

# Geometry

## Final Exam Review

- This review covers the major topics in the material that will be tested on the final exam. It is not necessarily all inclusive and additional study and problem solving practice may be required to fully prepare for the final.

- Use additional paper, if necessary.

- Calculators may be used; however, the final exam may have non-calculator portions. Therefore, prudence suggests you prepare with and without a calculator so you can handle any contingency.

Directions:

Questions 1 – 50: **True-False and Multiple Choice.** Circle the correct answer or put it in the space provided.

Questions 51 – 74: **Matching.** Place the letter of your answer in the space provided.

Questions 75 – 100: **Free Response.** Simplify all answers. Box or circle your final answer for each answer and **show all work!!**

This review is due on or before \_\_\_\_\_

**Name** \_\_\_\_\_

**Teacher** \_\_\_\_\_

**Period** \_\_\_\_\_

**Part I: Determine whether each statement is true (T) or false (F).**

- T F **1.** If  $\triangle ABC \sim \triangle DEF$ , then  $\frac{AB}{DE} = \frac{CA}{FD}$ .
- T F **2.** All regular pentagons are similar
- T F **3.** If the measures of one acute angle of a right triangle is  $30^\circ$ , then the measure of the other acute angle is  $60^\circ$ .
- T F **4.** If the legs of a right triangle are congruent, each acute angle has a measure of  $45^\circ$ .
- T F **5.** The hypotenuse of a  $45^\circ$ - $45^\circ$ - $90^\circ$  triangle is  $\sqrt{2}$  times as long as a leg.
- T F **6.** A dodecagon has twenty sides.
- T F **7.** When a central angle and an inscribed angle intercept the same arc, the two angles are congruent.
- T F **8.** A tangent to a circle is perpendicular to a radius drawn to the point of tangency.
- T F **9.** The measure of each interior angle of a regular hexagon is  $120^\circ$ .
- T F **10.** An angle inscribed in a semicircle is a right angle.
- T F **11.** If two circles are congruent, then their diameters are congruent.
- T F **12.** If a diameter is perpendicular to a chord, then it bisects the chord.
- T F **13.** A circle with an area of  $121\pi$  units<sup>2</sup> has a circumference of  $11\pi$  units.
- T F **14.** All angles which intercept congruent arcs of a circle are congruent.
- T F **15.** The central angle of a regular decagon is  $36^\circ$ .
- T F **16.** The sine ratio is defined to be the ratio of the length of the adjacent leg to the length of the hypotenuse.
- T F **17.** The area of a right triangle with side lengths of 3, 4, and 5 is 6 units.
- T F **18.** Opposite angles of an inscribed quadrilateral are complementary.

**Part II: Determine whether each statement is ALWAYS (A), SOMETIMES (S), or NEVER (N) true.**

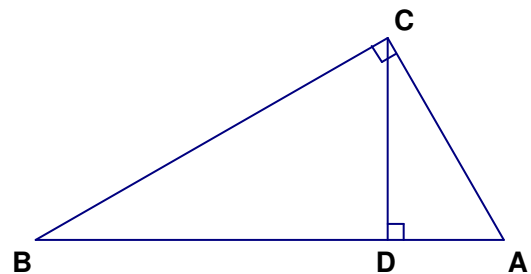
19. A radius of a circle is \_\_\_\_\_ a chord of the circle.
20. The diagonals of a quadrilateral are \_\_\_\_\_ perpendicular.
21. The bases of a trapezoid are \_\_\_\_\_ parallel.
22. The sine of an angle is \_\_\_\_\_ greater than 1.
23. Two congruent figures are \_\_\_\_\_ similar.

