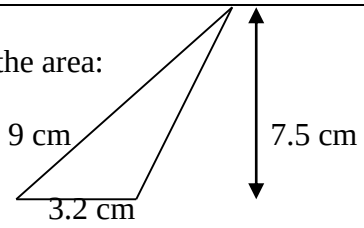
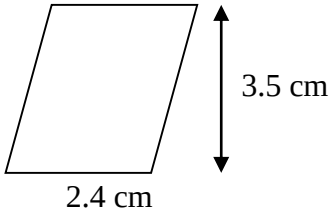
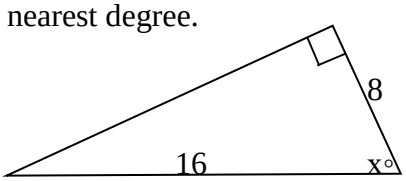
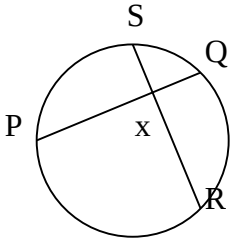
Challenge Test Review 2 NAME_____
Algebra 2 Honors

1. Find the area:  	14. (a)Lines l and m intersect at point O and the Angle between l and m is 23º. A figure is reflected in line l followed by a refection in line m. The overall effect is: (b) If the parallel lines p and q are 6cm apart and a figure is reflected in line p and then in line q, the overall effect is:
2. Find the area:  	15. The shorter leg of a 30º-60º-90º triangle is 5.1 feet long. Find the perimeter. 16. An expression for the circumference of a circle with radius r is:
3. If A = (3, 1) and B = (2, -4). Find vector $\overrightarrow{AB}$	17. If two solids have the same height and the same cross-sectional area at every level, then they have the same?
4. Two legs of a right triangle have lengths 10 and 7. The measure of the smaller acute angle is: 5. A rectangle has length a and width b. An expression for its area is…	18. Which of the following is not enough information to solve a right triangle? (A) One side length and one acute angle (B) One side length and one trig. ratio (C) Two sides (D) Two angles
6. A(2, -3) is translated onto A' by the vector $\vec{u} = \langle -4,2 \rangle$ Find the coordinates of A'.	19. The sides of a right triangle are x + 3, x + 4, and x + 5 units long. Find the side lengths of the triangle by solving for x.
7. What is a Pythagorean triple?	20. Find the surface area of a sphere that has a diameter of 12 cm. Express your answer in terms of π.
8. Triangle ABC is transformed by the motion rule (x, y) → (x + 2, y – 3) where A(3,2), B(2,4) and C(0,1). Find the coordinates of A', B', C'.	21. A forester, 80 feet from the base of a tree, observes that the angle between the ground and the top of the tree is 60°. Find the height of the tree.
9. For a circle of radius 8 feet, find the arc length s subtended by a central angle of 31º.	22. Write the ratio of vowels to consonants in the word MATHEMATICS.
10. The area of a trapezoid is 140 in^2. If the height is 8 inches and the longer base 24 inches, what is the length of the shorter base? Round your answer to the nearest tenth.	23. If a circle has a radius of 8 inches, what is the circumference rounded to the nearest whole number? (Use π = 3.14)
11. A line which intersects a circle at exactly two points is called….	24. Use your calculator to determine tan 53º
12. Find the missing angle and side measures of ΔABC, given that $\angle A = 30°$, $\angle C = 90°$ and CB = 10.	25. Inside a semicircular tunnel of diameter 30 feet, a vertical support beam is placed 8 feet from the side of the tunnel. How tall is the beam? (Round to one decimal place)
13. Define a prism.	26. Find the area of an equilateral triangle with a side of 7.

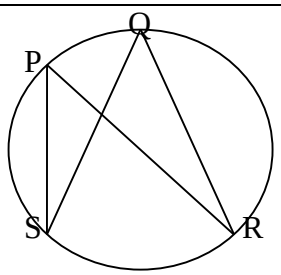
27. Solve for x to the nearest degree.



