick, then she does not go to school.
 - D** If Sarah goes to school, then she is sick.
- 4 If M is the midpoint of \overline{LP} , then what conclusion can be drawn? **4** _____
- A** $LP = PM$
 - B** $LM = MP$
 - C** $PL = LM$
 - D** $LP = \frac{1}{2}PM$
- 5 If two lines form congruent adjacent angles, then what can be concluded about the lines? **5** _____
- A** They are parallel.
 - B** They are skew.
 - C** They are vertical.
 - D** They are perpendicular.

Standards Practice

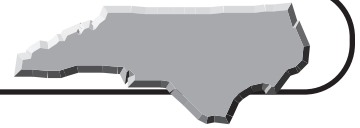


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

STANDARD 2.01 (continued)

- 6** By the Transitive Property, if $a = b$ and $b = c$, then what is true? **6** _____
- A** $a = d$
 - B** $a = c$
 - C** $b = d$
 - D** $b = e$
- 7** If two sides and the included angle of one triangle are congruent to the two sides and the included angle of another triangle, then the triangles are congruent. What theorem or postulate is being applied? **7** _____
- A** Side-Angle-Side
 - B** Angle-Side-Angle
 - C** Side-Side-Side
 - D** Angle-Angle-Side
- 8** If angle A and angle B are vertical angles, then they are always what kind of angles? **8** _____
- A** complementary
 - B** supplementary
 - C** congruent
 - D** corresponding
- 9** Find the measure of an angle that is twice as large as its supplement. **9** _____
- A** 30°
 - B** 60°
 - C** 90°
 - D** 120°
- 10** Each of these statements are conditionals. Which one has a false converse? **10** _____
- A** If today is June 14, then tomorrow is June 15.
 - B** If $6x = 18$, then $x = 3$.
 - C** If Kelsey lives in Charlotte, then she lives in North Carolina.
 - D** If $x^2 = 4$, then $x = -2$.

Standards Practice

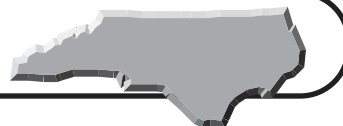


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

STANDARD 2.01 (continued)

- 11** If Q is between P and R , then what is the relationship among PQ , QR , and PR ? **11** _____
- A** $PR + QR = PQ$
 - B** $PQ + PR = QR$
 - C** $PQ + QR = PR$
 - D** $QR + PR = PQ$
- 12** Which of the following is a counterexample to the statement, “If a number is divisible by 4, then it is divisible by 6”? **12** _____
- A** $n = 12$
 - B** $n = 16$
 - C** $n = 18$
 - D** $n = 22$
- 13** If José eats a cookie and he eats a brownie, then he will go running. José did eat a cookie. José did not go running. Which statement must be true? **13** _____
- A** José ate a cookie and he ate a brownie.
 - B** José did go running or he ate a brownie.
 - C** José did not eat a cookie.
 - D** José did not eat a brownie.
- 14** Which is the converse of the following statement: “If we go to Jordan Lake, then we will go fishing”? **14** _____
- A** If we go to Jordan Lake, then we won’t go fishing.
 - B** If we go fishing, then we will go to Jordan Lake.
 - C** If we go fishing, then we won’t go to Jordan Lake.
 - D** If we do not go fishing, then we will go to Jordan Lake.
- 15** Each of these statements are conditionals. Which one has a true converse? **15** _____
- A** If today is Thursday, then tomorrow is Friday.
 - B** If a number is divisible by 6, then it is divisible by 3.
 - C** If $x > 0$, then $x^2 > 0$.
 - D** If Jason lives in Greensboro, then he lives in North Carolina.

Standards Practice

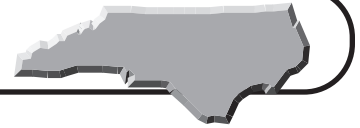


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

STANDARD 2.01 (continued)

- 16** The distance from Anna's house in Apex to Rocky Mount is 78 miles, and the distance from Rocky Mount to Serena's house is 43 miles. From these facts alone, what conclusion can you draw about the distance from Anna's house to Serena's house? **16** _____
- A** The distance is at least 35 miles and no more than 78 miles
 - B** The distance is at least 35 miles and no more than 121 miles.
 - C** The distance is at least 43 miles and no more than 78 miles.
 - D** The distance is at least 78 miles and no more than 121 miles.
- 17** How could the statement "All dogs have ears" be written as a conditional? **17** _____
- A** If a creature is a dog, then it has ears.
 - B** If a creature has ears, then it is a dog.
 - C** If a dog has ears, then it is a creature.
 - D** If a dog is a creature, then it has ears.
- 18** Which of the following is a counterexample to the statement "If $x > 3$, then $x > 6$ "? **18** _____
- A** $x = 4$
 - B** $x = 7$
 - C** $x = 8$
 - D** $x = 10$
- 19** What is the converse of the conditional "If a polygon is a quadrilateral, then it has four sides"? **19** _____
- A** If a quadrilateral has four sides, then it is a polygon.
 - B** If a polygon is a quadrilateral, then it has four sides.
 - C** If a quadrilateral is a polygon, then it has four sides.
 - D** If a polygon has four sides, then it is a quadrilateral.
- 20** Given the conditional "If an animal is a bird, then it can fly," which of the following would be a counterexample? **20** _____
- A** robin
 - B** blue jay
 - C** ostrich
 - D** blackbird

Standards Practice



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

STANDARD 2.02 Apply properties, definitions, and theorems of angles and lines to solve problems and write proofs.

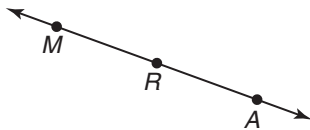
- 1 D is the midpoint of \overline{WB} , $WD = 10 - 2c$, and $WB = 14c - 16$. Find DB . **1** _____

A 2
B 5
C 6
D 12

- 2 Two angles are supplementary. The measure of the smaller angle is $2x$, and the measure of the larger angle is $6x$. What are the measures of the two angles? **2** _____

A 11.25° and 78.75°
B 22.5° and 67.5°
C 22.5° and 135°
D 45° and 135°

- 3 On the number line, point R has coordinate -15 , and point M has coordinate -27 . If point R is the midpoint of \overline{MA} , what is the coordinate of point A ? **3** _____



A -39
B -3
C 3
D 12

- 4 B is the midpoint of \overline{TG} , $TG = 11x + 3$, and $TB = 3x + 9$. Find TG . **4** _____

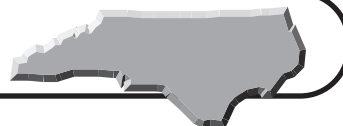


A 3
B 18
C 36
D 72

- 5 What kind of a line is the graph of the line with equation $y = -30$? **5** _____

A horizontal
B vertical
C discrete
D oblique

Standards Practice



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

STANDARD 2.02 (continued)

- 6 What geometric figure is the graph of $x \leq 6$ on a number line?

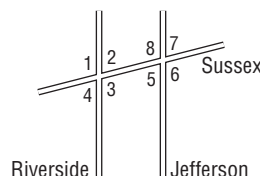
6 _____

- A** segment **B** ray
C line **D** arc

- 7 Sussex Avenue intersects the parallel streets Riverside and Jefferson. Which of the angles have measures equal to the measure of angle 2?

7 _____

- A** 1, 3, 7 **B** 4, 5, 7
C 4, 6, 8 **D** 3, 5, 8



- 8 James was taking a Geometry class in which

8 _____

he had to prove that \overleftrightarrow{AB} is parallel to \overleftrightarrow{CD} .

He was given that angle 1 was congruent to angle 3. He started his proof by stating that

angle 1 and angle 2 are congruent because

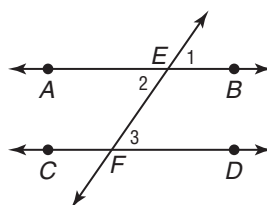
they are vertical angles. He then stated that

angle 2 was congruent to angle 3 by the Transitive Property. His final

statement was that \overleftrightarrow{AB} is parallel to \overleftrightarrow{CD} . What reason could he use?

What reason could he use?

- A** If alternate interior angles are congruent, then the lines are parallel.
B If vertical angles are congruent, then the lines are parallel.
C If alternate exterior angles are congruent, then the lines are parallel.
D If corresponding angles are congruent, then the lines are parallel.



- 9 Point P has coordinates $(-3, -6)$, and point N has coordinates $(4, -8)$.

