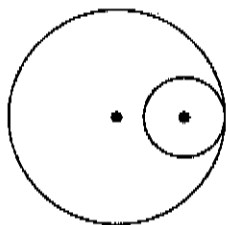


Cumulative Test 20A

1. (84) An 8-inch-by-12-inch transparency sheet is placed on an overhead projector. If the projector enlarges 550%, 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?

2. (97) Determine whether the two circles in the diagram below are concentric. Explain your reasoning.



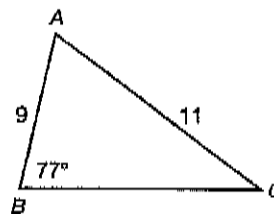
3. (86) In $\odot M$, chords \overline{QR} and \overline{ST} intersect at U . Determine TU if $QU = 5$, $RU = 9$, and $SU = 10$.

4. (100) Add the two matrices below.

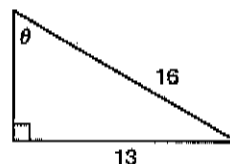
$$\begin{bmatrix} 4 & 0 \\ 3 & -2 \end{bmatrix} + \begin{bmatrix} -2 & 3 \\ 0 & 1 \end{bmatrix}$$

5. (87) On a floor plan, a porch in the shape of a trapezoid has an area of 1.25 square feet. If the floor plan has a scale of 1 : 12, what will be the actual area of the porch when it is built?

6. (94) Find the measure of $\angle A$ in the triangle below. Round your answer to the nearest degree.



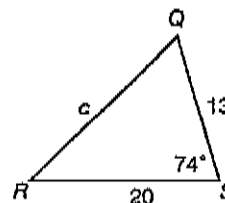
7. (82) In the diagram below, find θ to the nearest degree.



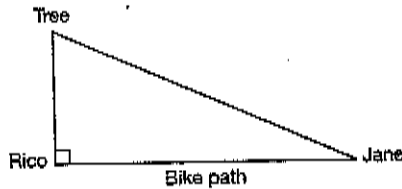
8. (96) A rectangle is one-fourth as tall as it is long. If its height is reduced to one-half its current height, what is the ratio of the new rectangle's perimeter to the original rectangle's perimeter?

9. (83) Add the vectors $\vec{a} = \langle 0, 5 \rangle$ and $\vec{b} = \langle 8, 0 \rangle$, and find the magnitude and angle from the horizontal of the resultant vector.

10. (98) Find c in the diagram below. Round your answer to the nearest tenth.

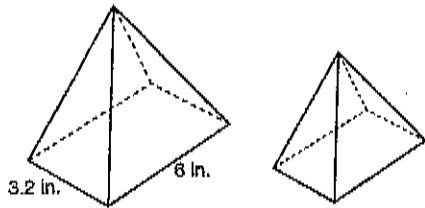


11. (91) Rico and Jane are standing on a bike path looking at a tree, as shown in the diagram below. Jane is four times as far from the tree as Rico is. What is the approximate ratio of Jane's distance from Rico to her distance from the tree?



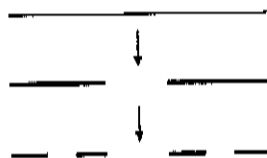
12. (80) A spherical globe has a radius of 7 inches. What is the surface area of the globe to the nearest hundredth of a square inch?

13. (99) The two similar rectangular pyramids shown below have a scale factor of 4 : 3. Determine the perimeter of the smaller pyramid's base.



14. (95) The equation of a circle is $x^2 + y^2 = 4$. Apply a dilation centered at the origin with a scale factor of 2. What is the new equation of the circle?

15. (Inv. 10) The diagram below shows the first two iterations of a fractal pattern. Draw the third iteration.



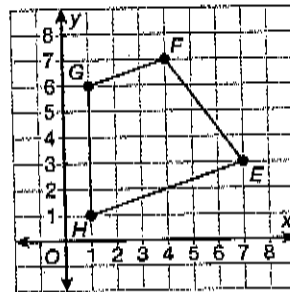
16. (81) Determine whether there is a solution for the system of linear equations below. If not, explain why not.

$$y = 3x + 3$$

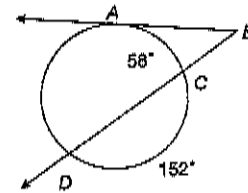
$$2y + 1 = 6x - 1$$

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

17. (92) Is quadrilateral $EFGH$ a trapezoid?



18. (79) Find $m\angle B$ in the diagram below.



19. (88) Solve the strict inequality $3x - 2y < 7$ for y .

20. (93) 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.

