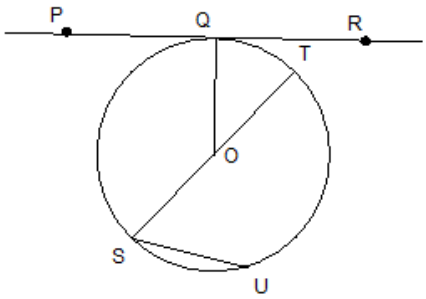
Section 8.1 & 8.2 Review

Multiple Choice

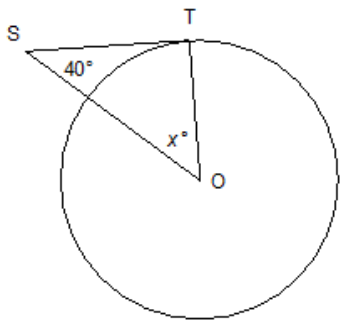
Identify the choice that best completes the statement or answers the question.

_____ 1. O is the centre of this circle.
Which line is a tangent?



a. OQ b. ST c. PR d. SU

2. O is the centre of this circle and point T is a point of tangency.
Determine the value of $x°$.

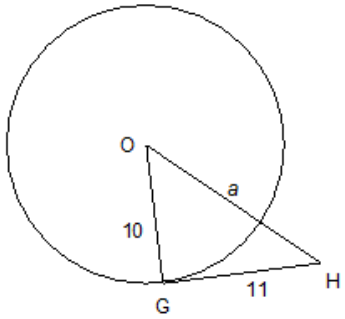


$\angle OTS = 90°$ (TangP)

$x° = 50°$ (SATT)

a. 90° b. 50° c. 130° d. 40°

3. O is the centre of this circle and point G is a point of tangency.
Determine the value of *a*. If necessary, give your answer to the nearest tenth.



$\angle OGH = 90^\circ$ (Tan ⊥ P)

a => hyp

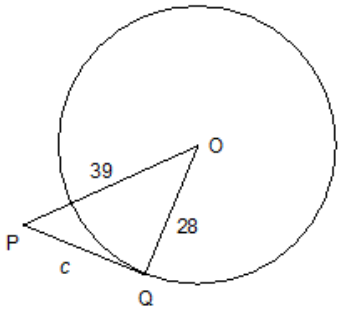
$c^2 = a^2 + b^2$

$c^2 = 11^2 + 10^2$

$c = 14.9$

a. 11.3 b. 22.5 c. 4.6 d. 14.9

4. O is the centre of this circle and point Q is a point of tangency.
Determine the value of c. If necessary, give your answer to the nearest tenth.



$\angle OQP = 90°$ (Tang P)

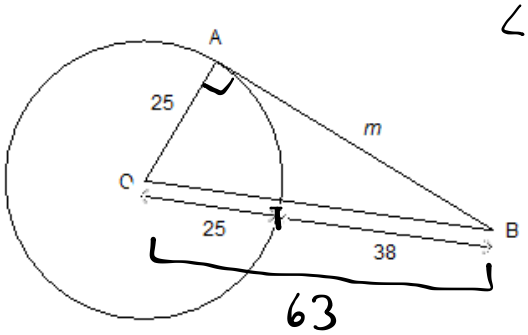
c => leg $\quad a^2 = c^2 - b^2$

$a^2 = 39^2 - 28^2$

$a = 27.1$

a. 48 b. 27.1 c. 11 d. 5.5

5. O is the centre of this circle and point A is a point of tangency.
Determine the value of m. If necessary, give your answer to the nearest tenth.



$\angle OAB = 90°$ (Tang ⊥ Rad)

$m \Rightarrow$ leg

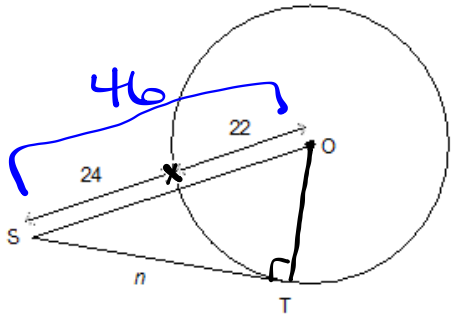
$a^2 = c^2 - a^2$

$a^2 = 63^2 - 25^2$

$a = 57.8$

a. 38 b. 7.2 c. 67.8 **d. 57.8**

6. O is the centre of this circle and point T is a point of tangency.
Determine the value of n. If necessary, give your answer to the nearest tenth.