9 _____

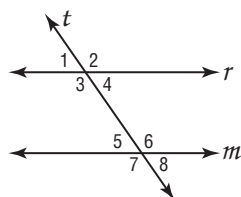
What is the slope of \overleftrightarrow{PN} ?

- A** $-\frac{7}{2}$ **B** -2
C $-\frac{2}{7}$ **D** $\frac{2}{7}$

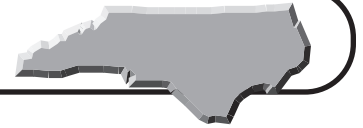
- 10 Which of the following must be true in order for line r to be parallel to line m ?

10 _____

- A** $\angle 3 \cong \angle 5$
B $\angle 2 \cong \angle 7$
C $\angle 4 \cong \angle 6$
D $\angle 5 \cong \angle 8$



Standards Practice



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

STANDARD 2.02 (continued)

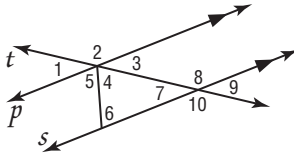
11 Two angles whose measures total 90° are called what kind of angles? **11** _____

- A** complementary
- B** vertical
- C** supplementary
- D** corresponding

12 If \overrightarrow{BX} is the bisector of angle ABC , then what two angles are congruent? **12** _____

- A** $\angle ABC$, $\angle XBC$
- B** $\angle ABC$, $\angle ABX$
- C** $\angle CBX$, $\angle ABC$
- D** $\angle ABX$, $\angle XBC$

Use the figure to answer Questions 13–15.



13 If $m\angle 2 = 145^\circ$ and $\angle 4 \cong \angle 6$, find $m\angle 5$. **13** _____

- A** 35°
- B** 70°
- C** 72.5°
- D** 107.5°

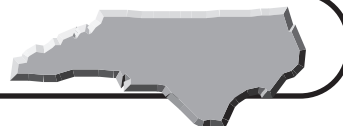
14 If $m\angle 1 = 5x - 5$, and $m\angle 7 = 4x + 4$, find $m\angle 1$. **14** _____

- A** 9°
- B** 40°
- C** 96°
- D** 140°

15 If $m\angle 3 = 6x + 3$, and $m\angle 10 = 10x - 15$, find $m\angle 8$. **15** _____

- A** 12°
- B** 75°
- C** 105°
- D** 168°

Standards Practice



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

STANDARD 2.02 (continued)

- 16** Which theorem or definition justifies this statement: “If E is the midpoint of \overline{AF} , then \overline{AE} is congruent to \overline{EF} ”?
- 16** _____

A Definition of skew lines
B Midpoint Theorem
C Definition of segment bisector
D Angle Bisector Theorem

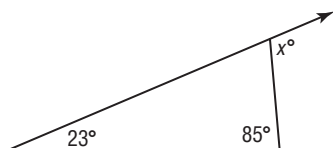
- 17** Juan was on a business trip that required him to travel from Charlotte to Fayetteville to Greenville and back to Charlotte. He drew an obtuse triangle on the map of his route. Two of the angles of his triangle measured 108° and 38° . What is the measure of the third angle?
- 17** _____

A 34° **B** 52°
C 70° **D** 146°

- 18** Jamal is placing a dresser in the corner of his bedroom. The measure of the angle of his dresser to the wall is 20° less than four times the measure of its complement. What is the measure of the angle of Jamal’s dresser to the wall?
- 18** _____

A 14° **B** 22°
C 68° **D** 140°

- 19** Rachel is building a ramp as shown in this figure. She wants to know the value of x .
- 19** _____

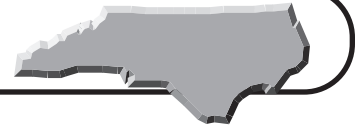


A 23 **B** 72
C 85 **D** 108

- 20** Which angles are always congruent?
- 20** _____

A complementary
B corresponding
C adjacent
D vertical

Standards Practice

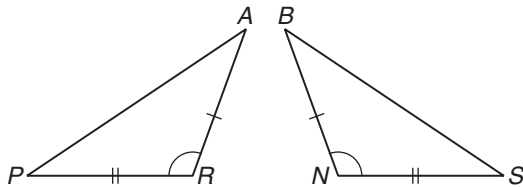


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

STANDARD 2.03 Apply properties, definitions, and theorems of two-dimensional figures to solve problems and write proofs: triangles, quadrilaterals, other polygons, circles.

- 1 What theorem or postulate could be used to prove that $\triangle PAR$ is congruent to $\triangle SBN$?

1 _____



- A** Side-Angle-Side **B** Angle-Side-Angle
C Side-Side-Side **D** Angle-Angle-Side

- 2 Jared was trying to build a ramp for his little brother and was going to make it in the shape of an isosceles triangle. He was trying to decide what all of the angle measures should be. One angle measure of his isosceles triangle was 84° . Give two possible pairs of measures for the other two angles.

2 _____

- A** 12° and 12° ; 48° and 96° **B** 48° and 84° ; 12° and 48°
C 84° and 12° ; 48° and 48° **D** 96° and 12° ; 84° and 48°

- 3 The pentagonal home plate at a baseball diamond has three right angles. The other two angles are congruent. Find their measure.

3 _____

- A** 54° **B** 67.5° **C** 90° **D** 135°

- 4 The sum of the measures of the interior angles of a polygon is five times the sum of the measures of its exterior angles, one angle at each vertex. How many sides does the polygon have?

4 _____

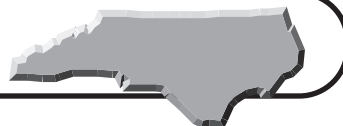
- A** 6 **B** 12 **C** 18 **D** 24

- 5 Two sides of a triangle have lengths 45 inches and 50 inches. How long can the third side be?

5 _____

- A** between 5 inches and 50 inches
B between 5 inches and 95 inches
C between 45 inches and 50 inches
D between 5 inches and 45 inches

Standards Practice



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

STANDARD 2.03 (continued)

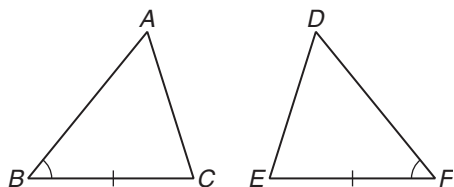
- 6** Find the length of the leg of a 45° - 45° - 90° triangle if the hypotenuse is 12 inches. **6** _____

A $3\sqrt{2}$ inches **B** 6 inches
C $6\sqrt{2}$ inches **D** $12\sqrt{2}$ inches

- 7** \overline{CR} is a diameter of circle O . The measure of $\widehat{ICR} = 319^\circ$. Find $m\angle COI$. **7** _____

A 41° **B** 139°
C 159.5° **D** 221°

- 8** To prove the two triangles congruent by using the Angle-Side-Angle Congruence Postulate, what other piece of information is needed? **8** _____



A $\angle C \cong \angle E$
B $\angle C \cong \angle D$
C $\angle A \cong \angle D$
D $\angle A \cong \angle E$

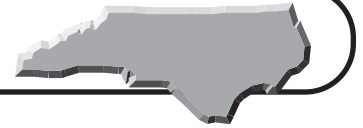
- 9** In quadrilateral $ABCD$, the measure of angle $A = x$, the measure of angle $B = 2x$, the measure of angle $C = 3x$, and the measure of angle $D = 4x$. Find the value of x and then state which pair of sides of $ABCD$ must be parallel. **9** _____

A $x = 3$; \overline{AD} and \overline{BD}
B $x = 10$; \overline{CD} and \overline{DA}
C $x = 18$; \overline{AB} and \overline{BC}
D $x = 36$; \overline{AB} and \overline{CD}

- 10** Which statement is true? **10** _____

A Every rhombus is a square.
B Every parallelogram is a rectangle.
C Every square is a rectangle.
D Every quadrilateral is a trapezoid.

Standards Practice



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

STANDARD 2.03 (continued)

- 11** Jim was trying to cut a piece of wood into a triangular shape that he could draw on for his art class. Which of the following sets of numbers could be lengths of three sides of his wood project?

A 4, 5, 8
B 7, 12, 23
C 10, 11, 30
D 14, 18, 37

11 _____

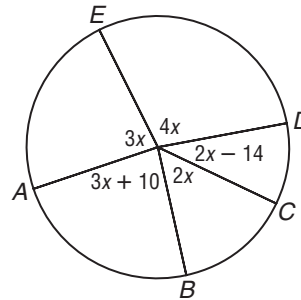
- 12** Kaitlyn noticed a beehive at her aunt's farm near Hillsborough. She saw that the face of a honeycomb consists of interlocking regular hexagons. What is the measure of each interior angle of these hexagons?