36. Given: measure of arc SQ = 80º, measure of arc PR = 152º, then $m\angle x = ?$

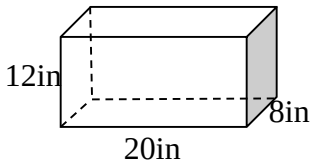


(Not drawn to scale)

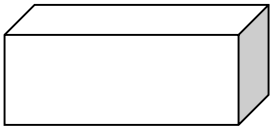


28. Find $m\angle PSQ$ if $m\angle PSQ = 3y + 4$ and $m\angle PRQ = 2y + 16$

37. If all the angles in the faces of the polyhedron below are right angles, then its surface area is…

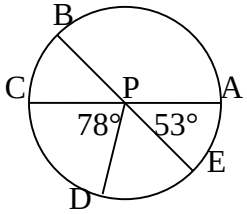


29. Find the number of faces, edges and vertices of:

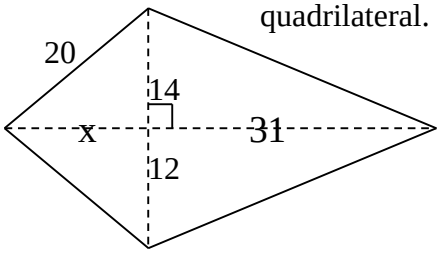


30. A segment whose endpoints are on the circle is ?

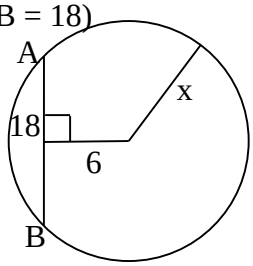
38. The measure of arc ADB is….



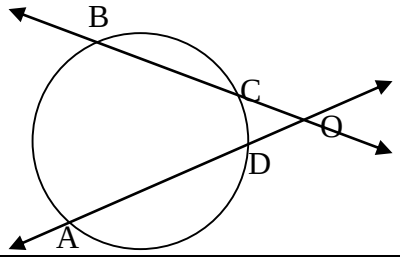
31. Find the area of the quadrilateral.



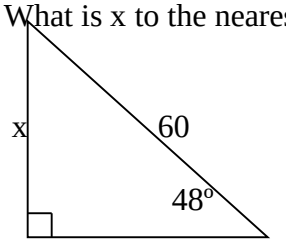
39. Find the value of x to the nearest tenth. (AB = 18)



32. Given: measure of arc AB = 92º, measure of arc CD=28º, then $m\angle DOC$ is?

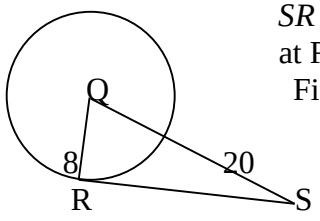


40. What is x to the nearest hundredth?



33. What is the segment that goes through center of circle and touches circle circumference twice?

41.



$\overline{SR}$ is tangent to circle Q at R.
Find RS. (QS = 20)
(QR = 8

34. Solve for x: $\frac{5}{x+2} = \frac{2}{x}$

35. (a) Find the exact total surface area of a cone that has a slant height of 25 in and radius of 6 in.
(b) Find the height of the cone.
(c) Find the volume of the cone.

42. What's the ratios of the lengths of sides of
(a) 30º-60º-90ºΔ? (b) 45º-45º-90º Δ?

43. (A) A circle is ***circumscribed*** about a polygon if:
(B) Draw an example of common internal tangents and common external tangents of 2 circles.

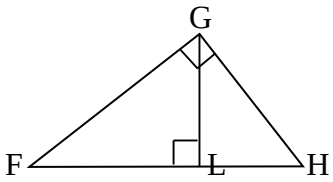
44. Draw:
(A) a regular polyhedron
(B) a non-convex polyhedron
(C) a polygon

45. Give two angles co-terminal with 250°

46. Convert 145° to radians and leave answer in terms of π.

47. A student is trying to work out the height of the music teacher. He is 15 feet away from the teacher and the angle of elevation from his feet to the top of teacher's head is 22°. How tall is the teacher in feet and inches?

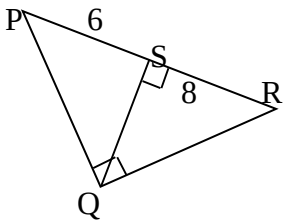
48. In the figure below, an altitude is drawn to the hypotenuse of a right triangle. Which of the following is not true?



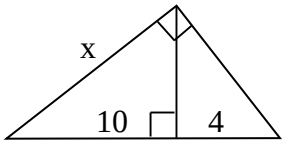
(A) $\Delta FLG \sim \Delta GHL$ (B) $\Delta GLH \sim \Delta FGH$
(C) $\Delta FGH \sim \Delta FLG$ (D) $\Delta GLH \sim \Delta FLG$

49. Find the equation of the circle with center (-3, 5) and (2, -4) is a point on the circle.

50. Given: PS = 6, SR = 8, then the value of QS is….



51. Find the value of x.

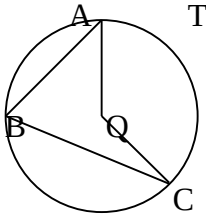


52. If $a = 3, c = 4, \beta = 40°$, then find side b.

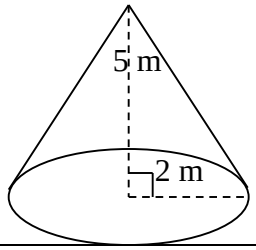
53. An automobile has 15-inch diameter wheels. If the wheels revolved four times after the brakes were applied, the stopping distance was approximately…