$OT = OX = 22$ (radii)

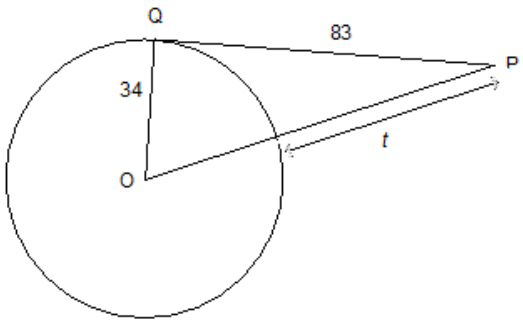
$\angle OTS = 90°$ (Tang P)

$n \Rightarrow$ leg $a^2 = c^2 - b^2$

$a^2 = 46^2 - 22^2$

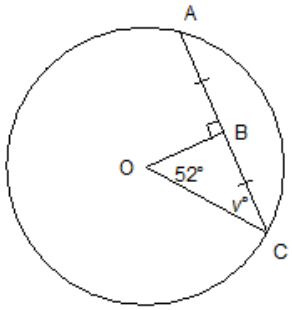
a. 5.7 b. 51 c. 24 d. 40.4 $a = 40.4$

7. O is the centre of this circle and point Q is a point of tangency.
Determine the value of t. If necessary, give your answer to the nearest tenth.



a. 61.3 b. 55.7 c. 55 d. 82.2

8. O is the centre of the circle. Determine the value of $v°$.



a. 19° b. 71° c. 52° d. 38°

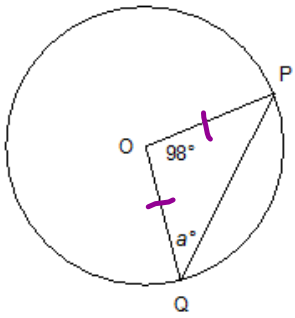
$\angle OBC = \angle OBA = 90°$ (chP)

$AB = BC = \#$ (chP)

$OC = OA$ (radii)

$y = 38°$ (SA $\perp$)

9. O is the centre of the circle. Determine the value of $a°$.



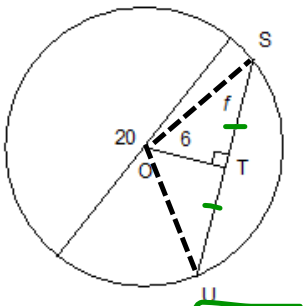
OP = OQ (radii)

$a° = \frac{180 - 98}{2}$

$a° = 41°$ (Isos Δ)

a. 49° b. 20.5° c. 41° d. 69.5°

10. O is the centre of the circle.
Determine the value of f to the nearest tenth, if necessary.

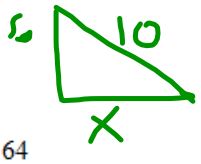


a. 4 b. 8 c. 64 d. 11.7

OU = OS = 10 (radii)

$\angle OTS = \angle OTU = 90°$ (chP)

UT = ST = ___ (chP)



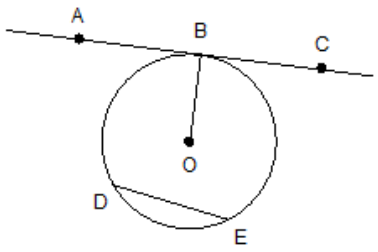
$a^2 = c^2 - b^2$

$a^2 = 10^2 - 6^2$

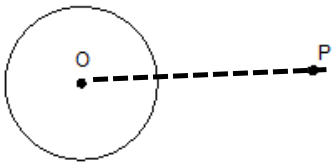
$a = 8$

Short Answer

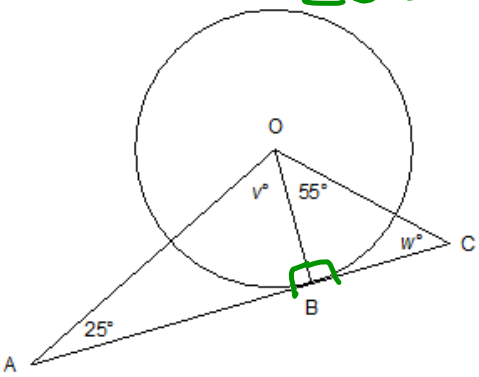
11. O is the centre of this circle.
Which line is a tangent?