**Part III: Multiple Choice. Choose the BEST answer and place it in the space provided.**

- \_\_\_\_ 24. The geometric mean of 3 and 12 is
- a. 2            b. 4            c. 6            d. 8
- \_\_\_\_ 25. If the length of the shorter leg of a  $30^\circ$ - $60^\circ$ - $90^\circ$  triangle is 4, then the length of the hypotenuse is
- a. 2            b.  $4\sqrt{3}$         c.  $4\sqrt{2}$         d. 8

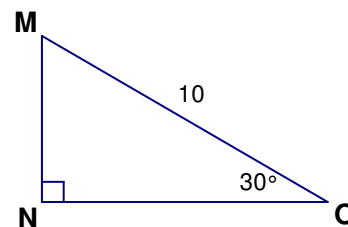
**For 26 and 27, use the diagram to the right.**

- \_\_\_\_ 26. If  $AD = 3$  and  $DB = 27$ , find  $CD$ .
- a.  $6\sqrt{2}$             c. 40.5
- b. 9            d. 81
- \_\_\_\_ 27. If  $BC = 15$  and  $BD = 10$ , find  $AD$ .
- a. 6.66            c. 22.5
- b. 12.5            d. 125



- \_\_\_\_ 28. Find the perimeter of a square whose area is 36.
- a. 6            b. 12            c. 24            d. 36

- \_\_\_\_ 29. For  $\triangle MNO$ , the length of  $\overline{NO}$  is
- a.  $5\sqrt{2}$             c. 10
- b.  $5\sqrt{3}$             d.  $10\sqrt{3}$



\_\_\_ 30. If the perimeter of a square equals  $20\sqrt{2}$ , the length of each diagonal of the square is

- a.  $10\sqrt{2}$     b.  $5\sqrt{2}$     c. 10    d. 5

\_\_\_ 31. If the sides of a triangle are 3, 4, and 6, then the triangle is

- a. a  $30^\circ$ - $60^\circ$ - $90^\circ$  triangle    c. a  $45^\circ$ - $45^\circ$ - $90^\circ$  triangle  
b. an acute triangle    d. not a right triangle

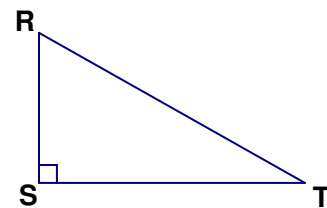
\_\_\_ 32. If the length of the hypotenuse of a  $45^\circ$ - $45^\circ$ - $90^\circ$  triangle is 8, then the length of a leg is

- a.  $8\sqrt{2}$     b.  $4\sqrt{2}$     c. 4    d.  $4\sqrt{3}$

**For 33 and 34, use the diagram to the right.**

\_\_\_ 33. In  $\triangle RST$ , if  $m\angle S = 90^\circ$ , then  $\tan R =$

- a.  $\frac{TS}{RS}$     b.  $\frac{RS}{TS}$     c.  $\frac{TS}{RT}$     d.  $\frac{RS}{RT}$



\_\_\_ 34. In  $\triangle RST$ , if  $m\angle S = 90^\circ$ , then  $\sin T =$

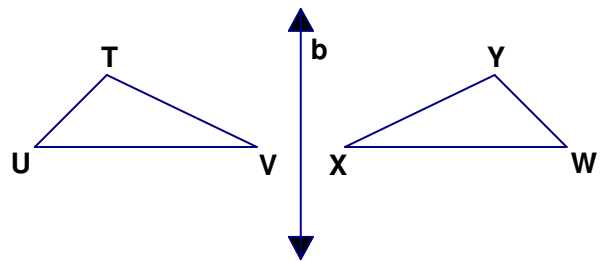
- a.  $\frac{TS}{RT}$     b.  $\frac{RS}{TS}$     c.  $\frac{RS}{RT}$     d.  $\frac{RT}{RS}$

\_\_\_ 35. A rhombus has a diagonal of 24 cm and an area of  $120 \text{ cm}^2$ . Find the length of the other diagonal of the rhombus.

- a. 10 cm    b. 5 cm    c. 13 cm    d. 12 cm

\_\_\_ 36. What is the reflection image of V over line  $b$ ?

