

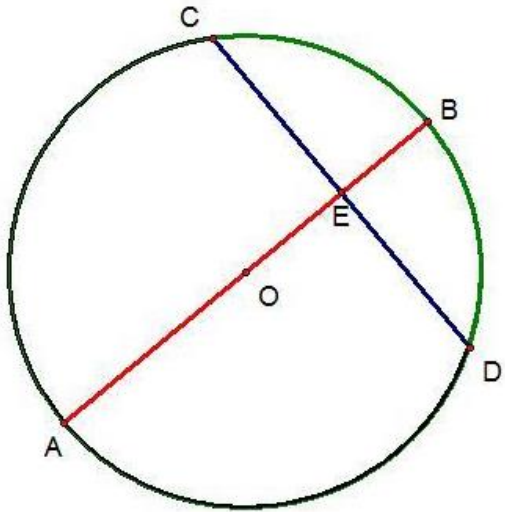
Part I – Match the expression on the left with the expression on the right that best matches it. Print the letters neatly next to each number. If I can't tell what letter you wrote, it will be marked incorrect.

- | | |
|--|---|
| 1. ____ Central angle | A. A line segment that connects the center of a circle to any point on it. |
| 2. ____ $30^\circ - 60^\circ$ right triangle | B. A line segment that connects two points of a circle. |
| 3. ____ Secant | C. A line in the plane of a circle that intersects it in exactly one point. |
| 4. ____ Arc Addition Postulate | D. An angle whose vertex is the center of a circle. |
| 5. ____ Radius | E. An angle whose vertex is on a circle, with each of the angle's sides intersecting the circle in another point. |
| 6. ____ Inscribed angle | F. A line that intersects a circle in two points. |
| 7. ____ Isosceles right triangle | G. If A-B-C, then $AB+BC=AC$ |
| 8. ____ Tangent | H. If C is on \widehat{AB} , then $m\widehat{AC} + m\widehat{CB} = m\widehat{ACB}$ |
| 9. ____ Chord | I. Triangle whose hypotenuse is twice the shorter leg and whose longer leg is $\sqrt{3}$ times the shorter leg. |
| 10. ____ Betweenness of Points Theorem | J. Triangle whose hypotenuse is $\sqrt{2}$ times the length of a leg. |

Part II – Fill in the blank with the appropriate verbal or mathematical expression to complete the given postulate, theorem, or corollary.

- In a circle, equal chords have _____ arcs.
- Inscribed angles that intersect the same arc are _____.
- The _____ to the hypotenuse of a right triangle is the geometric mean between the segments into which it divides the hypotenuse.
- The tangent segments to a circle from an external point are _____.
- If a line is _____ to a radius at its outer endpoint, it is tangent to the circle.
- If a line through the center of a circle is perpendicular to a chord, it also _____ the chord.
- An angle inscribed in a _____ is a right angle.
- A secant angle whose vertex is _____ a circle is equal in measure to half the sum of the arcs intercepted by it and its vertical angle.
- A secant angle whose vertex is _____ a circle is equal in measure to half the difference of its larger and smaller intercepted arcs.
- Each leg of a right triangle is the _____ between the hypotenuse and its projection on the hypotenuse.

Part III – Fill in the missing statements and/or reasons in the following proof.



Given: Circle O with diameter AB ;
chord CD perpendicular to AB .

To show: AB bisects CD

Proof:

Statements:

21. $\angle OEC$ and $\angle OED$ are right angles.

Reasons:

22. Draw OC and OD .

23. _____

All radii are equal.

24. $OE = OE$

25. $\triangle OEC = \triangle OED$

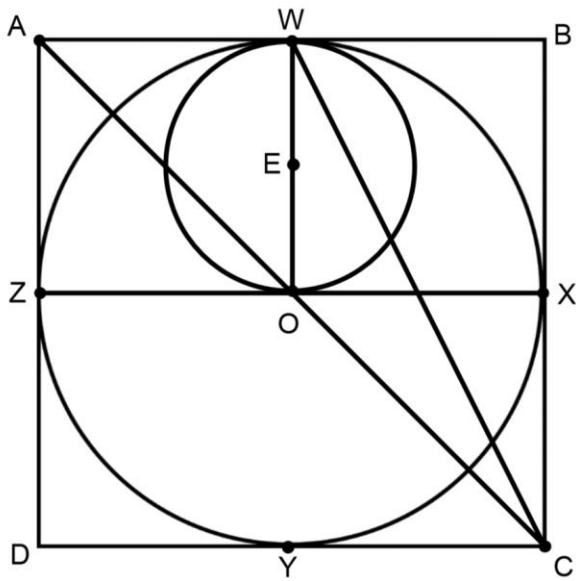
26. $CE = DE$

27. _____

If a line divides a line segment into two equal parts, it bisects it.

