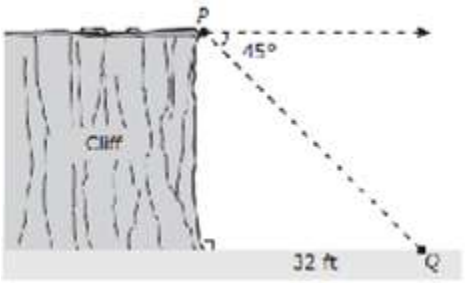
Geometry EOC Diagnostic Test 2013-2014

1) CD has an endpoint at (2, −1) and a midpoint at (8, 3). What is the measure of CD? Round to the 10^{th}.

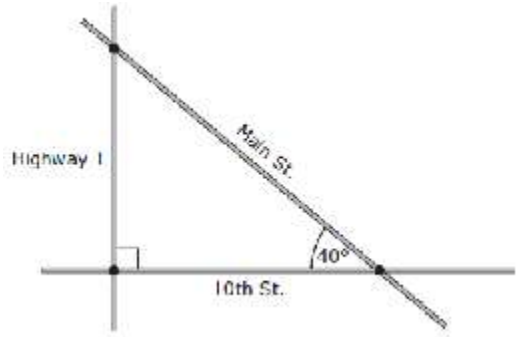
2) In the diagram below, the angle of depression from P to Q is 45°. What is the measure of PQ? Round to the 10^{th}.



3) Five spheres are being painted for a display at a store. If the diameter of each sphere is 7 centimeters, what is the total surface area that will be painted? Round to the nearest unit.

4) For triangles ΔABC and ΔDEF, <A Ξ<D and <BΞ<E. Based on this information, What can you say about <C and <F?

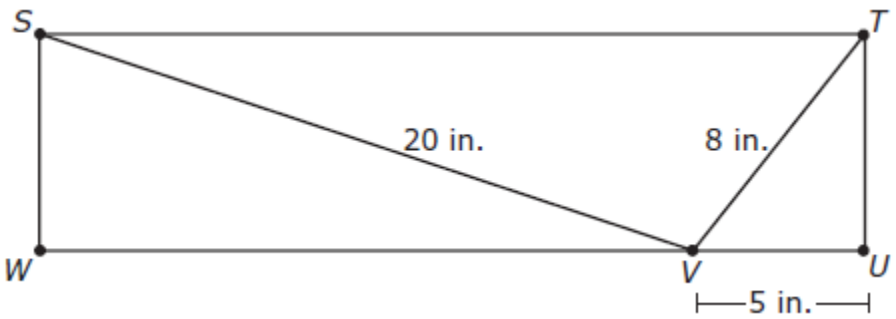
5) On the map below, Main Street, 10th Street, and Highway 1 intersect to form a right triangle. The distance between 10th Street and Main Street along Highway 1 is 5.6 mi. What is the measure to the length of Main Street from Highway 1 to 10th Street? Round to the 10^{th}.



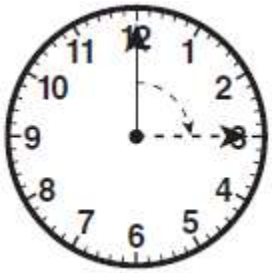
6) The side length of a smaller square is one-third the side length of a larger square. Given that the larger square has area equal to 225, what is the area of the smaller square?

7) Southern Memorial Park in North Miami Beach is bounded on the west by NE 16th Ave., on the east by NE 18th Ave., on the north by NE 157th Terrace, and on the south by NE 151st Street. All roads are straight and intersect in right angles. Diagonals across the park are congruent. What type of quadrilateral is Southern Memorial Park?

8) Rectangle STUW is shown below. What is ST?



9) The hand on the circular clock in the figure below measures 10 cm. What is the distance that the tip of the hand travels as it moves from the 12 to the 3? Round to the nearest unit.



10) Devon and Jamal both draw regular polygons. Devon's polygon has 14 sides. Jamal's polygon has 15 sides. Which statement is NOT true? Why is it NOT true?

