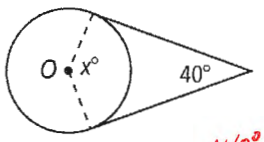
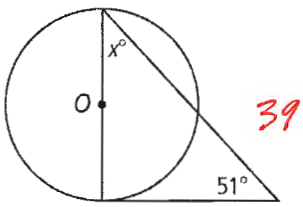
Name ANSWERS Date

12.1 & 12.2 - Parts of Circles, Tangent Lines, & Properties of Arcs

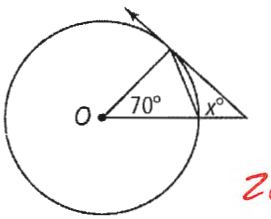
Assume that lines that appear to be tangent are tangent. O is the center of each circle. What is the value of x?

1) 

140°

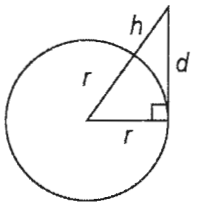
2) 

39°

3) 

20°

The circle at the right represents Earth. The radius of the Earth is about 6400 km. Find the distance d that a person can see on a clear day from each of the following heights h above Earth. Round your answer to the nearest tenth of a kilometer.



4) 12 km

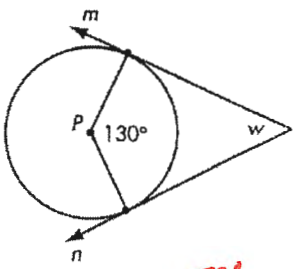
392.1 km

5) 1300 km

4281.4 km

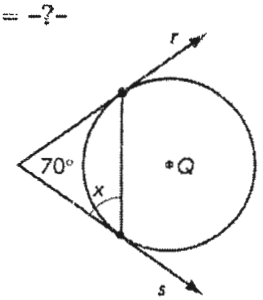
Find the missing variables.

6) Rays m and n are tangents.
w = -?-



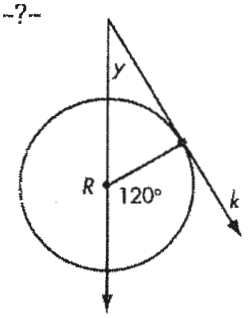
50°

7) Rays r and s are tangents.
x = -?-



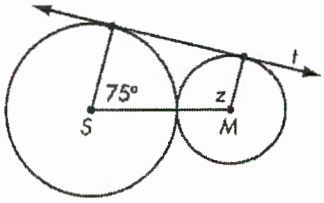
55°

8) Ray k is a tangent.
y = -?-



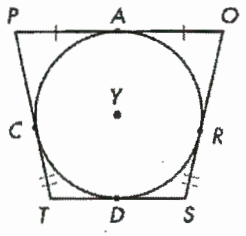
30°

9) Line t is a tangent to both circles. $z = -?-$



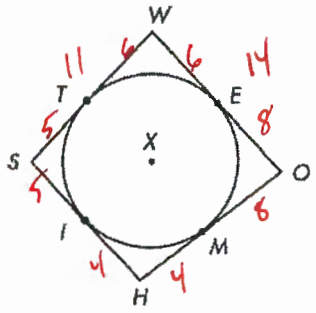
105°

10) Quadrilateral *POST* is circumscribed about circle *Y*. $OR = 13$ and $ST = 12$. What is the perimeter of *POST*?



76 in

11) Quadrilateral *SHOW* is circumscribed about circle *X*. $WO = 14$, $HM = 4$, $SW = 11$, and $ST = 5$. What is the perimeter of *SHOW*?