- a. X    c. W  
b. Y    d. T



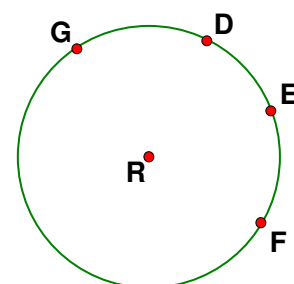
**For 37 and 38, use circle R to the right.**

\_\_\_ 37. A major arc of circle R is

- a.  $\widehat{DEF}$     b.  $\widehat{EF}$     c.  $\widehat{DGF}$     d.  $\widehat{ED}$

\_\_\_ 38. In circle R,  $m\widehat{GD} + m\widehat{DF} =$

- a.  $m\widehat{DEF}$     b.  $m\widehat{GDE}$     c.  $m\widehat{GFD}$     d.  $m\widehat{GDF}$



For 39 – 41, use circle O to the right.

\_\_\_ 39. The measure of  $\angle ABC =$

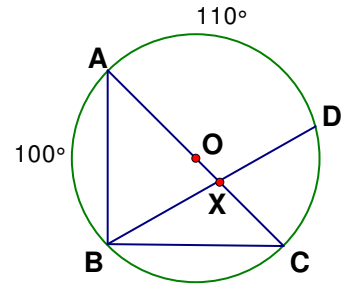
- a.  $100^\circ$       b.  $90^\circ$       c.  $80^\circ$       d.  $70^\circ$

\_\_\_ 40. The measure of  $\angle A =$

- a.  $40^\circ$       b.  $50^\circ$       c.  $60^\circ$       d.  $70^\circ$

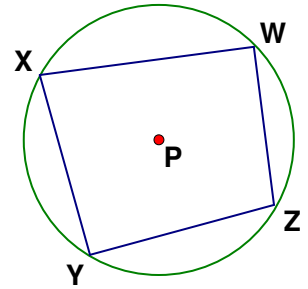
\_\_\_ 41. The measure of  $\angle AXD =$

- a.  $85^\circ$       b.  $95^\circ$       c.  $55^\circ$       d.  $100^\circ$



\_\_\_ 42. Quadrilateral WXYZ is inscribed in circle P. If  $m\angle X = 80^\circ$  and  $m\widehat{XW} = 105^\circ$ , then  $m\widehat{XY} =$

- a.  $95^\circ$       b.  $100^\circ$       c.  $105^\circ$       d.  $110^\circ$



\_\_\_ 43. Find the area of a circle whose circumference is  $10\pi$ .

- a.  $5\pi$       b.  $20\pi$       c.  $25\pi$       d.  $100\pi$

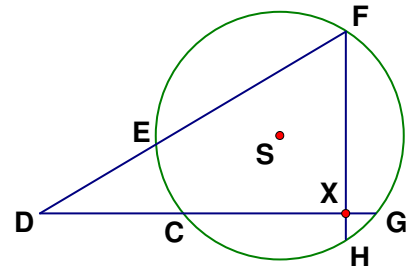
For 44 and 45, use circle S to the right.

\_\_\_ 44. If  $m\widehat{FG} = 80^\circ$  and  $m\widehat{EC} = 44^\circ$ , then  $m\angle D =$

- a.  $62^\circ$       b.  $38^\circ$       c.  $22^\circ$       d.  $18^\circ$

\_\_\_ 45. If  $CX = 12$ ,  $XG = 2$ , and  $XH = 3$ , then  $XF =$

- a. 12      b. 8      c. 4.5      d. 2



\_\_\_ 46. The length of a diagonal of a square is 6. The length of each side is

- a.  $6\sqrt{2}$       b.  $3\sqrt{2}$       c. 6      d. 3

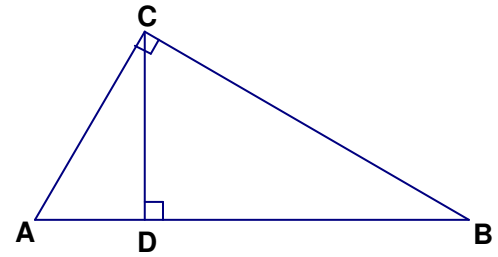
For 47 and 48, use the diagram to the right.