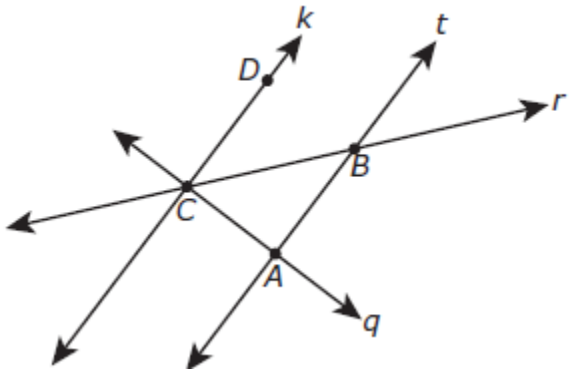
a. The measures of all the exterior angles of Devon's polygon are equal.

b. The sum of all the exterior angles of Devon's polygon equals the sum of all the exterior angles of Jamal's polygon.

c. The measure of one of the exterior angles of Jamal's polygon is greater than the measure of one of the exterior angles of Devon's polygon.

d. The measure of one of the exterior angles of Jamal's polygon plus the measure of the adjacent interior angle is 180°.

11) In the figure below, k||t and k is perpendicular to q. Based on this information, which statement is true?



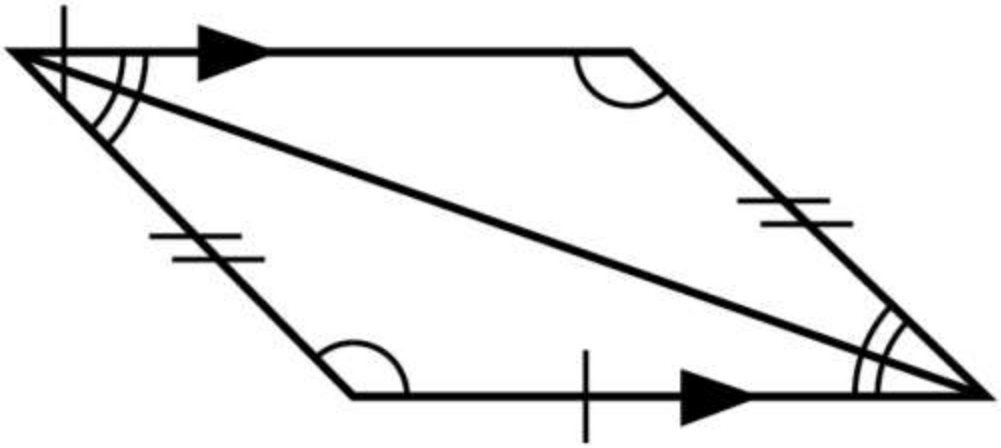
a. <ACB Ξ <ABC

b. CAB is an acute triangle.

c. <DCB Ξ <BCA

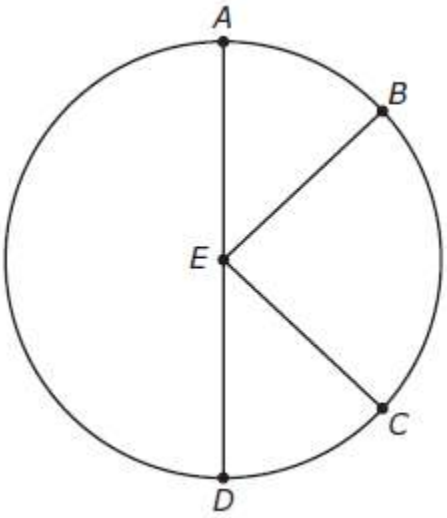
d. CAB is a right triangle.

12) Susie's teacher draws the quadrilateral shown below on the board. What three statements can be made to prove that the quadrilateral IS a parallelogram?



13) ΔABC has vertices at A(0, 0), B(9, 12), and C(25, 0). What is the distance between the midpoint of AB and the midpoint of AC?

14) In circle below, <AEB Ξ <CED. Name the arcs and the corresponding chords which must be congruent.