A 60°
B 90°
C 100°
D 120°

12 _____

- 13** Which of the following arcs has a measure of 38° ?

A \widehat{AB}
B \widehat{EA}
C \widehat{CD}
D \widehat{BC}



13 _____

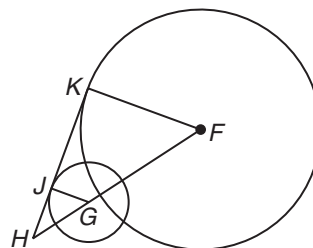
Use the following information for Questions 14 and 15.

\overline{KH} is tangent to circle F and circle G . $GJ = 6$; $JH = 8$; $FH = 30$.

- 14** Find the length of \overline{FK} .

A 16
C 20

B 18
D 24



14 _____

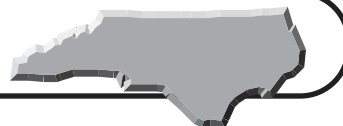
- 15** Find the length of \overline{KJ} .

A 16
C 20

B 18
D 24

15 _____

Standards Practice

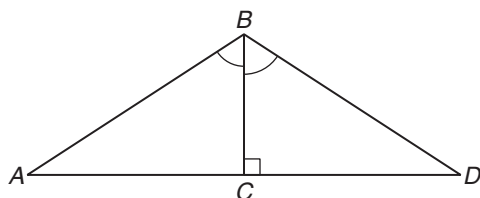


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

STANDARD 2.03 (continued)

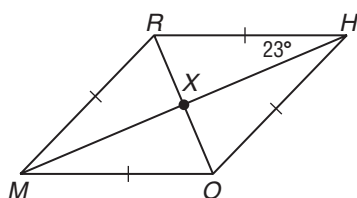
- 16** What theorem or postulate could be used to prove that $\triangle ABC$ is congruent to $\triangle DBC$?

16 _____



- A** Side Angle Side **B** Angle Side Angle
C Side Side Side **D** Angle Angle Side

Use the figure to answer Questions 17–19.



- 17** Find $m\angle MHO$.

17 _____

- A** 23° **B** 46°
C 67° **D** 157°

- 18** Find $m\angle XOH$.

18 _____

- A** 23° **B** 46°
C 67° **D** 134°

- 19** Find $m\angle MRH$.

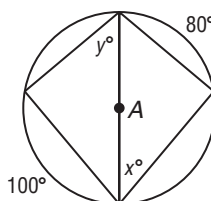
19 _____

- A** 23° **B** 46°
C 67° **D** 134°

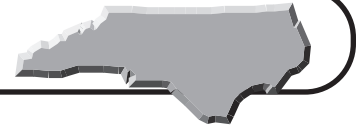
- 20** Find the values of x and y in circle A .

20 _____

- A** $x = 20, y = 25$
B $x = 40, y = 50$
C $x = 40, y = 100$
D $x = 80, y = 100$



Standards Practice



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

STANDARD 2.04 Develop and apply properties of solids to solve problems.

- 1 What is the minimum number of faces a prism can have?

1 _____

A 2

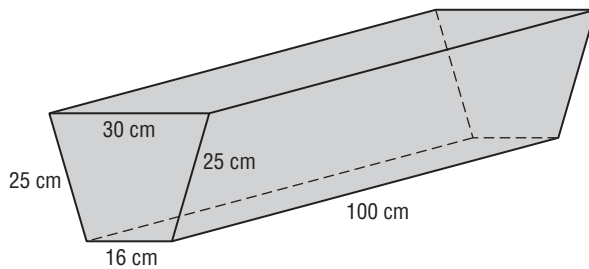
B 3

C 5

D 6

- 2 A window box planter is in the shape of a right trapezoidal prism. What volume of potting soil will fill this planter?

2 _____



A 276 cubic centimeters

B 552 cubic centimeters

C 26,600 cubic centimeters

D 55,200 cubic centimeters

- 3 Find the height of a regular hexagonal pyramid with lateral edges that are 10 feet and base edges that are 6 feet.

3 _____

A 3 feet

B 8 feet

C 9 feet

D 12 feet

- 4 A diagonal of a box forms a 35° angle with a diagonal of the base. Find the volume of the box to the nearest cubic meter.

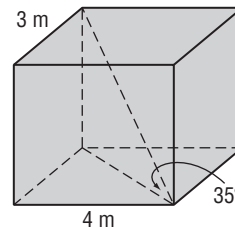
4 _____

A 3.5 cubic meters

B 38 cubic meters

C 42 cubic meters

D 60 cubic meters



- 5 Annie has a cylindrical container, but she does not know its radius or height. She does know that the radius and the height are the same and that the volume of the container is 512π cubic inches. Find the radius of Annie's container.

5 _____

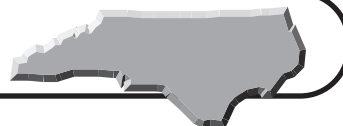
A 4 inches

B 8 inches

C 32 inches

D 64 inches

Standards Practice

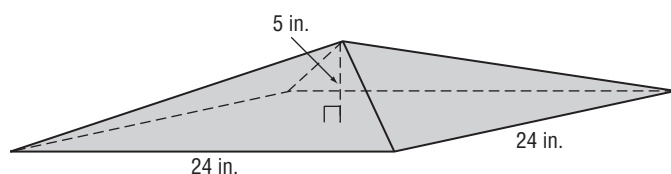


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

STANDARD 2.04 (continued)

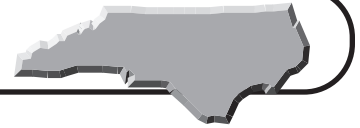
- 6** Maria wants to put her collectible figurine in a glass case. The glass case she found is a right hexagonal prism. How many lateral faces are there?
- A** 2
B 6
C 8
D 10

Use the figure to answer Questions 7–9.



- | | |
|--|-----------------|
| 7 Find the slant height. | 7 _____ |
| A 5 inches | |
| B 13 inches | |
| C 15 inches | |
| D 24 inches | |
| 8 Find the surface area. | 8 _____ |
| A 624 square inches | |
| B 816 square inches | |
| C 1,056 square inches | |
| D 1,200 square inches | |
| 9 Find the volume. | 9 _____ |
| A 720 cubic inches | |
| B 960 cubic inches | |
| C 2,880 cubic inches | |
| D 7,488 cubic inches | |
| 10 A cone and a cylinder both have a height of 48 centimeters and a radius of 15 centimeters. Find the ratio of their volumes without calculating the actual volumes. | 10 _____ |
| A 1:2 | B 1:3 |
| C 1:4 | D 1:8 |

Standards Practice



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

STANDARD 2.04 (continued)

- 11** If the measure of the edge of a cube is doubled, what happens to the volume of the cube? **11** _____

A It is multiplied by 2.
B It is divided by 2.
C It is multiplied by 8.
D It is divided by 8.

- 12** Susan has a full tub of ice cream with a radius of 6 centimeters and a height of 18 centimeters. She plans to soften the ice cream and shape it into a cone with a radius of 9 centimeters. What will be the height of Susan's cone? **12** _____

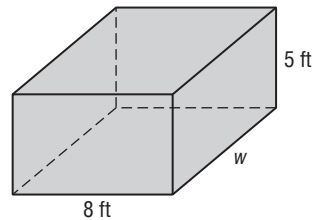
A 18 centimeters
B 24 centimeters
C 27 centimeters
D 36 centimeters

- 13** Two spheres have diameters of 24 centimeters and 36 centimeters. Find the ratio of the areas. **13** _____

A 2:3
B 3:5
C 4:9
D 8:27

- 14** The rectangular solid has a volume of 360 cubic feet. Find the width of the solid.

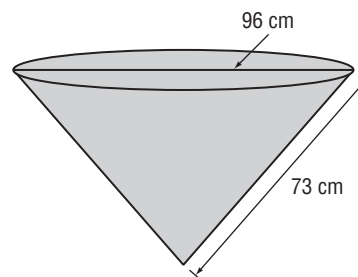
A 3 feet
B 9 feet
C 13 feet
D 40 feet



14 _____

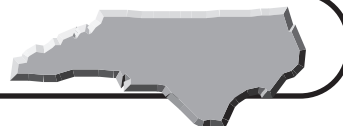
- 15** Water is pouring into a cone-shaped reservoir at the rate of 10,000 cubic centimeters per minute. Find the number of minutes it will take to fill the reservoir to the nearest minute.