54. Write down all the ways that 2 triangles can be similar.

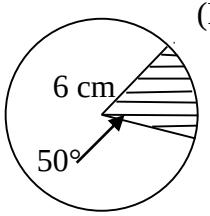
55. Given circle center Q and $m\angle B = 72°$. Then the measure of arc AC is…



56. Calculate the volume of the cone. Use $\pi = 3.14$.



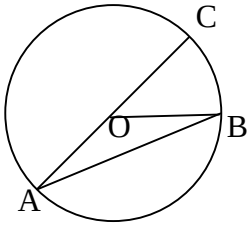
57. Find the area of the shaded region. (Radius = 6 cm and central angle = 50°)



58. A field is 150 m by 450 m. A barn 30 m by 41 m is built in the field. How much area is left over?

59. Draw the graphs of (a) y = cos x
(b) y = sin x
(c) y = tan x

60. Given: In circle O, measure of arc BAC = 290º. Find $m\angle A$

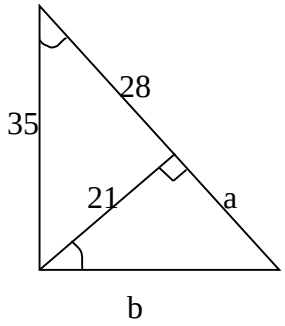


61. An aquarium in a restaurant is a rectangular prism and measures 2.5 feet by 5 feet by 3 feet. What is the volume of the aquarium?

62. Assume that $\angle A$ is an acute angle and sin A = 0.13. The $m\angle A$ = ?

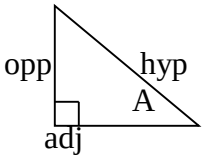
63. Find the surface area, in square centimeters, of a right circular cylinder if the radius is 4 cm and the height is 10 cm.

64. Solve for a and b.



65. Write down the definition of similar polygons.

66. The sine of $\angle A$ is the ratio:



67. Convert 1.45 radians to degrees.

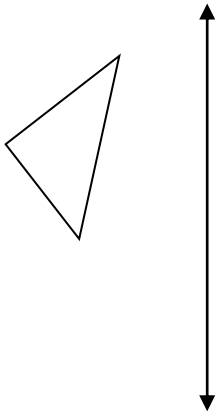
68. Find the volume of a sphere 6 ft in diameter.

69. Solve the triangle if $a = 5, b = 6, C = 39°$

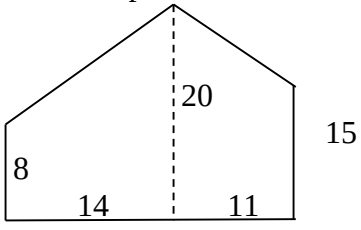
70. Define concentric circles.

71. $(-3,4)$ is a point on the terminal side of θ. Find the exact values of $\cos\theta$.

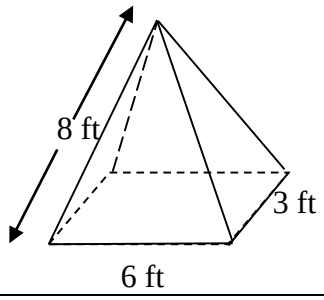
72. Reflect the triangle in the line



73. Find the area of the region shown by dividing it into two trapezoids.



74. The pyramid shown has a rectangular base and faces that are isosceles triangles. Find the total surface area. (Not drawn to scale)



75. Draw a quadrilateral with:
(a) Exactly one line of symmetry.
(b) Exactly two lines of symmetry.
(c) Exactly four lines of symmetry.

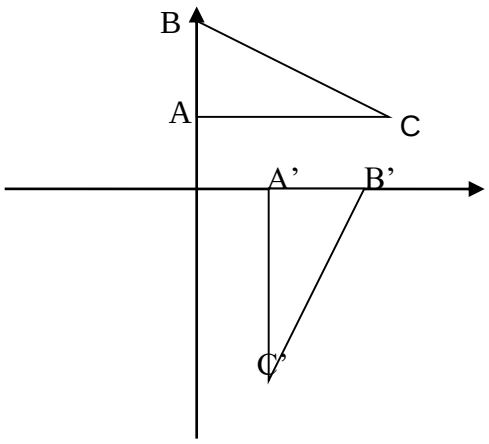
76. Find the exact value of $\cos 150°$.