15) A 14-foot ladder is leaning against a house so that its top touches the top of the wall. The bottom of the ladder is 8 feet away from the wall. What is the height of the wall? Round to the 10^{th}

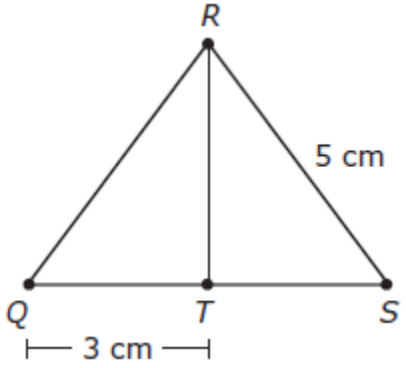
16) In QRS, is an altitude. Which additional condition would NOT be sufficient to prove that QR = SR?

a. T is the midpoint of QS.

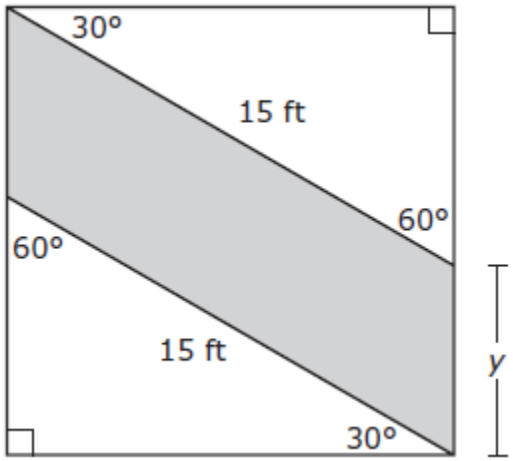
b. RT bisects <QRS.

c. TS = 2 cm

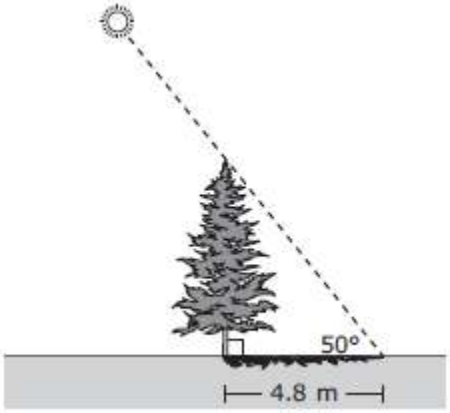
d. RT = 4 cm



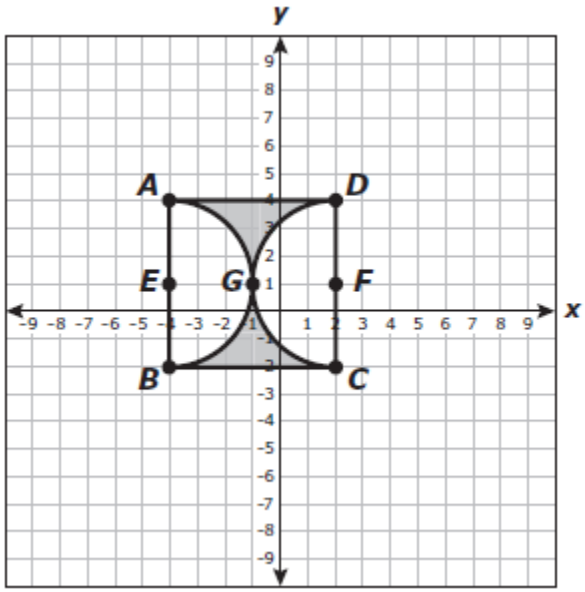
17) Within a square section of land, a landscaper will build a path, as represented by the shaded section in the diagram below. What is the value of y? Round to the 10th.



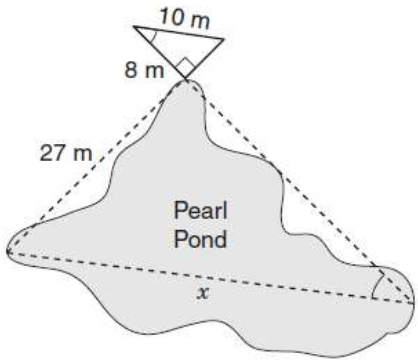
18) A tree's shadow is 4.8 m long on level ground, as shown in the diagram. The angle of elevation from the tip of the shadow to the sun is 50°. What is the height of the tree? Round to the 10th.