A 13 minutes
B 15 minutes
C 26 minutes
D 30 minutes



15 _____

Standards Practice

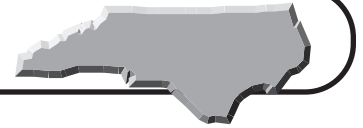


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

STANDARD 2.04 (continued)

- 16** At a new home in Greensboro, a driveway 30 meters long and 5 meters wide is to be paved with blacktop that is 3 centimeters thick. How much will the blacktop cost if it is sold at the price of \$352 per cubic meter? **16** _____
- A** \$1,584
B \$1,760
C \$2,816
D \$15,840
- 17** Find the volume of a sphere with radius 5 centimeters. **17** _____
- A** $\frac{100}{3}\pi$ cubic centimeters
B 100π cubic centimeters
C 125π cubic centimeters
D $\frac{500}{3}\pi$ cubic centimeters
- 18** Assume that Earth and the Moon are smooth spheres with diameters of 12,800 kilometers and 3,200 kilometers. Find the ratio of their volumes. **18** _____
- A** 4:1
B 16:1
C 32:1
D 64:1
- 19** A bricklayer in Jacksonville is putting brick on a house. One of the bricks he uses has dimensions of 20 centimeters, 10 centimeters, and 5 centimeters and has a mass of 1.2 kilograms. A second brick of the same material has dimensions of 25 centimeters, 15 centimeters, and 4 centimeters. What is the mass of the second brick? **19** _____
- A** 0.8 kilograms
B 1.2 kilograms
C 1.5 kilograms
D 1.8 kilograms
- 20** A cone with a radius of 6 centimeters and a height of 12 centimeters is filled to capacity with liquid. Find the minimum height of a cylinder with a 4 centimeter radius that will hold the same amount of liquid. **20** _____
- A** 9 centimeters
B 18 centimeters
C 27 centimeters
D 36 centimeters

Standards Practice



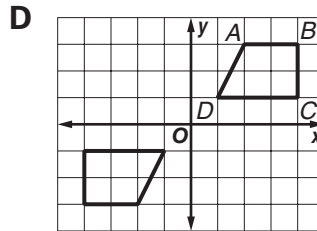
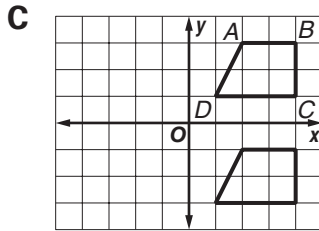
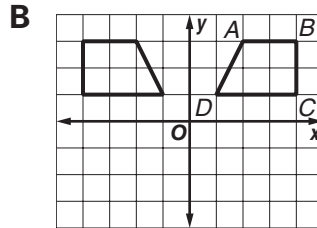
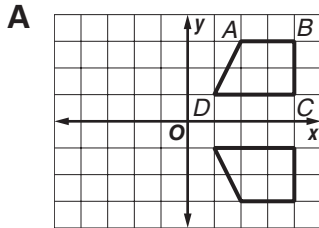
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

STANDARD 3.01 Describe the transformation (translation, reflection, rotation, dilation) of polygons in the coordinate plane in simple algebraic terms.

- 1** What is the image of $P(1, 3)$ after the transformation $(x, y) \rightarrow (2x, 2y)$? **1** _____

A (1, 3) **B** (1, 6) **C** (2, 3) **D** (2, 6)

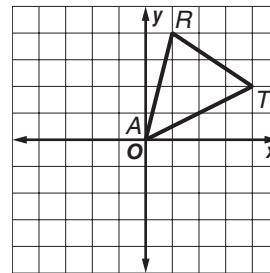
- 2** Which of the following is the correct drawing when reflecting $ABCD$ in the x -axis? **2** _____



Use the figure to answer Questions 3–5.

- 3** Write the coordinates of the image of each point by reflection in the x -axis.

A $A'(0, 0)$, $R'(-1, 4)$, $T'(-4, 2)$
B $A'(0, 0)$, $R'(4, 1)$, $T'(2, 4)$
C $A'(0, 1)$, $R'(-4, 1)$, $T'(-4, -2)$
D $A'(0, 0)$, $R'(1, -4)$, $T'(4, -2)$



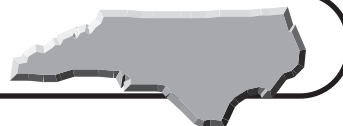
- 4** Write the coordinates of the image of each point by reflection in the y -axis.

A $A'(0, 0)$, $R'(-1, 4)$, $T'(-4, 2)$ **B** $A'(0, 0)$, $R'(4, 1)$, $T'(2, 4)$
C $A'(0, 1)$, $R'(-4, 1)$, $T'(-4, -2)$ **D** $A'(0, 0)$, $R'(1, -4)$, $T'(4, -2)$

- 5** Write the coordinates of the image of each point by reflection in the line $y = x$.

A $A'(0, 0)$, $R'(-1, 4)$, $T'(-4, 2)$ **B** $A'(0, 0)$, $R'(4, 1)$, $T'(2, 4)$
C $A'(0, 1)$, $R'(-4, 1)$, $T'(-4, -2)$ **D** $A'(0, 0)$, $R'(1, -4)$, $T'(4, -2)$

Standards Practice



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

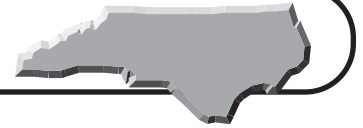
STANDARD 3.01 (continued)

Use the following information to answer Questions 6–9.

$A(0, 0)$, $B(3, 4)$, $C(5, 1)$, and $D(-1, -3)$ are points on a graph. Apply the transformation $(x, y) \rightarrow (x + 1, y + 2)$.

- 6** Find the images of points A , B , C , and D . **6** _____
- A** $A'(1, 2)$, $B'(4, 6)$, $C'(6, 3)$, $D'(0, -1)$
- B** $A'(1, 2)$, $B'(3, 6)$, $C'(6, 2)$, $D'(3, -1)$
- C** $A'(2, 1)$, $B'(2, 6)$, $C'(4, 3)$, $D'(-1, -1)$
- D** $A'(0, 0)$, $B'(4, 3)$, $C'(1, 5)$, $D'(-3, -1)$
- 7** What is the name of the polygon formed by $A'B'C'D'$? **7** _____
- A** hexagon
- B** pentagon
- C** quadrilateral
- D** square
- 8** Find the length of segment AB . **8** _____
- A** 1
- B** 5
- C** 7
- D** 12
- 9** Find the length of segment $C'D'$. **9** _____
- A** $2\sqrt{5}$
- B** $2\sqrt{10}$
- C** $2\sqrt{13}$
- D** 52
- 10** Selena was trying to put together a puzzle of geometric shapes on a coordinate grid. One of her pieces was a right triangle. She placed it on the grid so the 3 corners had the coordinates $R(-2, 0)$, $U(0, 0)$ and $N(-2, -6)$. She then rotated her triangle 90° counterclockwise about the origin. What are the new coordinates R' , U' , and N' ? **10** _____
- A** $R'(0, 2)$, $U'(0, 6)$, $N'(6, -2)$
- B** $R'(2, 0)$, $U'(0, 0)$, $N'(2, 6)$
- C** $R'(0, 2)$, $U'(0, 0)$, $N'(-6, 2)$
- D** $R'(0, -2)$, $U'(0, 0)$, $N'(6, -2)$

Standards Practice



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

STANDARD 3.01 (continued)

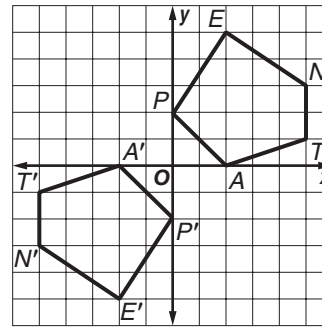
- 11** If $P'(3, 5)$ is the image of P , find P using the transformation $(x, y) \rightarrow (x - 1, y + 6)$.

A $P(2, 11)$ **B** $P(2, -1)$
C $P(4, 11)$ **D** $P(4, -1)$

11 _____

- 12** Matthew is trying to visualize what different transformations look like. One of his drawings was transforming $PENTA$ into $P'E'N'T'A'$. Which transformation is this?

