

Geometry Cumulative Study Guide

Test 20

Name: _____

Date: _____

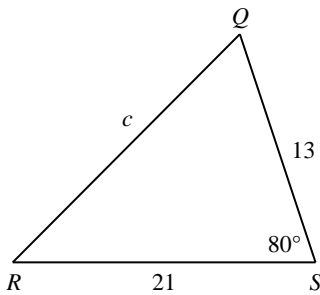
Period: _____

Numeric Response

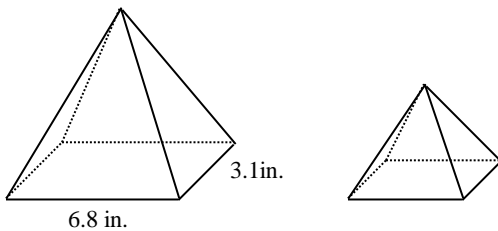
1. A spherical globe has a radius of 9 inches. What is the surface area of the globe to the nearest hundredth of a square inch?

2. On a floor plan, a porch in the shape of a trapezoid has an area of 2.5 square feet. If the floor plan has a scale of 1 : 15, what will be the actual area, in square feet, of the porch when it is built?

3. Find c in the diagram below. Round your answer to the nearest tenth.

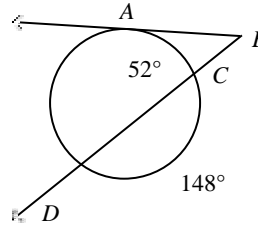


4. The two similar rectangular pyramids shown below have a scale factor of 5 : 4. Determine the perimeter, in inches, of the smaller pyramid's base.



Problem

5. Find $m\angle B$ in the diagram below.

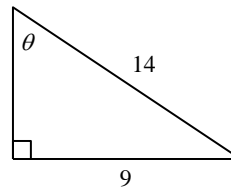


6. Determine whether there is a solution for the system of linear equations below. If not, explain why not.

$$y = 3x + 1$$

$$3y + 2 = 6x - 1$$

7. In the diagram below, find θ to the nearest degree.



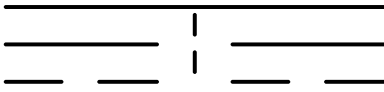
8. Add the vectors $\vec{a} = \langle 0, 6 \rangle$ and $\vec{b} = \langle 10, 0 \rangle$, and find the magnitude and angle from the horizontal of the resultant vector. Round your answers to the nearest hundredth.

9. An 10-inch-by-11-inch transparency sheet is placed on an overhead projector. If the projector enlarges 300%, what will be the lengths of the sides of the projection? How does the perimeter of the original transparency sheet compare to the perimeter of the projection?

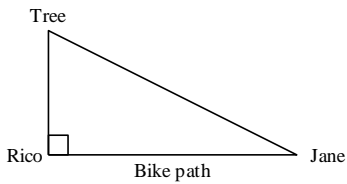
10. In $\odot M$, chords \overline{QR} and \overline{ST} intersect at U . Determine TU if $QU = 6$, $RU = 9$, and $SU = 7$.

11. Solve the strict inequality $2x + 6y < -7$ for y .

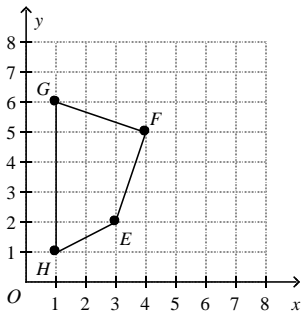
12. The diagram below shows the first two iterations of a fractional pattern. Draw the third iteration.



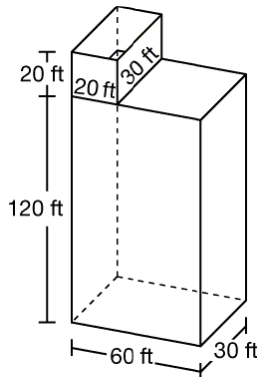
13. Rico and Jane are standing on a bike path looking at a tree, as shown in the diagram below. Jane is two times as far from the tree as Rico is. What is the approximate ratio of Jane's distance from Rico to her distance from the tree?



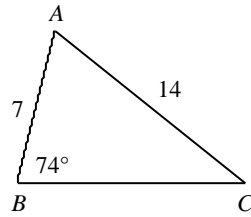
14. Is quadrilateral $EFGH$ a trapezoid?



15. A building in the shape of a rectangular prism is 60 feet along the front, 30 feet along the side, and 120 feet high. A penthouse in the shape of a rectangular prism is 20 feet along the front, 30 feet along the side, and 20 feet high. Make orthographic drawings of the front, side, and top of the building.



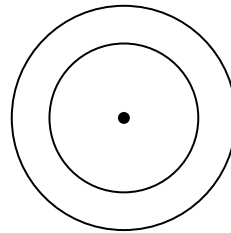
16. Find the measure of $\angle A$ in the triangle below. Round your answer to the nearest degree.



17. The equation of a circle is $x^2 + y^2 = 36$. Apply a dilation centered at the origin with a scale factor of 2. What is the new equation of the circle?

18. A rectangle is one-fifth as tall as it is long. If its height is reduced to one-half of its current height, what is the ratio of the new rectangle's perimeter to the original rectangle's perimeter?