\_\_\_ 47. If  $AD = 2.5$ , and  $AB = 10$ , find  $BC$ .

- a. 6      b. 8      c.  $5\sqrt{3}$       d.  $8\sqrt{3}$

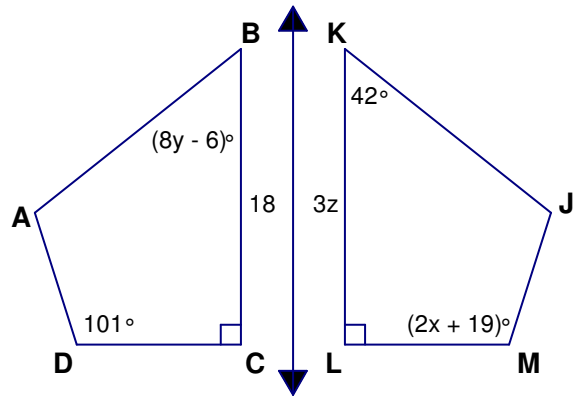
\_\_\_ 48. If  $AD = 7$  and  $AB = 28$ , find  $AC$ .

- a. 14      b. 21      c. 4      d. 28



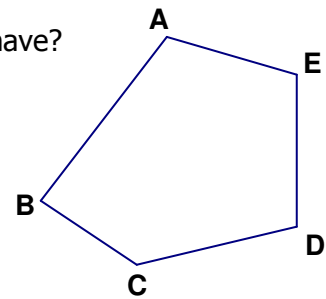
\_\_\_ 49. The transformation to the right is an isometry. What are the value of the variables?

- a.  $x = 41, y = 6, z = 6$   
 b.  $x = 40, y = 6, z = 9$   
 c.  $x = 6, y = 40, z = 6$   
 d.  $x = 41, y = 40, z = 6$



\_\_\_ 50. How many lines of symmetry does polygon ABCDE *appear* to have?

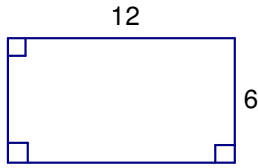
- a. 0      b. 1      c. 2      d. 5



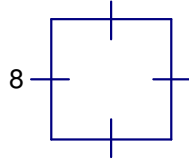
**Part IV: Matching. Match each figure with its area.**

**SET 1**

\_\_\_ 51.



\_\_\_ 52.



**A. 128**

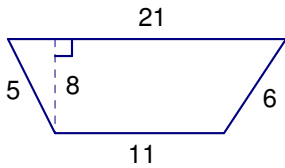
**B. 28**

**C. 50**

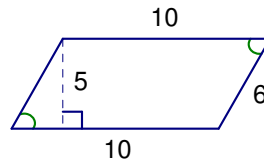
**D. 64**

**E. 72**

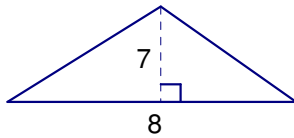
\_\_\_ 53.



\_\_\_ 54.

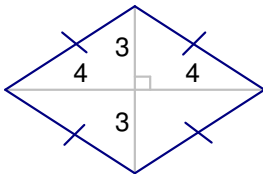


\_\_\_ 55.

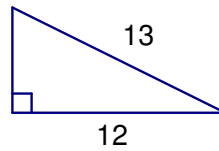


**SET 2**

\_\_\_ 56.



\_\_\_ 57.