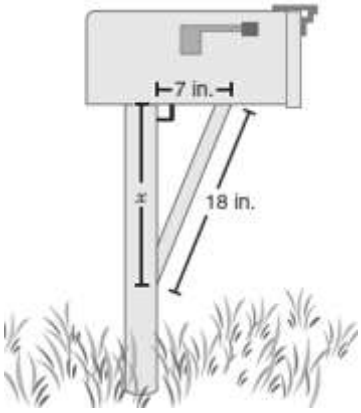
19) Points A, B, C, and D are the vertices of a square. Points E and F are the centers of two congruent semicircles that are tangent to each other at point G. What is the area of the shaded region? Round to the 10th.



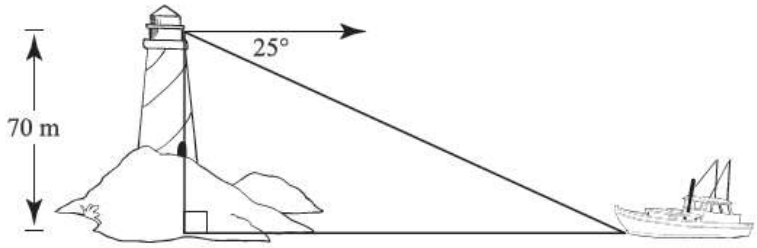
20) The drawing below can be used to find , the width of Pearl Pond at its widest point. What is the value of x?



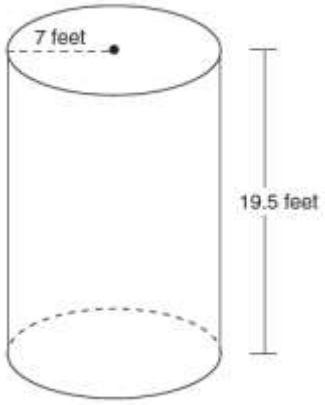
21) The drawing below shows Jeremy's mailbox and the brace he used to secure it to the post. If the length of the brace is approximately 18 inches, what is x, the distance between the bottom of the mailbox and the point on the post where Jeremy secured the brace? Round to the nearest unit.



22) From the observation deck of a lighthouse 70 meters above sea level, the lighthouse keeper can see a fishing boat at a 25-degree angle of depression. What is the horizontal distance, to the nearest meter, from the base of the lighthouse to the fishing boat?



23) Look at the cylinder shown below. What is the total surface area of this cylinder in terms of π?



24) Which of the following is true of all squares and all rectangles? Name all that are true.

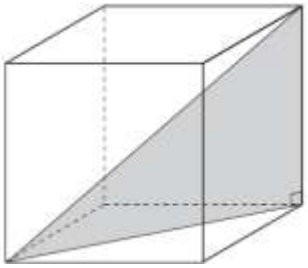
I. All squares and all rectangles are equilateral.

II. All squares and all rectangles are equiangular.

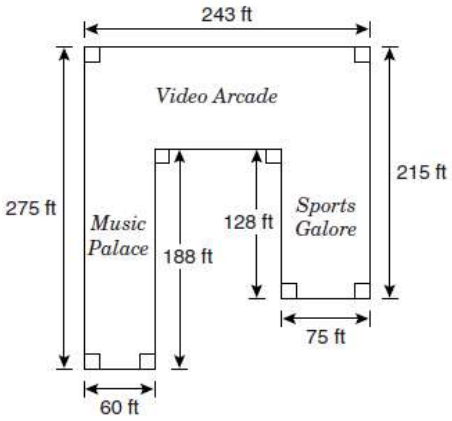
III. All rectangles are squares.

25) Mr. Franco is making a triangular cement slab and needs to set boards before he can pour the cement. He has already set two boards that are 5 feet and 8 feet in length. What is a reasonable range for the length of the third board that Mr. Franco could set for this triangular cement slab?