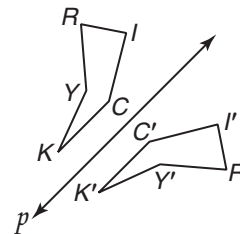
A reflection in the x -axis
B rotation of 90°
C reflection in the y -axis
D rotation of 180°



12 _____

- 13** Ricky was in an art class in which she wanted the polygon $RICKY$ to be transformed to $R'T'C'K'Y'$ using the line p so that she could paint both of them. What kind of transformation is this?

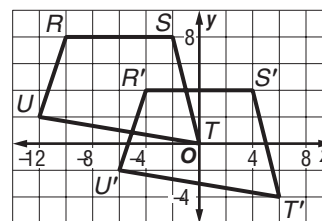
A reflection
B rotation
C dilation
D translation



13 _____

- 14** How would this transformation be described algebraically?

A $(x, y) \rightarrow (x + 4, y - 5)$
B $(x, y) \rightarrow (x + 2, y - 7)$
C $(x, y) \rightarrow (x + 6, y - 4)$
D $(x, y) \rightarrow (x + 3, y - 4)$



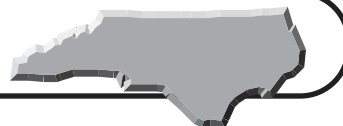
14 _____

- 15** Which of the following words, when reflected in a vertical line, will be identical to the original word?

A DECIDE
B MOM
C DOG
D ABIDE

15 _____

Standards Practice

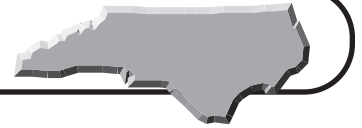


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

STANDARD 3.01 (continued)

- 16** For $(x, y) \rightarrow (4x, 4y)$, find the image of $L(3, -2)$. **16** _____
- A** $(3, -8)$
B $(7, 2)$
C $(12, -8)$
D $(12, -4)$
- 17** If a figure is reflected in the x -axis and then it is reflected in the line $y = x$, it would be the same as which of the following counterclockwise transformations? **17** _____
- A** reflection over the y -axis
B rotation of 90°
C rotation of 180°
D rotation of 270°
- 18** R maps point P to P' , and S maps P' to P'' . Find T , the translation that maps P to P'' . Use these translations for R and S .
 $R: (x, y) \rightarrow (x + 1, y + 2)$, $S: (x, y) \rightarrow (x - 5, y + 7)$ **18** _____
- A** $(x - 6, y - 5)$
B $(x - 9, y + 4)$
C $(x + 4, y + 9)$
D $(x - 4, y + 9)$
- 19** If a figure is reflected in the y -axis and then rotated 180° , it would be the same as which of the following transformations? **19** _____
- A** reflection in the x -axis
B rotation of 90°
C rotation of 180°
D rotation of 270°
- 20** Which of the following words remain unchanged when reflected in a horizontal line? **20** _____
- A** WOW
B ICEBOX
C BRIDE
D TOOT

Standards Practice



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

STANDARD 3.02 Use matrix operations (addition, subtraction, multiplication, scalar multiplication) to describe the transformation of polygons in the coordinate plane.

1 What is the matrix for a reflection in the y -axis?

1 _____

A $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

B $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$

C $\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$

D $\begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$

2 What is the matrix for a rotation of 180° ?

2 _____

A $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

B $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$

C $\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$

D $\begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$

3 Calculate the matrix for a rotation of 180° followed by a reflection in the y -axis.

3 _____

A $\begin{bmatrix} 1 & 0 \\ 1 & 0 \end{bmatrix}$

B $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

C $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$

D $\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$

4 Write the matrix for a transformation that has a size change of magnitude 3 with the center at $(0, 0)$.

4 _____

A $\begin{bmatrix} 0 & 3 \\ 3 & 0 \end{bmatrix}$

B $\begin{bmatrix} 3 & 0 \\ 0 & 3 \end{bmatrix}$

C $\begin{bmatrix} 3 & 1 \\ 1 & 3 \end{bmatrix}$

D $\begin{bmatrix} 1 & 3 \\ 3 & 1 \end{bmatrix}$

5 Which of the following is the matrix for the identity transformation?

5 _____

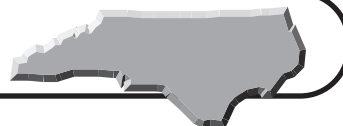
A $\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$

B $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

C $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

D $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$

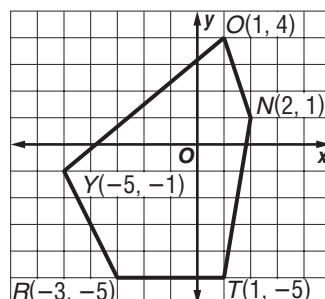
Standards Practice



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

STANDARD 3.02 (continued)

Use the figure to answer Questions 6–9.



6 Write the pentagon *TRYON* as a matrix.

A $\begin{bmatrix} 1 & -3 & -5 & 1 & 2 \\ -5 & -5 & -1 & 4 & 1 \end{bmatrix}$

B $\begin{bmatrix} 1 & 2 & 1 & -3 & -1 \\ 4 & 1 & -5 & -5 & -1 \end{bmatrix}$

C $\begin{bmatrix} -5 & 1 & 2 & 1 & -3 \\ -1 & 4 & 1 & -5 & -5 \end{bmatrix}$

D $\begin{bmatrix} 1 & 2 & 1 & -5 & -3 \\ -5 & 1 & 4 & -1 & -5 \end{bmatrix}$

6 _____

7 What is the dimension of the matrix representing *TRYON*?

A 5×2

B 2×5

C 10×1

D 1×10

7 _____

8 Multiply $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$ by the matrix for *TRYON*.

A $\begin{bmatrix} -1 & 3 & -5 & -1 & -2 \\ -5 & -5 & 1 & 4 & 1 \end{bmatrix}$

B $\begin{bmatrix} -1 & 3 & 5 & -1 & -2 \\ 5 & 5 & 1 & -4 & -1 \end{bmatrix}$

C $\begin{bmatrix} 1 & 3 & 5 & 1 & 2 \\ 5 & 5 & 1 & 4 & 1 \end{bmatrix}$

D $\begin{bmatrix} -1 & 3 & 5 & -1 & -2 \\ -5 & -5 & -1 & 4 & 1 \end{bmatrix}$

8 _____

9 Use scalar multiplication to multiply pentagon *TRYON* by 4.

A $\begin{bmatrix} 4 & -12 & -20 & 4 & 8 \\ -20 & -20 & -4 & 16 & 4 \end{bmatrix}$

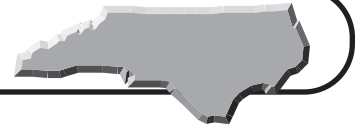
B $\begin{bmatrix} 4 & -12 & -20 & 4 & 8 \\ -5 & -5 & -1 & 4 & 1 \end{bmatrix}$

C $\begin{bmatrix} -1 & -3 & -5 & 1 & 2 \\ -20 & -20 & -4 & 16 & 4 \end{bmatrix}$

D $\begin{bmatrix} 5 & 1 & -1 & 5 & 6 \\ -1 & -1 & 3 & 8 & 5 \end{bmatrix}$

9 _____

Standards Practice



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

STANDARD 3.02 (continued)

- 10** Suppose you want to enlarge a figure described by matrix A by 125%. By what matrix should you multiply matrix A ? **10** _____

A $\begin{bmatrix} 1.25 & 1 \\ 1 & 1.25 \end{bmatrix}$

B $\begin{bmatrix} 1 & 1.25 \\ 1.25 & 1 \end{bmatrix}$

C $\begin{bmatrix} 1.25 & 0 \\ 0 & 1.25 \end{bmatrix}$

D $\begin{bmatrix} 0 & 1.25 \\ 1.25 & 0 \end{bmatrix}$

- 11** A triangle ABC represented by the matrix $C = \begin{bmatrix} 3 & 4 & 6 \\ -2 & 4 & 1 \end{bmatrix}$ is plotted on the coordinate grid. Add matrix $D = \begin{bmatrix} 9 & 9 & 9 \\ 0 & 0 & 0 \end{bmatrix}$ to matrix C . What is the new matrix for $C + D$? **11** _____

A $\begin{bmatrix} -6 & -5 & -3 \\ -2 & 4 & 1 \end{bmatrix}$

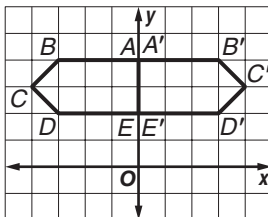
B $\begin{bmatrix} 27 & 36 & 54 \\ 0 & 0 & 0 \end{bmatrix}$

C $\begin{bmatrix} 3 & 4 & 6 \\ 7 & 13 & 10 \end{bmatrix}$

D $\begin{bmatrix} 12 & 13 & 15 \\ -2 & 4 & 1 \end{bmatrix}$

- 12** What does the addition of matrix $C + D$ in Question 11 do to the polygon? **12** _____
- A** Moves it 9 places right.
B Moves it 9 places up.
C Moves it 9 places down.
D Moves it 9 places left.