**A. 30**

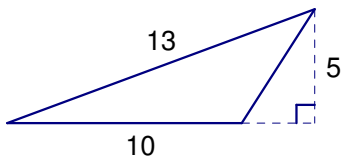
**B. 24**

**C. 25**

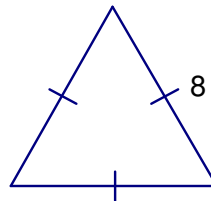
**D.  $2\sqrt{3}$**

**E.  $16\sqrt{3}$**

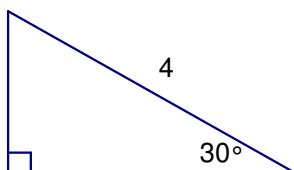
\_\_\_ 58.



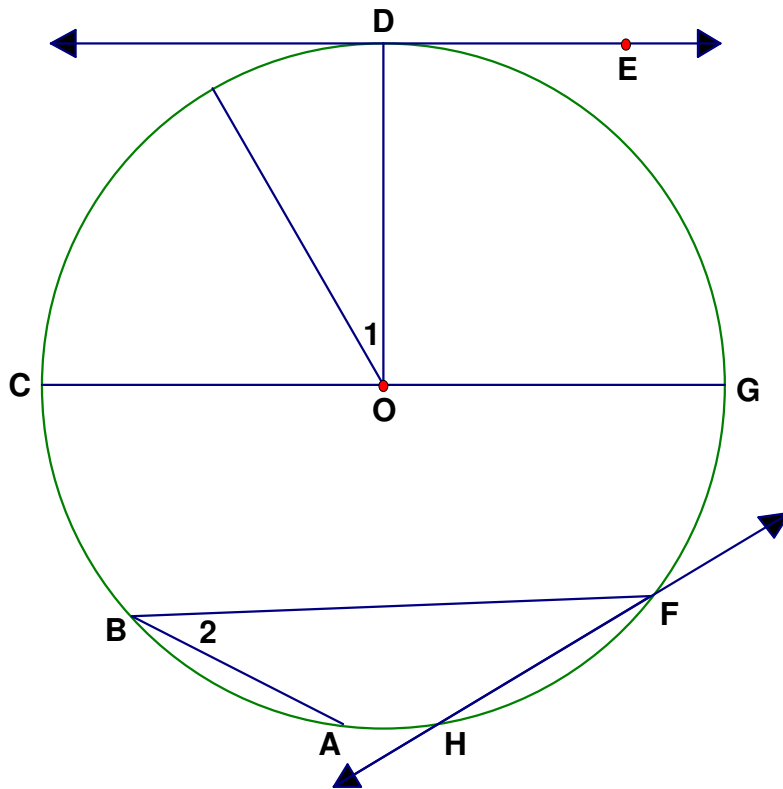
\_\_\_ 59.



\_\_\_ 60.



**Part V: Matching. Match each part to its correct name. BE SPECIFIC!!**



\_\_\_ 61.  $\overline{CG}$

\_\_\_ 62.  $\overline{DE}$

\_\_\_ 63. D

\_\_\_ 64.  $\overline{AB}$

\_\_\_ 65.  $\overline{HF}$

\_\_\_ 66.  $\angle ODE$

\_\_\_ 67.  $\angle 1$

\_\_\_ 68.  $\angle 2$

\_\_\_ 69.  $\overline{OD}$

**A.** chord

**B.** secant

**C.** diameter

**D.** point of tangency

**E.** tangent

**AB.** inscribed angle

**AC.** central angle

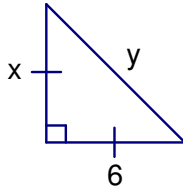
**AD.** radius

**AE.** right angle



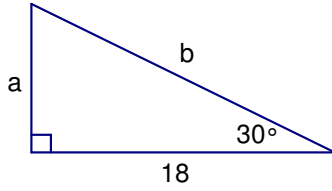
**Part VI: Select the best answer from the list.**

\_\_\_ **70.** Find  $x$ .