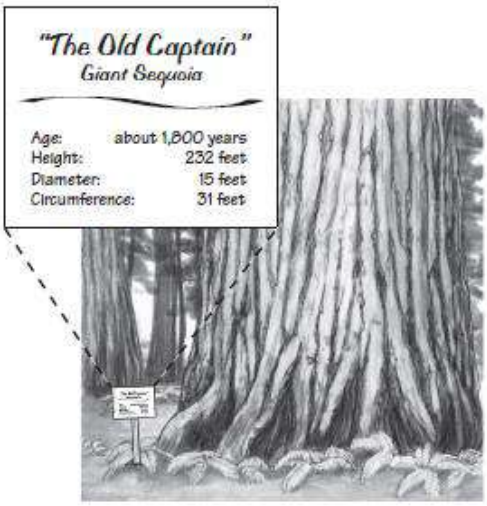
26) Matthew correctly constructed a model of a right triangle with the largest dimensions possible to fit in a cube, as shown in the figure below. If each side of the cube measures eight centimeters, what is the approximate length of the hypotenuse of this right triangle? Round the 100^{th}.



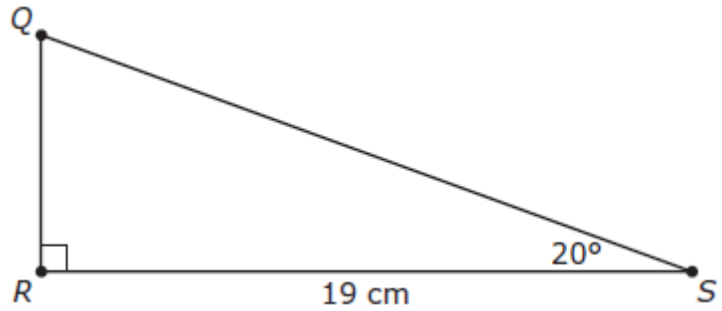
27) The dimensions of 3 connected stores are shown below. How many square feet of floor space are used by the 3 stores?



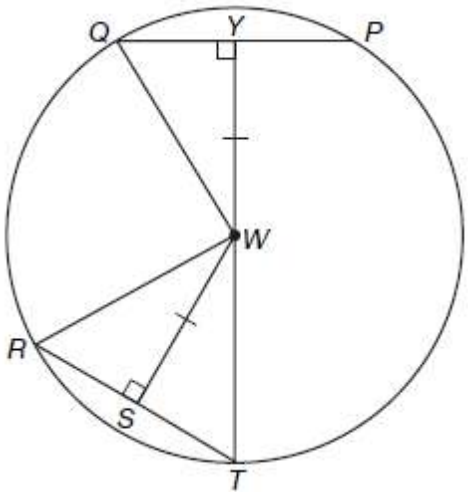
28) Lisa was on vacation in California and saw this sign next to a large tree in the forest. The sign gave the circumference as 31 feet, but the diameter as 15 feet. After a minute and without calculating the circumference, she concluded that the diameter was correct, but that the circumference was incorrect. What was her reasoning?



29) What is the length of QR in centimeters? Round to the 100th.

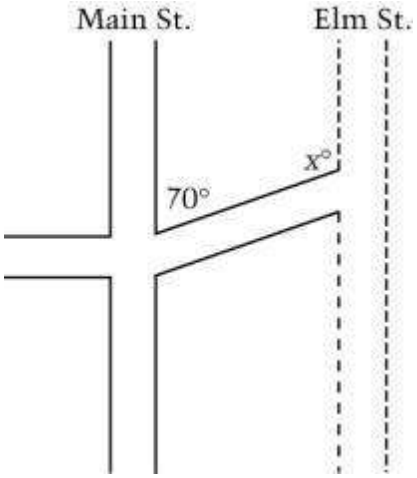


30) Points *P*, *Q*, *R*, and *T* all lie on circle *W*, as shown below. If circle W has an approximate area of 618 square centimeters and SW = 12 centimeters, what is the length of QP? Round to the nearest unit.



31) ΔXYZ has a right angle at point Y. Point W is between points X and Z. WY is perpendicular to XZ. Name the similar right triangles (all of them!).

32) In the figure below, Elm St. is to be constructed parallel to Main St. What is the value of x.