- 13** Describe the transformation that maps $ABCDE$ onto $A'B'C'D'E'$. **13** _____



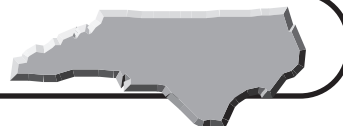
A $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$

B $\begin{bmatrix} 1 & 0 \\ -1 & 1 \end{bmatrix}$

C $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

D $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

Standards Practice



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

STANDARD 3.02 (continued)

- 14** A quadrilateral $EFGH$ represented by the matrix $H = \begin{bmatrix} 1 & 2 & -1 & -2 \\ 3 & 7 & 6 & 4 \end{bmatrix}$ is **14** _____

plotted on the coordinate grid. Subtract matrix $M = \begin{bmatrix} -3 & -3 & -3 & -3 \\ 2 & 2 & 2 & 2 \end{bmatrix}$ from matrix H . What is the new matrix $H - M$?

- A** $\begin{bmatrix} -2 & -1 & -4 & -5 \\ 5 & 9 & 8 & 6 \end{bmatrix}$ **B** $\begin{bmatrix} 4 & 5 & 2 & 1 \\ 1 & 5 & 4 & 2 \end{bmatrix}$
C $\begin{bmatrix} -4 & -5 & -2 & -1 \\ -1 & -5 & -4 & -2 \end{bmatrix}$ **D** $\begin{bmatrix} 3 & 4 & 1 & 0 \\ 0 & 4 & 3 & 1 \end{bmatrix}$

- 15** What does the subtraction of matrix M from H in Question 14 do to the quadrilateral? **15** _____

- A** Moves it right 2, down 3.
B Moves it left 3, down 2.
C Moves it right 3, down 2.
D Moves it right 3, up 2.

- 16** To reduce a figure written as matrix B to 75% of its original size, by what matrix would you multiply matrix B ? **16** _____

- A** $\begin{bmatrix} 0.75 & 0 \\ 0 & 0.75 \end{bmatrix}$ **B** $\begin{bmatrix} 0 & 0.75 \\ 0.75 & 0 \end{bmatrix}$
C $\begin{bmatrix} -0.75 & 0 \\ 0 & -0.75 \end{bmatrix}$ **D** $\begin{bmatrix} 0 & -0.75 \\ -0.75 & 0 \end{bmatrix}$

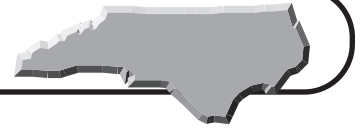
- 17** To what single transformation is a rotation of 180° followed by a reflection in the x -axis equivalent? **17** _____

- A** reflection in the y -axis
B rotation of 90°
C rotation of 180°
D rotation of 270°

- 18** Consider $\triangle DEF$ with vertices $D(1, -2)$, $E(3, 5)$, and $F(-3, -1)$. Use matrix multiplication to find the image of $\triangle DEF$ under a counterclockwise rotation of 90° . **18** _____

- A** $\begin{bmatrix} -2 & 5 & -1 \\ -1 & -3 & 3 \end{bmatrix}$ **B** $\begin{bmatrix} 2 & -5 & 1 \\ 1 & 3 & -3 \end{bmatrix}$
C $\begin{bmatrix} 2 & 5 & 1 \\ 1 & 3 & 3 \end{bmatrix}$ **D** $\begin{bmatrix} 2 & -5 & -1 \\ -1 & -3 & 3 \end{bmatrix}$

Sample Test



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

- 1** In a right hexagonal prism, what is the shape of each lateral face?

1 _____

- A** parallelogram
- B** rectangle
- C** rhombus
- D** square

- 2** If two parallel lines are cut by a transversal, then what is true about the consecutive interior angles?

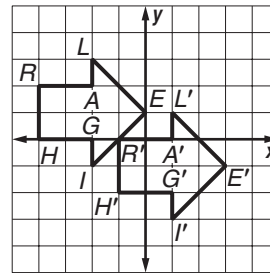
2 _____

- A** They are complementary.
- B** They are congruent.
- C** They are supplementary.
- D** They are similar.

- 3** What is the matrix for the translation that maps *RALEIGH* to *R'A'L'E'I'G'H'*?

3 _____

- A** $\begin{bmatrix} 3 & 3 & 3 & 3 & 3 & 3 & 3 \\ -2 & -2 & -2 & -2 & -2 & -2 & -2 \end{bmatrix}$
- B** $\begin{bmatrix} 3 & 3 & 3 & 3 & 3 & 3 & 3 \\ 2 & 2 & 2 & 2 & 2 & 2 & 2 \end{bmatrix}$
- C** $\begin{bmatrix} 2 & 2 & 2 & 2 & 2 & 2 & 2 \\ 3 & 3 & 3 & 3 & 3 & 3 & 3 \end{bmatrix}$
- D** $\begin{bmatrix} 2 & 2 & 2 & 2 & 2 & 2 & 2 \\ -3 & -3 & -3 & -3 & -3 & -3 & -3 \end{bmatrix}$



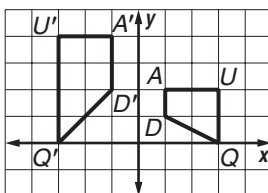
- 4** In the coordinate plane, point *P* is located at (4, 7), and point *Q* is located at (10, 1). Find the coordinates of the midpoint of the segment with endpoints *P* and *Q*.

4 _____

- A** (6, -6)
- B** (7, 4)
- C** (8, 3)
- D** (14, 8)

- 5** Describe the transformation of *QUAD* to *Q'U'A'D'* algebraically.

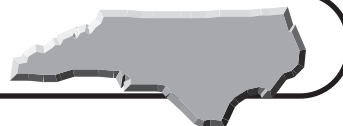
5 _____



- A** $(x, 2y)$
- B** $(-x, 2y)$
- C** $(-x, 3y)$
- D** $(3x, -y)$

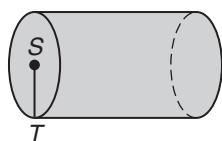
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Sample Test (continued)



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

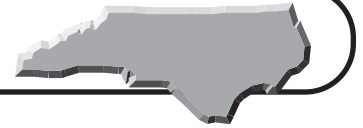
- 6** Which is the converse of the following statement: “If I get a car, then I will go to North Carolina State University.” **6** _____
- A** If I go to North Carolina State University, then I will get a car.
B If I go to North Carolina State University, then I won’t get a car.
C If I don’t go to North Carolina State University, then I will get a car.
D If I don’t get a car, then I will go to North Carolina State University.
- 7** A right cone and a right cylinder have bases with equal areas. The height of the cylinder is 4 times the height of the cone. What is true about their volumes? **7** _____
- A** The volume of the cylinder is $\frac{1}{3}$ times that of the cone.
B The volume of the cylinder is 4 times that of the cone.
C The volume of the cylinder is 6 times that of the cone.
D The volume of the cylinder is 12 times that of the cone.
- 8** If J is the midpoint of \overline{TL} and the length of \overline{TL} is 18 centimeters, what is the length of \overline{JL} ? **8** _____
- A** 6 centimeters **B** 9 centimeters
C 18 centimeters **D** 36 centimeters
- 9** Shelly draws $\triangle TRY$ on a coordinate grid with vertices $T(-5, 3)$, $R(-5, 0)$, and $Y(4, 2)$. She wants to move the triangle so that the image of Y , which she calls Y' , is the ordered pair $(-1, 4)$. What does this translation do to $\triangle TRY$? **9** _____
- A** It moves it 3 units left and 2 units down.
B It moves it 5 units right and 6 units down.
C It moves it 3 units right and 2 units up.
D It moves it 5 units left and 2 units up.
- 10** In the right cylinder, the length of \overline{ST} is 15 centimeters. Find the exact value of the circumference of a base of the cylinder. **10** _____