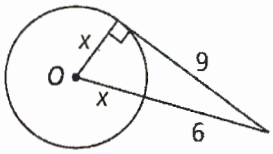


$11 + 14 + 12 + 9$

$= 46$

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

6)



$x^2 + 9^2 = (x+6)^2$

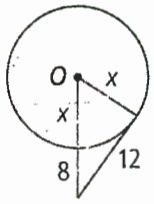
$x^2 + 81 = x^2 + 12x + 36$

$45 = 12x$

$x = 3.75$

≈ 3.8

7)



$x^2 + 12^2 = (x+8)^2$

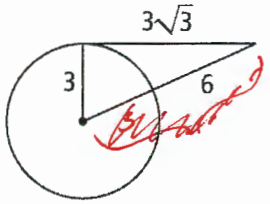
$x^2 + 144 = x^2 + 16x + 64$

$80 = 16x$

$x = 5$

Determine whether a tangent line is shown in each diagram. Explain.

8)



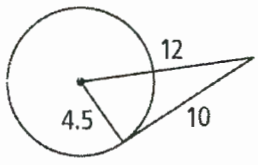
$3^2 + (3\sqrt{3})^2 = 6^2$

$9 + 27 = 36$

Yes.

Because, it is a right triangle

9)

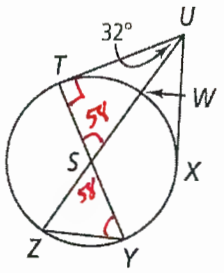


$4.5^2 + 10^2 = 12^2$

$20.25 + 100 = 144$

No. The angle is not a right angle.

10) $\overline{TY}$ and $\overline{ZW}$ are diameters of $\odot S$. $\overline{TU}$ and $\overline{UX}$ are tangents of $\odot S$. What is $m\angle SYZ$?



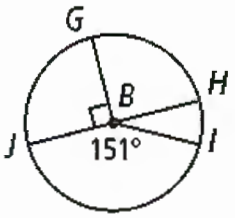
$m\angle SYZ = 61°$

Find the measure of each arc in $\odot B$.

11) $\overset{\frown}{GJ}$ $90°$

12) $\overset{\frown}{HI}$ $29°$

13) $\overset{\frown}{HIJ}$ $180°$



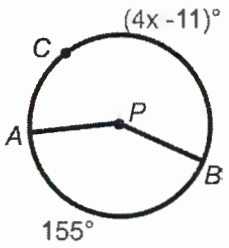
14) $\overset{\frown}{GJI}$ $241°$

15) $\overset{\frown}{GHJ}$ $270°$

16) $\overset{\frown}{GJH}$ $270°$

Find the measure of each x in $\odot P$.

16)



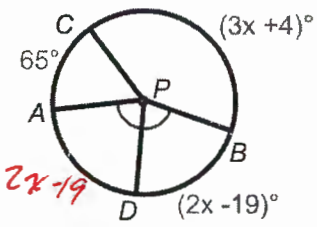
$4x-11+155=360$

$4x-11=205$

$4x=216$

$x=54$

17)



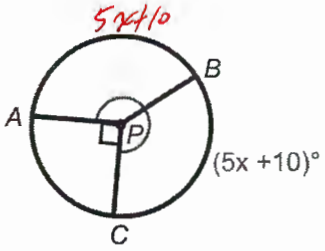
$(2x-19)+(2x-19)+(3x+4)+65=360$

$7x+31=360$

$7x=329$

$x=47$

18)



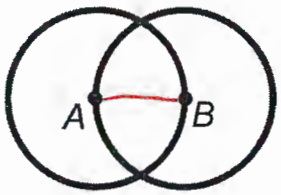
$(5x+10)+(5x+10)+90=360$

$10x+20=270$

$10x=250$

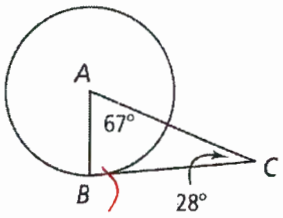
$x=25$

19) What can you conclude about $\odot A$ and $\odot B$?



Since both circles have a radius of $\overline{AB}$, then the two circles must be congruent.

20) A classmate states that $\overline{BC}$ is tangent to $\odot A$. Explain how to show that your classmate is wrong.



85°

According to the given info, the $m\angle ABC$ is 85°. ~~Since $\overline{BC}$ is supp~~

If $\overline{BC}$ was a tangent, then it would form a 90° angle.