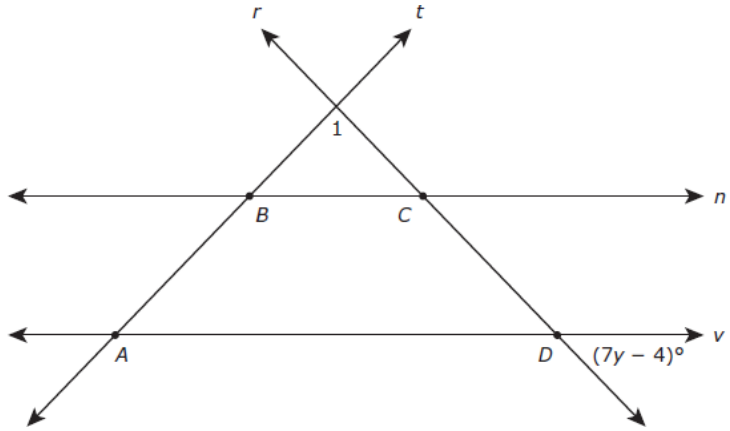
33) Name the number of faces, edges and vertices in a triangular prism.

34) Which type of polygon can never be equiangular? Why

a. Parallelogram
b. obtuse triangle
c. pentagon
d. equilateral octagon

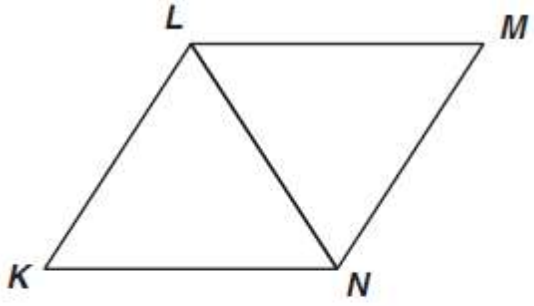
35) The top of a bench has a length of 5 ft. and a width of 2 ft. A second bench is similar to the first bench. The top of the second bench is 3 ft. wide. What is the length of the top of the second bench?

36) Lines r, t, n, and v intersect as shown to form isosceles trapezoid ABCD. Find measure of <1 given y=5?



37) In quadrilateral ABCD, AB||CD and <A ≡ <B and AB ≠ CD. What is the quadrilateral? Draw the picture!

38) Study the figure below. Which theorem can be used to prove that ΔKLN ≅ ΔMNL?



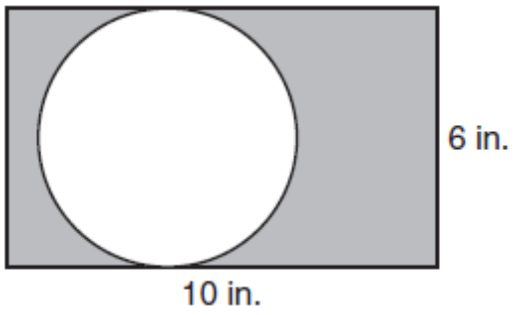
$\angle K \cong \angle M$

$\overline{LM} \parallel \overline{KN}$

39) The area of a larger square is 16 times the area of a smaller square. How many times as long is the base of the larger square than the base of the smaller square?

40) What is the difference between the sum of the measures of the interior angles of a regular pentagon and the sum of the measures of the exterior angles of a regular pentagon?

41) The figure below is a circle inside a rectangle. What is the area, to the nearest square inch, of the shaded region of the figure?

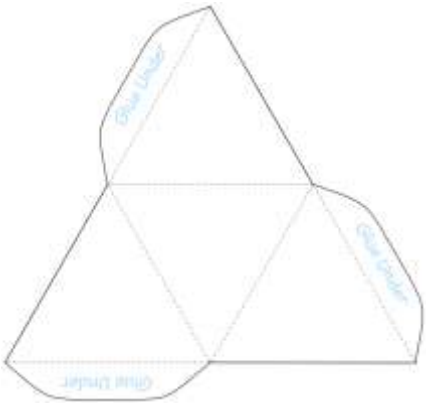


42) What is an equation of the circle with center (-5,4) and a radius of 7?

43) The measure of an interior angle of a regular polygon is 120°. How many sides does the polygon have?

44) Triangle ABC is similar to triangle DEF. The lengths of the sides of ABC are 5, 8, and 11. What is the length of the shortest side of DEF if its perimeter is 60?