- A** 30π centimeters **B** 45π centimeters
C 60π centimeters **D** 225π centimeters



Sample Test (continued)



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

- 11** The measures of two angles of a triangle are 5 times and 6 times the measure of the least angle. Find all three measures. **11** _____

A $15^\circ, 75^\circ, 90^\circ$

B $16^\circ, 82^\circ, 82^\circ$

C $5^\circ, 75^\circ, 90^\circ$

D $20^\circ, 75^\circ, 85^\circ$

- 12** $\triangle XYZ$ is represented by $\begin{bmatrix} -2 & -1 & 3 \\ -4 & -6 & 5 \end{bmatrix}$. Find the matrix for a rotation 180° of $\triangle XYZ$. **12** _____

A $\begin{bmatrix} -4 & -6 & 5 \\ -2 & 1 & 3 \end{bmatrix}$

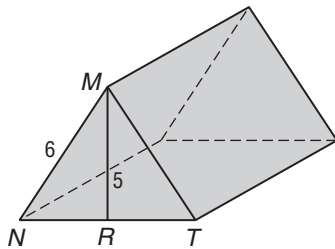
B $\begin{bmatrix} 4 & 6 & -5 \\ -2 & 1 & 3 \end{bmatrix}$

C $\begin{bmatrix} 2 & -1 & -3 \\ -4 & -6 & -5 \end{bmatrix}$

D $\begin{bmatrix} 2 & -1 & -3 \\ 4 & 6 & -5 \end{bmatrix}$

Use the following information for Questions 13 and 14.

Debbie is going camping near Jordan Lake with some friends. Her tent is in the shape of a right prism and has isosceles $\triangle MNT$ as the prism base.



- 13** If the top of the tent is 5 feet above the ground and \overline{NT} is 6.6 feet long, find the area of the prism base to the nearest tenth. **13** _____

A 8.3 square feet

B 15.0 square feet

C 16.5 square feet

D 18.3 square feet

- 14** If the length of Debbie's tent is 7 feet, find the surface area of the tent, including the floor, to the nearest tenth. **14** _____

A 79.6 square feet

B 121.4 square feet

C 130.2 square feet

D 163.2 square feet

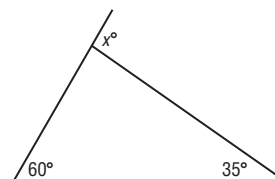
- 15** Find the value of x .

A 25

B 55

C 85

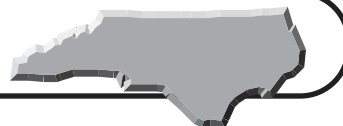
D 95



- 15** _____



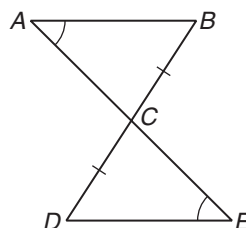
Sample Test (continued)



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

- 16** Which theorem or postulate can be used to prove that $\triangle ABC$ is congruent to $\triangle EDC$?

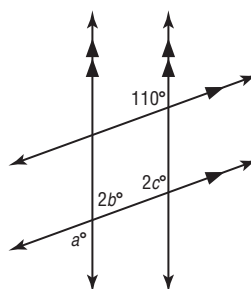
A SAS
B AAS
C ASA
D SSS



16 _____

- 17** Find the values of a , b , and c .

A $a = 35, b = 70, c = 110$
B $a = 35, b = 35, c = 55$
C $a = 70, b = 35, c = 55$
D $a = 70, b = 70, c = 55$



17 _____

- 18** Rhonda was playing on an 8 square by 8 square checkerboard. She closed her eyes and dropped a pebble randomly onto the board. What is the probability that the pebble would land on one of the four center squares?

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

18 _____

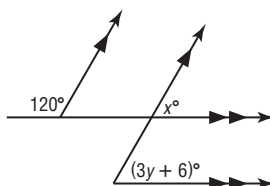
- 19** If Nick buys a puppy and builds a kennel, then the puppy will sleep outside. The puppy did not sleep outside. Nick did buy a puppy. Which statement must be true?

A Nick did not build a kennel.
B Nick did build a kennel, or the puppy did sleep outside.
C Nick did not buy a puppy.
D Nick did buy a puppy, and Nick did build a kennel.

19 _____

- 20** Find the values of x and y .

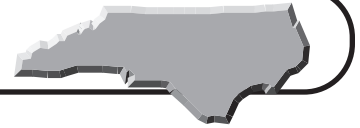
A $x = 60, y = 18$
B $x = 60, y = 54$
C $x = 120, y = 18$
D $x = 120, y = 60$



20 _____



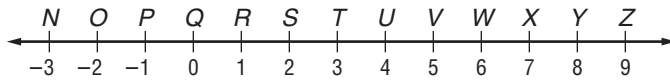
Sample Test (continued)



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

Use the following information for Questions 21 and 22.

A point is randomly picked on the number line.



21 Find the probability that the point is on \overline{PV} and \overline{RY} .

21 _____

A $\frac{1}{12}$

B $\frac{1}{8}$

C $\frac{1}{4}$

D $\frac{1}{3}$

22 Find the probability that the point is on \overline{QR} or \overline{YZ} .

22 _____

A $\frac{1}{6}$

B $\frac{1}{4}$

C $\frac{7}{12}$

D $\frac{11}{12}$

23 A triangle is represented by the matrix $\begin{bmatrix} 1 & -2 & 3 \\ 4 & 0 & -1 \end{bmatrix}$. What would be the matrix after shifting the triangle 3 to the right and 2 down?

23 _____

A $\begin{bmatrix} 4 & 1 & 6 \\ 6 & 2 & 1 \end{bmatrix}$

B $\begin{bmatrix} -1 & -4 & 1 \\ 7 & 3 & 2 \end{bmatrix}$

C $\begin{bmatrix} 4 & 1 & 6 \\ 2 & -2 & -3 \end{bmatrix}$

D $\begin{bmatrix} 3 & 1 & 6 \\ 7 & 3 & 2 \end{bmatrix}$

24 A circular pond is enclosed by a square wall 10 meters on a side. What is the maximum possible distance around the edge of the pond?

24 _____

A 5π meters

B 10π meters

C 25π meters

D 100π meters

25 Rachel bought a new rocking chair from a furniture store in High Point. The chair was delivered in a box that was 4 feet long, 4 feet wide, and 5 feet high. Find the volume of the box.

25 _____

A 13 cubic feet

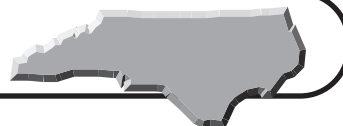
B 21 cubic feet

C 80 cubic feet

D 156 cubic feet



Sample Test (continued)



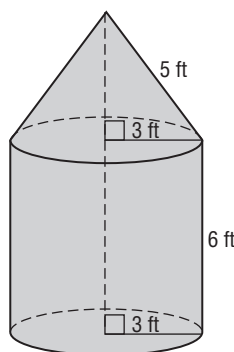
Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 26** A playing card is about 5.6 centimeters by 8.7 centimeters. If a stack of 72 cards is 2.7 centimeters high, what is the volume of one card, to the nearest tenth? **26** _____

A 0.2 cubic centimeters
B 0.7 cubic centimeters
C 1.8 cubic centimeters
D 2.5 cubic centimeters

- 27** A cone is placed on top of a cylinder as shown. Find the volume of the figure. **27** _____

A 66π cubic feet
B 69π cubic feet
C 90π cubic feet
D 99π cubic feet



- 28** Patrick wanted to transform $\triangle PAT$ with vertices $P(2, 6)$, $A(-2, 4)$, and $T(3, 1)$ so that new $\triangle P'A'T'$ would have vertices $P'(-2, -6)$, $A'(2, -4)$, $T'(-3, -1)$. Describe this transformation algebraically. **28** _____

A $(-x, y)$
B $(-x, -y)$
C $(y, -x)$
D $(-y, x)$

- 29** How would the transformation in Question 28 be described in words? **29** _____

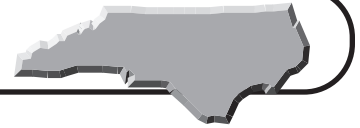
A It is a reflection over the x -axis.
B It is a reflection over the y -axis.
C It is a rotation of 180° .
D It is a rotation of 270° .

