Geometry Semester 2 Review Part 2

1. **Which of the following would lead to the distance between the center of a circle and chord in the circle.**

   A. The perpendicular bisector of a chord will always intersect the center of a circle. Therefore, the distance to the center of the circle can be represented as the length of a line segment forming a right triangle with the radius as hypotenuse and a side of length six cm as one of the legs. We can solve for the distance to the center using the Pythagorean Theorem.

   B. We form a right triangle by connecting the endpoint of the chord with the center of the circle. Thus we are able to find the area of the triangle by finding the product of one-half and the legs of the right triangle. This area is constant for the triangle, so we are able to set up the area formula using the hypotenuse of 12 cm as the base and the distance between the chord and the center of the circle as the height. We can find the distance by using inverse operations to solve for the height of the triangle

   C. If we construct another radius originating at the endpoint of the chord, it forms a triangle inscribed in a semicircle. The triangle must be right because an inscribed angle is half the measure of the intercepted arc. We can use the Pythagorean Theorem to find the missing side length. The triangle is similar to a right triangle with the radius as hypotenuse and the distance between the chord and the center of the circle as one of the legs. Thus we can use a proportion to find the missing distance.

   D. Drawing a line segment connecting the endpoint of the chord to the center of the circle forms an isosceles triangle because all radii are congruent. The altitude of an isosceles is also a median, therefore two right triangles are formed. We are able to solve for the height of the isosceles triangle, and therefore the distance between the chord and the center of the circle, using the Pythagorean Theorem.

2. **Identify the center and radius of the following:**

   a) $(x-6)^2+(y-14)^2=64$

   b) $x^2+(y+17)^2=20$

   c) $x^2+4x+y^2-10y=11$

3. **Identify the vertex, focus and directrix (write an equation of the line for the directrix)**

   a) $48(y-5)=(x+13)^2$

   b) $y+45=\frac{1}{2}(x+11)^2$

   c) $-2(y+4)=(x-20)^2$

   d) $(y+9)=-\frac{1}{64}(x-21)^2$

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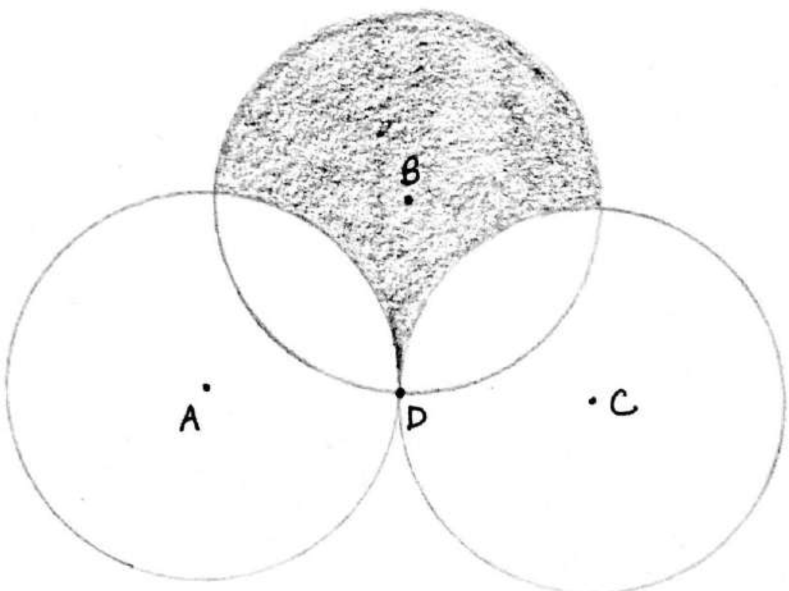
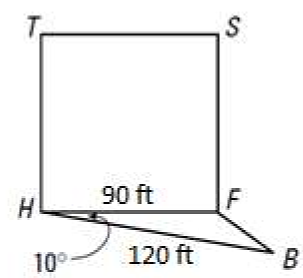
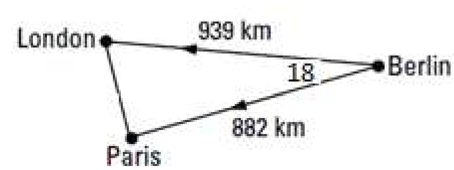
4. Find the area of the shaded region given circles A, B, and C are congruent with radius 6 cm and circles A and C are externally tangent at point D.



5. A baseball infield is determined by a square with sides 90 ft long. In the diagram, home plate is *H* and first base is *F*. Suppose the first baseman ran in a straight line from *F* to catch a pop-up at *B*, 120 ft from home plate. If the measure of ∠*FHB* is 10°, how far did the first baseman run?

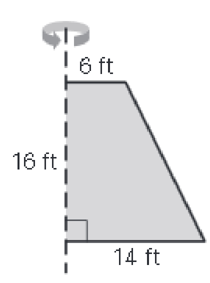


6. Two airplanes leave Berlin, one heading straight for London and the other straight for Paris. The angle formed is 18 degrees. Estimate the distance from London to Paris. (use trig)



7. If two solids are similar with a scale factor of 6.3, how many times larger is the surface area of the larger solid? How many times larger is the volume?

8. Consider a trapezoid rotated 360° about one of its sides as shown at the right. What solid is formed? What is its volume?



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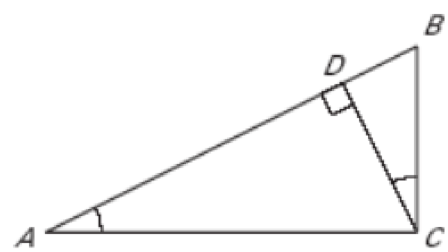
9. Find the angular and tangential velocity for each of the following:

A Ferris wheel with a 50-foot radius makes 1.5 revolutions per minute. Find the angular and linear speed of the Ferris wheel. Round your answers to one decimal place.

A car is traveling at a rate of 55 miles per hour, and the diameter of its wheels is 2.5 feet. Find the number of revolutions per minute the wheels are rotating. Find the angular speed of the wheels. Round your answers to one decimal place.

10. Given $\angle BCA$ is a right angle:

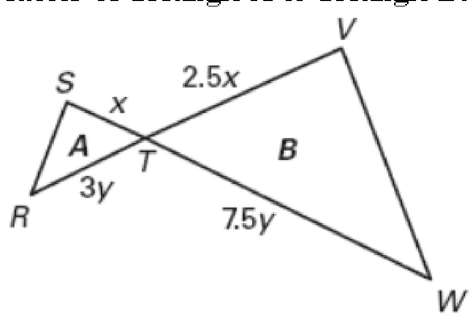


1. **PROVE:** $\Delta ABC \sim \Delta ACD$
2. **PROVE:** $\Delta ABC \sim \Delta CBD$
3. **PROVE:** $\Delta ACD \sim \Delta CBD$

11.

Show that the triangles are similar and write a similarity statement. Then find the scale factor of Triangle A to Triangle B.

4.



12. Do you know your properties of angles and segments in circles; are they memorized??
Do you have the trig formulas memorized??? SohCahToa, Law of Sines, Law of Cosines
Do you have your area, volume formulas memorized??

Work on memorizing what you do not already have memorized!!