45) What polyhedra can be formed by folding the net pictured below?



46) Kristen is designing a triangular ramp so she can practice jumps with her bike. She has three pieces of wood. Which could be the possible measurements of these three pieces?

a. 2 feet, 5 feet, 9 feet

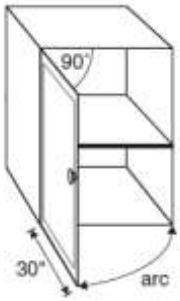
b. 3 feet, 4 feet, 8 feet

c. 3 feet, 6 feet, 8 feet

d. 4 feet, 5 feet, 9 feet

47) Sarah is watching a monitor that shows the locations of ships in the ocean. These locations are displayed on a coordinate grid. To avoid collisions, a safety zone with a radius of 4 units is kept around each ship. Sarah notices one ship at point (-2, 3). Which equation represents the edge of the safety zone for this ship?

48) The door of the cabinet shown below can open to a maximum angle of 90°. What is the length of the arc through which the door swings?



49) A circle's center is at (2, –3), and one point on the circle is (3, 5). What is the equation of the circle?

50) What property is true for a rhombus, but not true for a rectangle? Hint: DRAW the figures!

a. Opposite angles are congruent.

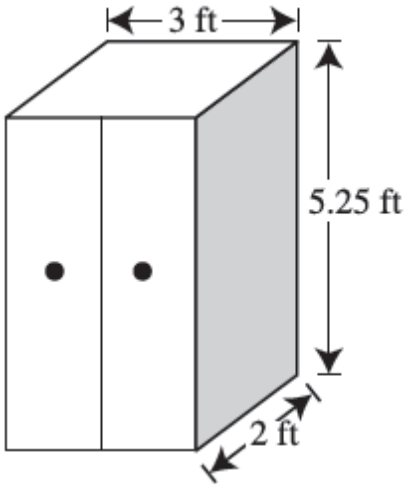
b. Opposite angles are supplementary.

c. Diagonals are congruent.

d. Diagonals are perpendicular.

51) The diameter of a sphere is 30 centimeters. What is the surface area of the sphere? Round to the nearest unit.

52) The storage cabinet shown below is in the shape of a rectangular solid. All six faces of the storage cabinet are to be painted. What is the surface area of the storage cabinet to the nearest hundredth of a square foot?



53) Which statement is logically equivalent to *"if the juice spilled on the chair, then there is a stain on the chair*?"

a. If there is not a stain on the chair, then the juice did not spill on the chair.

b. If the juice did not spill on the chair, then there is not a stain on the chair.

c. The juice spilled on the chair if and only if there is a stain on the chair.

d. If there is a stain on the chair, then the juice spilled on the chair.

54) What is the inverse of the following statement? *"If you do your homework, then you will play a game."*

55) What is the contrapositive of the following statement? *"If Alex gets at least a B on the final test, then he will pass the class."*

56) Write the converse of the following statement. *If two angles are vertical, then they are congruent.*

57) Quadrilateral JKLM has vertices J(-4, -1), K(-1, 2), and L(6, 2). For what coordinates of point M is JKLM a parallelogram?

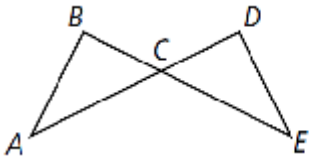
58) Circus elephants perform tricks on crates with sides that form quadrilaterals. In order to maximize the amount of weight that the crate can hold, the quadrilaterals must meet the requirements listed below. What kind of quadrilateral should the circus owner order?

i. Exactly one pair of opposite sides should be parallel.

ii. The base angles must be equal.

iii. The sides that are not parallel must be equal to each other.

59) Give the missing reason to complete the following proof.