19. Determine whether the circles in the diagram below are concentric. Explain your reasoning.



20. Add the two matrices below.

$$\begin{bmatrix} 1 & 0 \\ -3 & -4 \end{bmatrix} + \begin{bmatrix} 2 & 0 \\ -2 & -3 \end{bmatrix}$$

Geometry Cumulative Study Guide Test 20

Answer Section

MERIC RESPONSE

1. ANS: 1017.88

PTS: 1 REF: Lesson 80: Finding Surface Areas and Volumes of Spheres
 NAT: NCTM G.3a TOP: Cumulative Test 20

2. ANS: 562.5

PTS: 1 REF: Lesson 87: Area Ratios of Similar Figures
 NAT: NCTM M.2b TOP: Cumulative Test 20
 MSC: Geom_S09_00045

3. ANS: 22.7

PTS: 1 REF: Lesson 98: Law of Cosines
 TOP: Cumulative Test 20 MSC: Geom_S10_00044

4. ANS: 15.84

PTS: 1 REF: Lesson 99: Volume Ratios of Similar Solids
 NAT: NCTM G.1b TOP: Cumulative Test 20

OBLEM

5. ANS:
 $m\angle B = 54^\circ$

PTS: 1 REF: Lesson 79: Angles Exterior to Circles
 NAT: NCTM G.1d TOP: Cumulative Test 20

6. ANS:
 $(-2, -5)$

PTS: 1 REF: Lesson 81: Graphing and Solving Linear Systems
 NAT: NCTM A.2b TOP: Cumulative Test 20

7. ANS:
 $\theta \approx 40^\circ$

PTS: 1 REF: Lesson 82: More Applications of Trigonometry
 NAT: NCTM G.1d TOP: Cumulative Test 20

8. ANS:

The magnitude of the resultant vector is approximately 11.66. The angle from the horizontal is approximately 30.96° .

PTS: 1 REF: Lesson 83: Vector Addition
 NAT: NCTM NO.3a
 TOP: Cumulative Test 20 MSC: Geom_S09_00062

9. ANS:
 30 inches by 33 inches; the perimeter of the original transparency sheet is $\frac{2}{3}$ the perimeter of the projection.
 MSC: Geom_S08_00067

PTS: 1 REF: Lesson 84: Dilations
 TOP: Cumulative Test 20 MSC: Geom_S09_00066

10. ANS:
 $TU = 7\frac{5}{7}$

NAT: NCTM G.1d REF: Lesson 86: Determining Chord Length
 NAT: NCTM G.4d TOP: Cumulative Test 20

11. ANS:
 $y < -\frac{1}{3}x - \frac{7}{6}$

MSC: Geom_S10_00045
 PTS: 1 REF: Lesson 88: Graphing and Solving Linear Inequalities
 NAT: NCTM A.2b TOP: Cumulative Test 20

12. ANS:

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PTS: 1 REF: Investigation 10: Fractals
 TOP: Cumulative Test 20 MSC: Geom_S10_00048

13. ANS:
 Jane is approximately $\frac{\sqrt{3}}{2}$ times as far from Rico as she is from the tree.
 MSC: Geom_S09_00052

PTS: 1 REF: Lesson 91: Introduction to Trigonometric Identities
 NAT: NCTM G.1d TOP: Cumulative Test 20

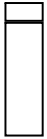
14. ANS:
 No, $EFGH$ is not a trapezoid.
 MSC: Geom_S09_00057

PTS: 1 REF: Lesson 92: Quadrilaterals
on the Coordinate Plane
NAT: NCTM G.2a TOP: Cumulative Test 20

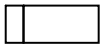
15. ANS:
Front:



Side:



Top:



PTS: 1 REF: Lesson 93: Representing
Solids: Orthographic Views
NAT: NCTM G.4a TOP: Cumulative Test 20

16. ANS:
 $m\angle A \approx 77^\circ$

PTS: 1 REF: Lesson 94: Law of Sines
TOP: Cumulative Test 20 MSC:
Geom_S10_00057

17. ANS:
 $x^2 + y^2 = 144$

PTS: 1 REF: Lesson 95: Equations of
Circles: Translating and Dilating
NAT: NCTM G.3a TOP: Cumulative Test 20

18. ANS:
11 : 12

PTS: 1 REF: Lesson 96: Effects of
Changing Dimensions on Perimeter and Area
NAT: NCTM G.1a TOP: Cumulative Test 20

19. ANS:
Yes, the circles are coplanar and they share the same
center, so they are concentric.

PTS: 1 REF: Lesson 97: Concentric
Circles NAT: NCTM G.1d
TOP: Cumulative Test 20 MSC:

Geom_S10_00067

20. ANS:
$$\begin{bmatrix} 3 & 0 \\ -5 & -7 \end{bmatrix}$$
om_S10_00052

PTS: 1 REF: Lesson 100:
Transformation Matrices
NAT: NCTM G.1d TOP: Cumulative Test 20
NCTM G.3a TOP: Cumulative Test 19

MSC: Geom_S10_00055

NAT: NCTM G.1d

MSC: Geom_S10_00061

MSC: Geom_S10_00063