Geometry II | Test #3 | Name:_____
Brewer | 28 April 2016

Part I – Match the expression on the left with the expression on the right that best matches it. Print the letters neatly next to each number. If I can't tell what letter you wrote, it will be marked incorrect.

1. _____ Median
2. _____ $30° - 60°$ right triangle
3. _____ Secant
4. _____ Arc Addition Postulate
5. _____ Apothem
6. _____ Circumference of a circle
7. _____ Isosceles right triangle
8. _____ Area of a circle
9. _____ Chord
10. _____ Regular polygon
11. _____ Perimeter of a regular n-gon
12. _____ Area of a regular n-gon

A. A perpendicular line segment from the center of a circle to one of its sides.
B. $2\pi r$
C. $nr^2 \sin\frac{180}{n}\cos\frac{180}{n}$
D. Triangle whose hypotenuse is twice the shorter leg and whose longer leg is $\sqrt{3}$ times the shorter leg.
E. A line segment that joins a vertex of a polygon to the midpoint of its opposite side.
F. $2nr \sin\frac{180}{n}$
G. A line segment that connects two points of a circle.
H. A line that intersects a circle in two points.
I. A convex polygon that is both equilateral and equiangular.
J. If C is on $\widehat{AB}$, then $m\widehat{AC} + m\widehat{CB} = m\widehat{ACB}$
K. πr^2
L. Triangle whose hypotenuse is $\sqrt{2}$ times the length of a leg.

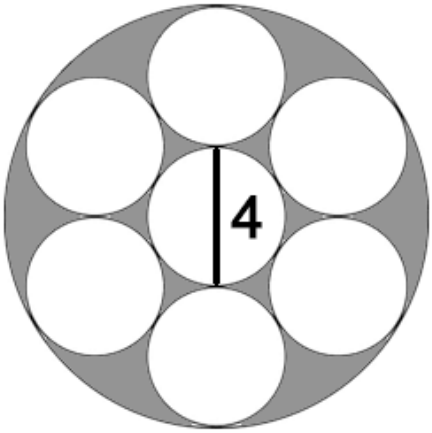
Part II – Match the description on the left with the point of concurrence it produces on the right. Print the letters neatly next to each number. If I can't tell what letter you wrote, it will be marked incorrect.

13. _____ The point at which the lines containing the altitudes of a triangle are concurrent
14. _____ The point at which the perpendicular bisectors of the sides of a triangle are concurrent
15. _____ The point at which the medians of a triangle, or line segments joining each vertex to the midpoint of the opposite side, are concurrent
16. _____ The point at which the angles bisectors of a triangle are concurrent

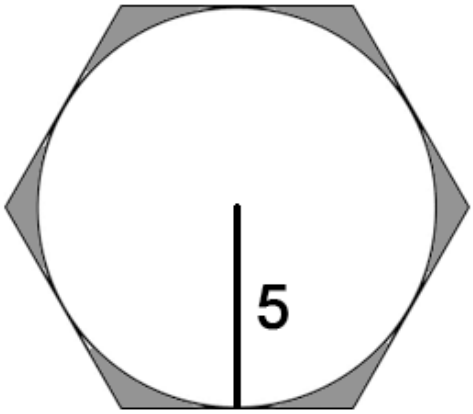
A. Center of the incircle, or a circle inscribed within the triangle
B. Centroid, or center of mass
C. Orthocenter
D. Center of a circle circumscribed about the triangle

Part III – Find the area of the shaded region. Round to the nearest tenth. Please show all of your work and circle or box your final answer.

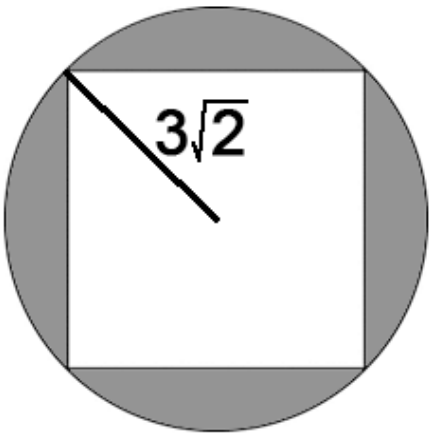
17. Seven smaller circles packed into a larger circle. The diameter of the small circle is 4.



18. Circle inscribed within a regular hexagon. The radius of the circle is 5.

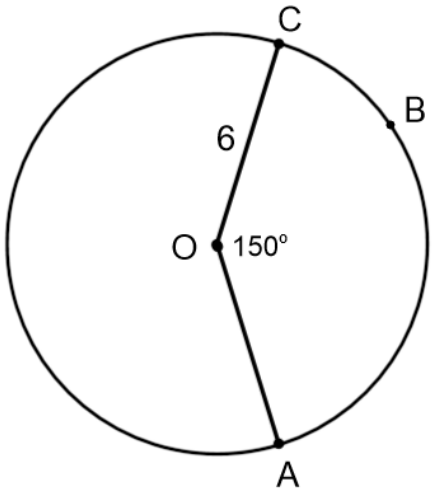


19. Square inscribed in a circle. The radius of the circle is $3\sqrt{2}$.



Part IV – Find the requested measurements. Round to the nearest tenth. Please show all of your work and circle or box your final answer.

For the circle with central angle AOC measuring $150°$ and radius 6, determine



20. The area of sector ABC

21. The length of arc $\widehat{ABC}$