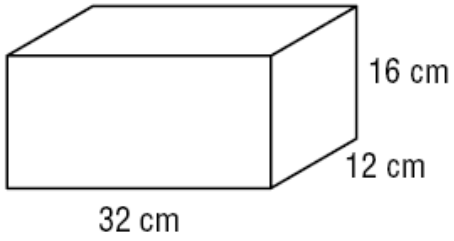
Given: $AC \cong EC$

$\overline{BC} \cong \overline{DC}$

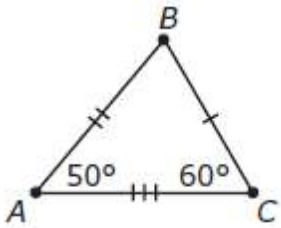
Prove: $\angle A \cong \angle E$

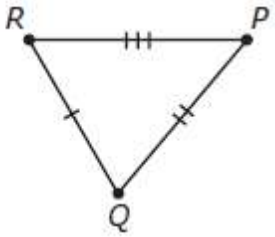
Statements	Reasons
$AC \cong EC$	1. Given
$BC \cong DC$	2. Given
$\angle BCA \cong \angle DCE$	_____
$\triangle ABC \cong \triangle EDC$	4. SAS Postulate
$\angle A \cong \angle E$	5. C.P.C.T.C.

60) The rectangular prism below has a surface area of 2,176 square centimeters. A similar rectangular prism has a surface area of 544 square centimeters. How many centimeters long is the longest edge of the similar prism?

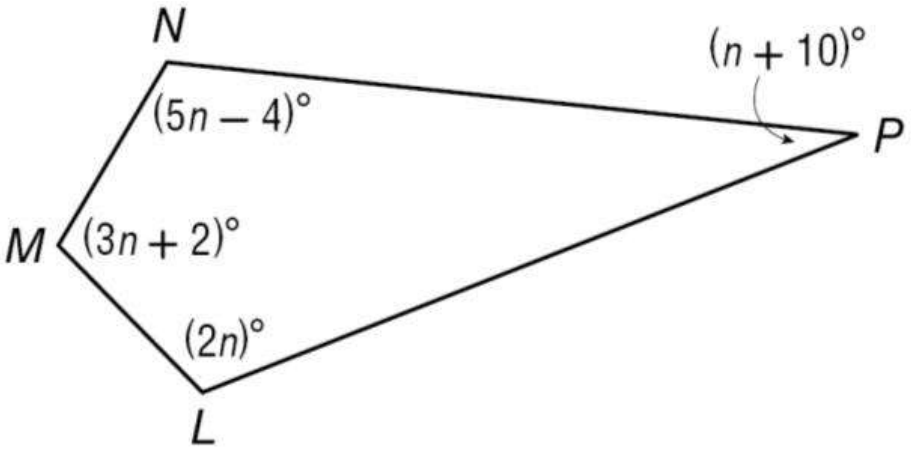


61) ABC andPQR are shown in the diagram below. Based on the information provided in the diagram, what is in degrees?

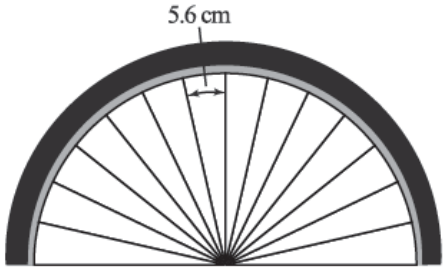




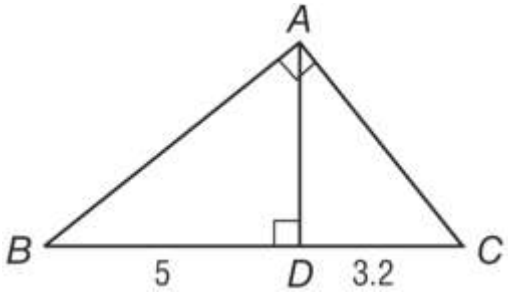
62) What is the m<M in quadrilateral LMNP?



63) A wheel is being made with spokes that are 25 cm long, as shown in the figure below. The spokes meet at the center of the wheel and will be separated so that there is 5.6 cm along the curved part of the wheel between any two ends of a spoke. What is the central angle between any two consecutive spokes? Round your answer to the nearest degree. Measurement between spokes is 5.6 cm.



64) In right triangle,AD is an altitude of the triangle that cuts hypotenuse BC into two segments with lengths as shown. What is the height of triangle?



65) A banner is composed of two congruent triangles and a rectangle, as shown below. What is the total area of the banner in square centimeters?