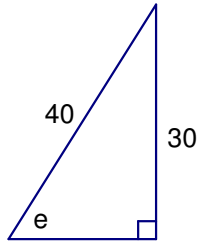
\_\_\_ **71.** Find  $y$ .

\_\_\_ **72.** Find  $a$ .



\_\_\_ **73.** Find  $b$ .

\_\_\_ **74.** Find  $e$ .



**A.  $12\sqrt{3}$**

**B. 48.6**

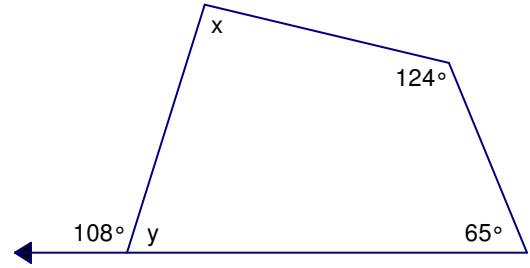
**C.  $6\sqrt{2}$**

**D.  $6\sqrt{3}$**

**E. 6**

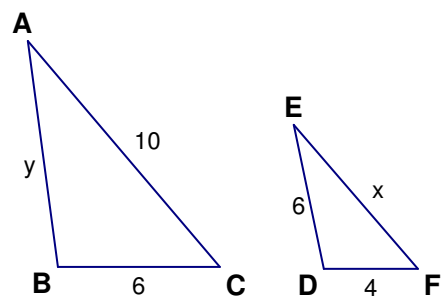
**Part VII: Free Response. Solve for the indicate values. Show all work. Round answers to the nearest tenth, when appropriate.**

75. Find  $x$  and  $y$ .

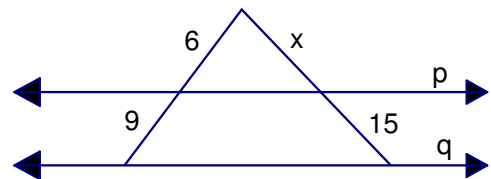


76. A wheelchair ramp has a slope of  $\frac{1}{10}$ . If its rise is  $5\frac{1}{2}$  feet, what is its run?

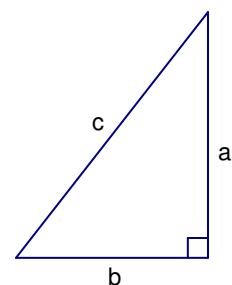
77. Given that  $\triangle ABC \sim \triangle DEF$ , solve for  $x$  and  $y$ .



78. If  $p \parallel q$ , solve for  $x$ .

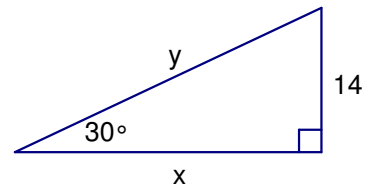


79. Find the area of this right triangle if  $b = 17$  and  $c = \sqrt{514}$ .

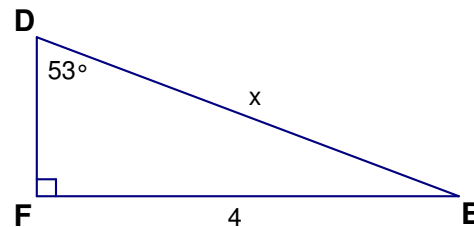


**80.** A triangle has side lengths of 6, 9, and 11. Decide whether it is an acute, right, or obtuse triangle. Explain.

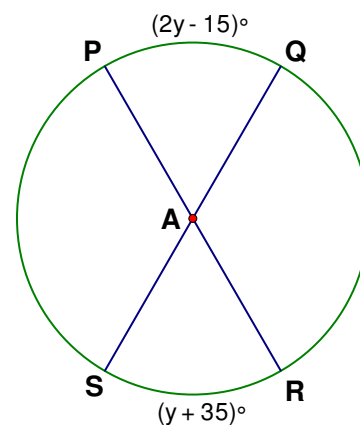
**81.** Find the value of  $x$  and  $y$ .



