## PARTS OF A CIRCLE

EQ. What is a circle and how do we identify points, segments and lines that are related to a circle?
$>$ A circle is a set of points in a plane that have an equal distance from a given point.
Read each of the questions below. How can you respond to the questions using one of the mentioned circle parts and the given visual?
$>$ The center of a circle is a point that has an equal
distance from each point on the circle. Which mentioned part is the center?
$>$ Aradius of a circle is a segment between the center and a point on the circle. Which mentioned part is a
radius? $A \bar{B}, \overline{A C}, \overline{A D}$
$>$ A diameter of a circle is a segment between two points on the circle whose midpoint is the center. Which mentioned part is a diameter? $\overline{C B}$
$>$ A Chord of a circle is a segment between two points on the circle. Which mentioned part is a non-diameter chord? EF
$>$ A tangen ${ }^{2}$ of a circle is a line that touches or intersects the circle at exactly one point. Which mentioned part is tangent? $\leftrightarrows$

$>$ A Secant of a circle is a line that touches or intersects the circle at exactly two points. Which mentioned part is
secant?
$\rightarrow$ Apoint of tangency of a circle is the point of intersection of a tangent. Which mentioned part is a point of tangency? I

How many radii make up a diameter? 2 How much of the diameter makes up a radius? $\frac{1}{2}$

From \#2, segment AD is the mentioned radius. What are two other radii shown on the circle? $\overline{A C}, \overline{A B}$
From \#4, segment EF is the mentioned non-diameter chord. What is another non-chord shown on the circle?

| TANGENT PROPERTY |  | Pythagorean Theorem |
| :--- | :---: | :---: |
|  | On OT, draw radius TN. <br> The tangent line is <br> perpendiculart the radius <br> drawn to the tangent <br> point. | $a^{2}+b^{2}=c^{2}$ |

\#1-6, $\checkmark$ whether the line or segment is best described as a radius, diameter, chord, secant or tangent.

|  | Radius | Diameter | Chord | Secant | Tangent |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{A D}$ |  |  |  |  |  |
| 2 | $\mathbf{C D}$ | $\checkmark$ |  |  |  |
| 3 | $\overleftrightarrow{\mathrm{EG}}$ |  |  |  |  |
| 4 | $\mathbf{H B}$ |  |  |  |  |
| 5 | $\overleftrightarrow{\mathbf{H B}}$ |  |  |  |  |
| 6 | $\overleftrightarrow{\mathrm{AD}}$ |  |  |  |  |

For \#7-12, $\checkmark$ whether the line or segment is best described as a radius, diameter, chord, secant or tangent.

| 7 | $\overleftrightarrow{A E}$ | Radius | Diameter | Chord | Secant | Tangent |
| ---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 7 |  |  |  | $\checkmark$ |  |  |
| 8 | $\overleftrightarrow{\mathbf{B D}}$ |  |  |  |  |  |
| 9 | $\mathbf{A B}$ |  |  |  |  |  |
| 10 | $\overleftrightarrow{\mathrm{AB}}$ |  |  |  |  |  |
| 11 | $\mathbf{E A}$ |  |  |  |  |  |
| 12 | $\mathbf{B C}$ |  |  |  |  |  |

For \#13-16, write whether $\overleftrightarrow{A B}$ is tangent to $O O$ or not. Show work.

13

$\overleftrightarrow{\mathbf{A B}}$ (is. is not \} tangent to ๑०.

$\overleftrightarrow{A B}\{$ is, i not tangent to ©O

$\overleftrightarrow{A B}\{$ is, iquot $\}$ tangent to ©O.

$\overleftrightarrow{\mathbf{A B}}$ Sis, not \} tangent to ©O.
tionship between major ares, minor ares and contrut ...........

POINTS OF INTERSECTION BETWEEN TWO CIRCLES


For \#17-24, match the notation with the term that best describes it.


SEGMENTS are segments on tangents that are congruent.
How do we know tangent segments are congruent?


What kinds of circle parts are line $A B$ and line $C B$ ? tan gen ts
What kind of angles are $\angle \mathrm{TAB}$ and $\angle \mathrm{TCB}$ ? Right
$\mathrm{TB} \cong \mathrm{TB}$. What part of the right triangle is TB to $\triangle \mathrm{TAB}$ and $\triangle \mathrm{TCB}$ ? hypotenuu
$T A \cong T C$. What kinds of circle parts are TA and TC to OT? RadiUS
What part of the right triangle is TA to $\triangle T A B$ and $T C$ to $\triangle T C B$ ? leg
WHY is AB is congruent to CB ? HL. $\mathrm{AB} \cong \mathrm{CB}$ because CPCTC.
oof the following, AB and CB are tangent segments to $\bigcirc \mathrm{Q}$. How can we show the process for the requested measures?

26.

$$
\begin{gathered}
2 x+1=3 x-6 \\
-3 x \quad-3 x \\
\hline-x=-7 \\
x=7 \\
8^{2}+15^{2}=c^{2}
\end{gathered}
$$



$$
\begin{array}{l|l|l}
12^{2}+52 \\
169=C^{2} & C=13 & \alpha(3)+ \\
x=3 & A B=12 & \mathrm{QC}=5
\end{array}
$$

$$
64+225-\frac{c^{2}}{\sqrt{289}}=1^{2}, \quad c=17
$$

$x=7$
$C B=17$
$\mathrm{QA}=8$
How can we show the process for finding the perimeter of each quadrilateral?


Perimeter of
Quadrilateral NWAK $=$

$$
\frac{16+\frac{13+13+10}{52}}{}
$$




Perimeter of
Quadrilateral FIVE $=$

$$
\frac{26+34+34+42}{136}
$$