- 30** A building that is 25 meters tall casts a shadow that is 17 meters long. Find the angle of elevation of the sun to the nearest degree. **30** _____

A 34°
B 43°
C 47°
D 56°



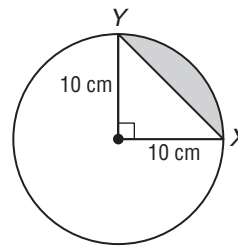
Sample Test (continued)



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

- 31** Find the area of the shaded region that is bounded by \widehat{XY} and \overline{XY} .

- A** $10\pi - 50$ square centimeters
B $10\pi - 100$ square centimeters
C $25\pi - 25$ square centimeters
D $25\pi - 50$ square centimeters



31 _____

- 32** Find the matrix for a reflection in the y -axis followed by a reflection in the x -axis.

- A** $\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$ **B** $\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$
C $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$ **D** $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

32 _____

- 33** What conclusion can be made from the following statements?
 “Pedro is older than Jacob. Jacob is older than Julie.”

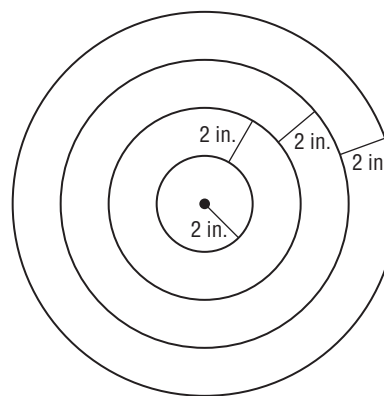
- A** Pedro is older than Julie. **B** Julie is older than Pedro.
C Pedro is younger than Julie. **D** Julie is older than Jacob.

33 _____

Use the figure to answer Questions 34 and 35.

- 34** Find the probability that a dart hitting the dartboard randomly will land in the innermost circle.

- A** $\frac{1}{32}$ **B** $\frac{1}{16}$
C $\frac{1}{4}$ **D** $\frac{1}{2}$



34 _____

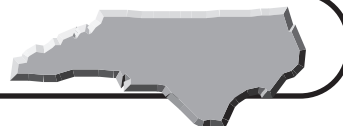
- 35** Find the probability that a dart hitting the dartboard randomly will land in one of the two innermost circles.

- A** $\frac{1}{32}$ **B** $\frac{1}{16}$
C $\frac{1}{4}$ **D** $\frac{1}{2}$

35 _____



Sample Test (continued)

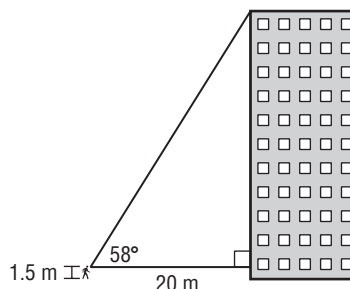


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 36** Suppose it takes you 2 minutes to walk around a circular garden. You decide you want to walk on the sidewalk that goes straight through the middle of the garden along its diameter. To the nearest second, how long would it take you to walk along this sidewalk at the same rate? **36** _____
- A** 24 seconds **B** 35 seconds
C 38 seconds **D** 60 seconds

- 37** Circle P has a radius of 6, and the measure of $\angle MPB = 120^\circ$. Find the length of \widehat{MB} . **37** _____
- A** 4π **B** 8π
C 12π **D** 45π

- 38** A building inspector 1.5 meters tall is standing 20 meters from the base of a building. He sights the top of the building with an angle of elevation of 58° . Find the height of the building to the nearest tenth of a meter. **38** _____
- A** 18.5 meters
B 32.0 meters
C 33.5 meters
D 38.0 meters

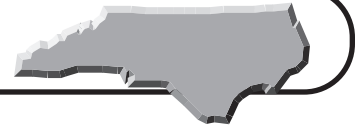


- 39** A box has dimensions ℓ , w , and h . If the dimensions are multiplied by 3, 4, and 5, respectively, how is the volume of the box changed? **39** _____
- A** The new volume is $\frac{1}{5}$ times the original volume.
B The new volume is 12 times the original volume.
C The new volume is 20 times the original volume.
D The new volume is 60 times the original volume.

- 40** Which of the following is a counterexample to the statement "If $x < 20$, then $x < 15$ "? **40** _____
- A** $x = -20$
B $x = -15$
C $x = 13$
D $x = 18$



Sample Test (continued)

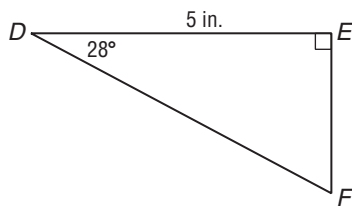


Read each question and choose the best answer. Then write the letter for the answer you have chosen in the blank at the right of each question.

- 41** From the top of a lighthouse 17 meters high, a sailboat is sighted having an angle of depression of 3° . How far from the lighthouse is the boat, to the nearest meter? **41** _____

A 17 meters **B** 89 meters
C 324 meters **D** 325 meters

- 42** In right triangle DEF , the length of \overline{DE} is 5 inches. The measure of $\angle EDF$ is 28° . Find the length of the hypotenuse of the triangle to the nearest tenth. **42** _____



A 4.4 inches **B** 5.7 inches
C 9.4 inches **D** 10.7 inches

- 43** A rectangle is defined by the matrix $P = \begin{bmatrix} 3 & 3 & 7 & 7 \\ 0 & 2 & 2 & 0 \end{bmatrix}$. Find the matrix for a dilation of 4. **43** _____

A $\begin{bmatrix} 7 & 7 & 11 & 11 \\ 4 & 6 & 6 & 4 \end{bmatrix}$ **B** $\begin{bmatrix} -1 & -1 & 3 & 3 \\ -4 & -2 & -2 & -4 \end{bmatrix}$
C $\begin{bmatrix} 12 & 12 & 28 & 28 \\ 0 & 8 & 8 & 0 \end{bmatrix}$ **D** $\begin{bmatrix} 0 & 8 & 8 & 0 \\ 7 & 7 & 11 & 11 \end{bmatrix}$

- 44** A square park has a perimeter of 2,640 feet. What is the area of the park? **44** _____

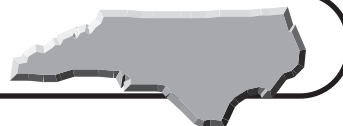
A 132,000 square feet
B 205,000 square feet
C 435,600 square feet
D 660,000 square feet

- 45** $\angle NCU$ measures 72° . \overline{CT} bisects $\angle NCU$. Find the measure of $\angle NCT$. **45** _____

A 18°
B 36°
C 72°
D 144°



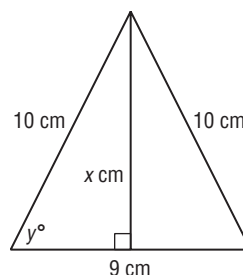
Sample Test (continued)



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

- 46** Michael is wrapping a gift. He wants to know how many square feet of wrapping paper it would take to cover the box exactly. The box is 2 feet by 3 feet by 5 feet. **46** _____
- A** 20 square feet **B** 30 square feet
C 60 square feet **D** 62 square feet

- 47** The lengths of the three sides of a triangle are 9 centimeters, 10 centimeters, and 10 centimeters. Find the value of x to the nearest tenth and find the value of y to the nearest degree.



47 _____

- A** $x = 4.4, y = 27$
B $x = 8.9, y = 63$
C $x = 9.2, y = 60$
D $x = 10.0, y = 45$

- 48** Joseph was taking a geometry class in which he needed to show reflections of polygons. He drew a hexagon and labeled it *DURHAM*. If the coordinates of point M were (a, b) and he reflected the hexagon over the y -axis, what would be the coordinates of the image M' ? **48** _____
- A** $(-a, b)$ **B** $(-b, a)$
C $(a, -b)$ **D** $(-a, -b)$

- 49** A square is attached to one side of a regular hexagon and matches up exactly. The square has a side length of 4 centimeters. Find the perimeter of the new polygon and name the new polygon. **49** _____
- A** 32 centimeters; octagon
B 32 centimeters; nonagon
C 40 centimeters; decagon
D 40 centimeters; nonagon

- 50** If Renae goes on vacation and she takes a plane, she will fly out of Raleigh-Durham International Airport. Renae did go on vacation and she did not fly out of Raleigh-Durham International Airport. Which statement must be true? **50** _____
- A** Renae flew out of a different airport.
B Renae did not take a plane.
C Renae did go on vacation, and she did take a plane.
D Renae did take a plane, or she did fly out of Raleigh-Durham International Airport.

