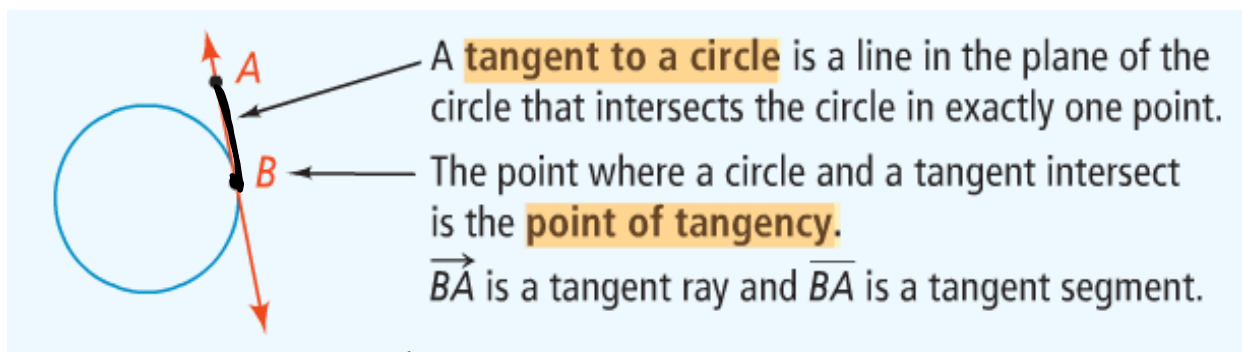


Geometry

Chapter 12

Section 12-1



\overleftrightarrow{AB} is tangent line.

take note

Theorem 12-1

Theorem

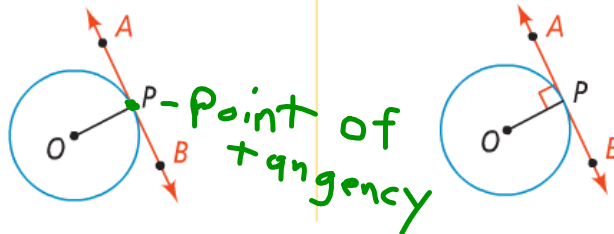
If a line is tangent to a circle, then the line is perpendicular to the radius at the point of tangency.

If ...

\overleftrightarrow{AB} is tangent to $\odot O$ at P

Then ...

$\overleftrightarrow{AB} \perp \overline{OP}$

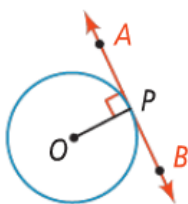


take note

Theorem 12-2**Theorem**

If a line in the plane of a circle is perpendicular to a radius at its endpoint on the circle, then the line is tangent to the circle.

If ...
 $\overleftrightarrow{AB} \perp \overline{OP}$ at P



Then ...

\overleftrightarrow{AB} is tangent to $\odot O$

\overleftrightarrow{AB} is tangent to $\odot O$. If $m\angle A = 34$, find $m\angle O$.

$$m\angle A + m\angle B + m\angle O = 180$$

$$34 + 90 + m\angle O = 180$$

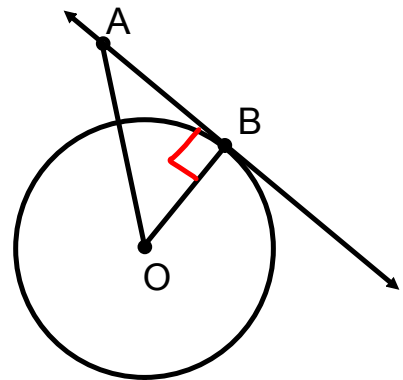
$$\begin{array}{r} -34 \quad -90 \\ \hline m\angle O = 56 \end{array}$$

$\overline{AO} = 10.1$, $\overline{AB} = 6.06$. Find \overline{OB} .

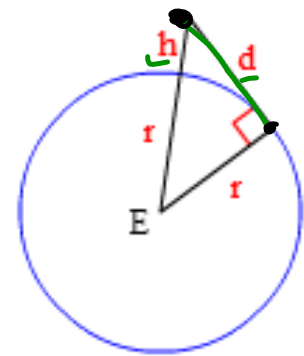
$$6.06^2 + OB^2 = 10.1^2$$

$$\begin{array}{r} 36.7236 + OB^2 = 102.01 \\ -36.7236 \quad \quad -36.7236 \\ \hline \end{array}$$

$$OB = 8.08$$



The diagram at right shows the distance to the horizon from a given height. Circle E represents the earth which has a radius of about 6400 km.



To the nearest km, what is the approximate distance to the horizon from a person at a height of 100 km?

$$6400^2 + d^2 = (6400 + 100)^2$$

$$-6400^2 \quad -6400^2$$

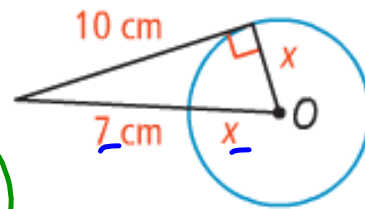
$$\sqrt{d^2} = \sqrt{1290000}$$

$$d = 1136 \text{ km}$$

In the circle, what is the value of x , to the nearest tenth?

$$10^2 + x^2 = (7+x)^2$$

$$(7+x)(7+x)$$



$$100 + \cancel{x^2} = 49 + 14x + \cancel{x^2}$$

$$100 = 49 + 14x$$

$$-49 \quad -49$$

$$\frac{51}{14} = \frac{14x}{14}$$

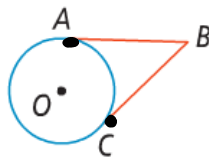
$$x = \frac{51}{14} = 3.6$$

take note

Theorem 12-3**Theorem**

If two tangent segments to a circle share a common endpoint outside the circle, then the two segments are congruent.

If ...

 \overline{BA} and \overline{BC} are tangent to $\odot O$ 

Then ...

 $\overline{BA} \cong \overline{BC}$

A, C - points of tangency

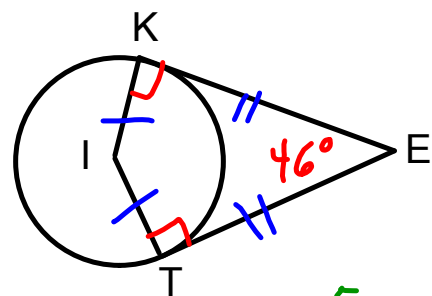
\overline{KE} and \overline{TE} are tangent to $\odot I$.

If $m\angle E = 46$, find $m\angle I$.

$$m\angle I = 134$$

What kind of shape is $\square KITE$?

KITE
 because
 radius \cong
 tangent \cong



$$\begin{array}{r} 90 \\ 90 \\ + 46 \\ \hline 226 \end{array} \qquad \begin{array}{r} 360 \\ - 226 \\ \hline 134 \end{array}$$

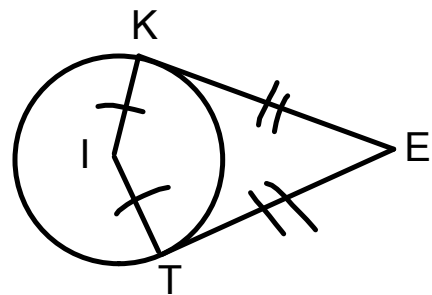
$\overline{KI} = 7.3$, $\overline{TE} = 24.2$. Find the perimeter

of \square KITE.

$$P = 7.3 \times 2 + 24.2 \times 2$$

$$P = 14.6 + 48.4$$

$$P = 63$$



Homework

Pages 767 - 768

6 - 22 even