Part IV – Find the requested segment lengths and angle measures.

Given circle O inscribed in square ABCD, and circle E with radius $EO=5$, tangent to diameter ZX at point O and concurrent with circle O and square ABCD at point W, determine the following:

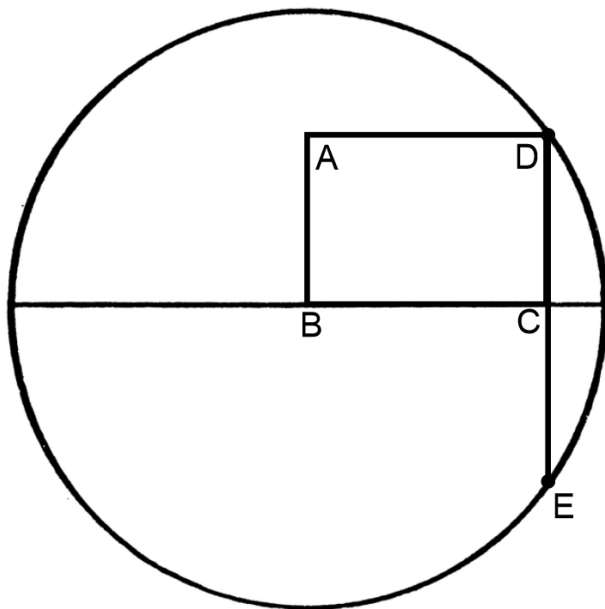


28. The length of diameter ZX

29. The length of segment WC

30. The length of diagonal AC

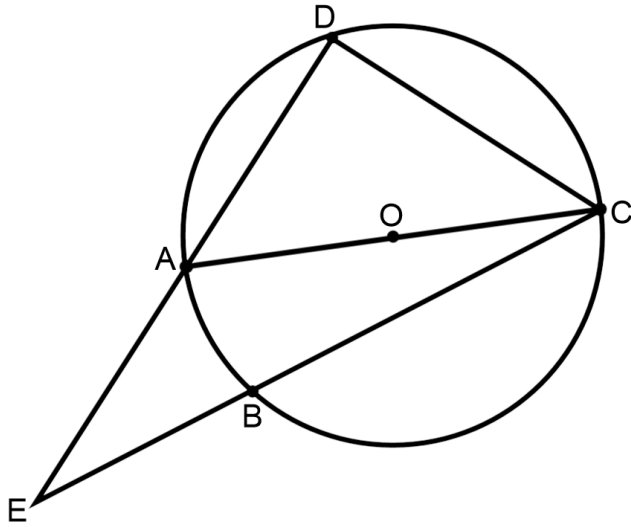
Given circle B with radius 5 and rectangle ABCD with width $BC=4$, determine:



31. The height AB of rectangle ABCD

32. The length of chord DE

Given circle O with diameter AC, triangle CDE with chord CD=5, and arc measures as follows: $m\widehat{BC} = 140^\circ$, $m\widehat{CD} = 100^\circ$, and $m\widehat{DA} = 80^\circ$, determine:



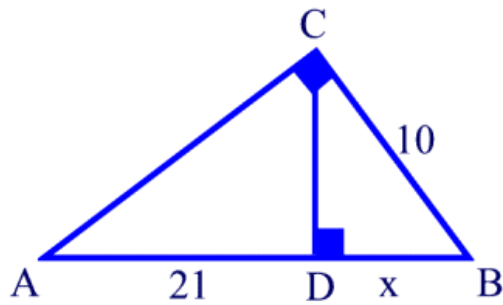
33. $m\widehat{AB}$

34. $\angle AEB$

35. $\angle ADC$

36. The length of secant CE.

Given right triangle ABC with altitude CD, with AD=21 and CB=10, determine:



37. $DB =$

38. $CD =$