77. Solve the following system:
$x = 2y + 5$
$3x - 4y = -20$

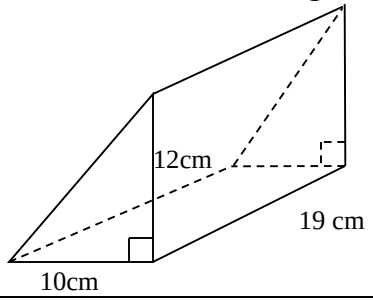
78. Find area of a sector with a radius of 4 and $\theta = 50°$. Leave the answer in terms of π.

79. Solve the triangle if $a = 5, B = 42°, C = 39°$

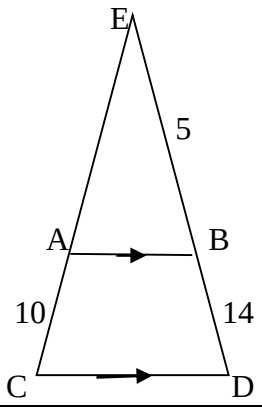
80. State the transformation of ABC.



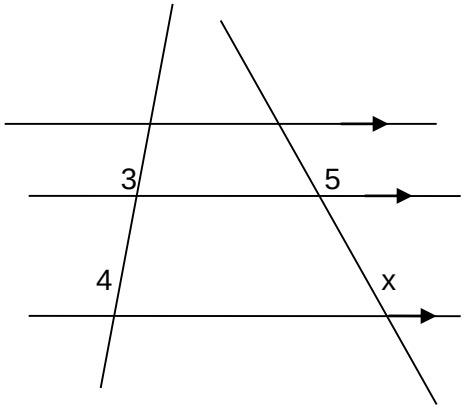
81. Find (a) the volume and
(b) the surface area of the triangular prism.



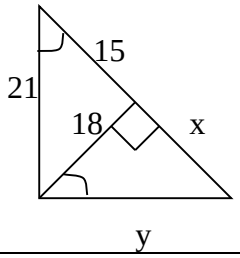
82. Find AE given that $\overline{AB}$ is parallel to $\overline{CD}$



91. Find x.



83. Solve for x and y.

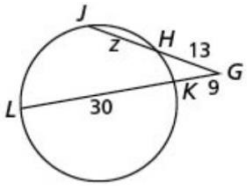


92. Plot the points A = (2, -1), B = (6, -1), C = (6, -3) and D = (2, -3).
(a) Reflect ABCD in the line y = 1.
(b) Rotate A'B'C'D' 90º counterclockwise about the origin.
(c) Translate A''B''C''D'' along the vector $\langle -5,2 \rangle$

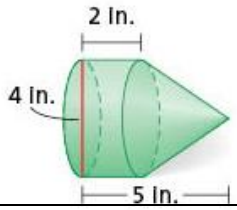
84. Find the geometric mean of 7 and 15.

93. Find the other leg of a right triangle, given one leg is 18 cm and the hypotenuse is 34 cm.

85. Find the value of z and the length of JG.



94. Find:
(a) the volume
(b) the surface area
of the composite figure.



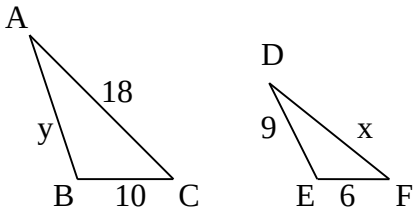
86. The point A(5, -2) is translated onto A' by the Vector $\vec{u} = \langle -6,7 \rangle$. The coordinates of A' are:

95. (a) Find the area of a regular octagon with side length 6 m. Round to the nearest tenth.
(b) Find the area of a regular hexagon with side length 10 cm. Round to the nearest tenth.

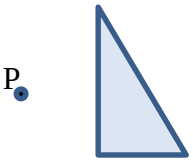
87. What are the angle of rotation and the order of rotational symmetry for the regular polygon?

96. According to a recent survey, 30 out of 40 geometry students like math. What's the ratio of those students that like math to total number of students?

88. Given: ΔABC is similar to ΔDEF.
Solve for x and y.



97. Perform a dilation with a scale factor of 2 given the triangle and the center of dilation *P*.



89. Find the volume of a regular square based pyramid with base side length of 8 cm and slant height of 5cm.

98. Triangle ABC is reflected in line x = 2 where A(3,2), B(2,4) and C(0,1). Find the coordinates of A', B', C'.

90. What is the effect on
(a) the volume and (b) the surface area
of a sphere if the radius is multiplied by 4?