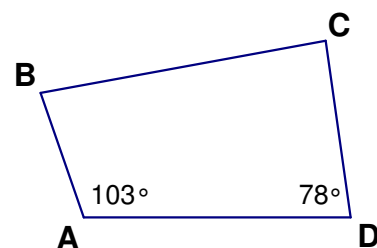
**82.** Find the value of  $x$ , to the nearest whole number. (not drawn to scale)



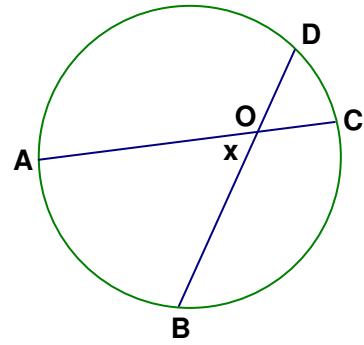
**83.** Find  $m\widehat{PQ}$  in circle A. Drawing is not to scale.



**84.** What must be the measures of  $\angle B$  and  $\angle C$  so that a circle can circumscribed about ABCD? (Diagram is not drawn to scale.)



85. Find the value of  $x$  if  $m\widehat{AB} = 41^\circ$  and  $m\widehat{CD} = 35^\circ$ . (not drawn to scale)

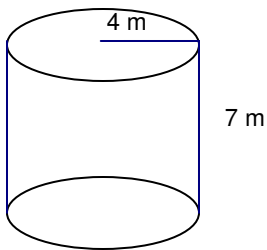


86. Find the sum of the measures of the interior angles of a decagon.

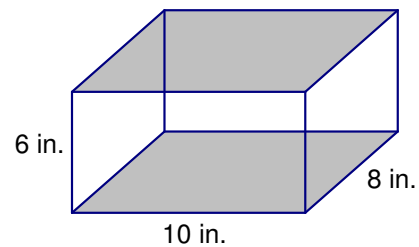
87. Find the number of sides of a regular polygon with each interior angle equal to  $150^\circ$ .

88. Find the measure of an interior and an exterior angle of a regular polygon with 15 sides.

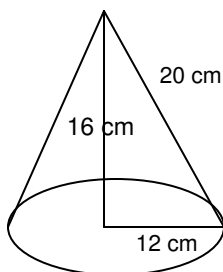
89. Find the volume of the cylinder.



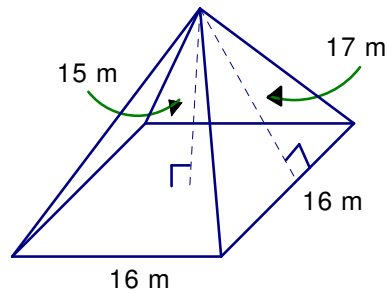
90. Find the lateral area of the rectangular prism.



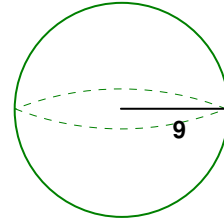
91. Find the total surface area of the cone.



92. Find the volume of the pyramid.



93. Find the surface area **AND** the volume of the sphere.



94. An 8 foot ladder is leaning against a house and makes a  $48^\circ$  angle with the ground. How far is the foot of the ladder from the house?

95. What is the area of a circle whose circumference is  $16\pi$ ?

96. What is the area of a square whose perimeter is 24 units?

97. Twenty five feet of licorice weighs 12 lbs. How much does 150 ft of the same licorice weigh?

98. A bus traveled 120 miles in 2.5 hours. How many miles will it travel in 8 hrs going the same speed?

99. If the legs of a right triangle have the measures 5 and 8, what is the length of the hypotenuse?

100. What are you going to do this summer? 😊