12. Draw a line through point P that is NOT a tangent to the circle.



13. O is the centre of this circle and point B is a point of tangency.
Determine the values of $v°$ and $w°$.

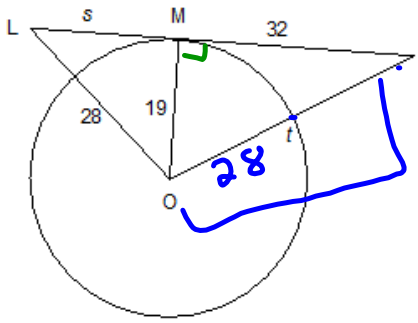


$\angle OBA = \angle OBC = 90°$ (Tang P)

$W = 35°$ (SATT)

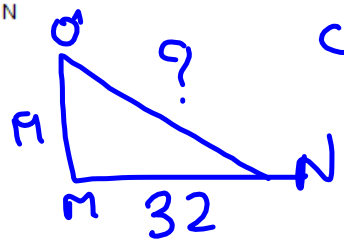
$V = 65°$ (SATT)

14. O is the centre of this circle and point Q is a point of tangency.
Determine the values of s and t. If necessary, give your answers to the nearest tenth.

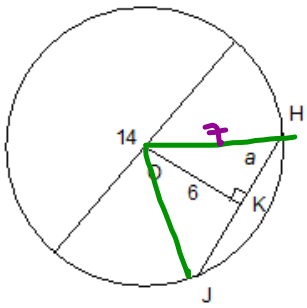


$\angle OML = \angle OMN = 90°$ (tang P)

$c^2 = a^2 + b^2$



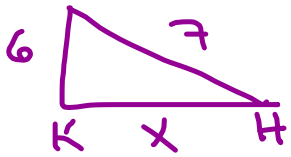
15. Point O is the centre of this circle. Without solving for a, sketch and label the length of any extra line segments you need to draw to determine the value of a.



$OH = OJ = 7$ (radii)

$\angle OKH = \angle OKJ = 90°$ (chP)

$HK = JK =$ ____ (chP)



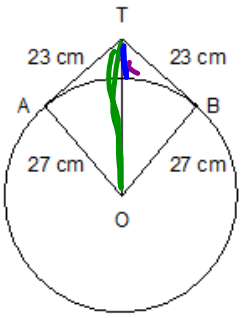
$a^2 = c^2 - b^2$

$a^2 = 7^2 - 6^2$

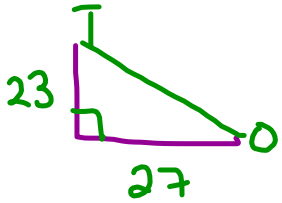
$a^2 = 49 - 36$

Problem

16. A circular mirror with radius 27 cm hangs from a hook.
The wire is 46 cm long and is a tangent to the circle at points A and B.
How far, to the nearest tenth, above the top of the mirror is the hook?



$\angle OBT = \angle OAT = 90^\circ$ (Tang ⊥)



$c^2 = a^2 + b^2$

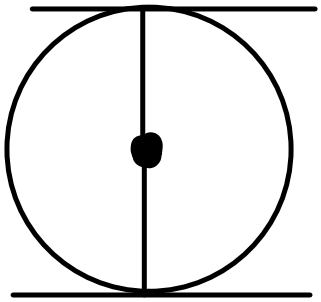
$c^2 = 27^2 + 23^2$

$C = 35.5$

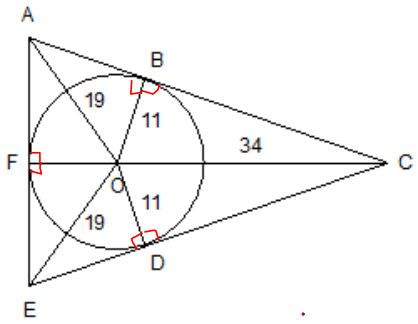
$X = 35.5 - 27$

$X = 12.6$

17. When are two tangent lines to a circle parallel? Draw a sketch to support your answer.



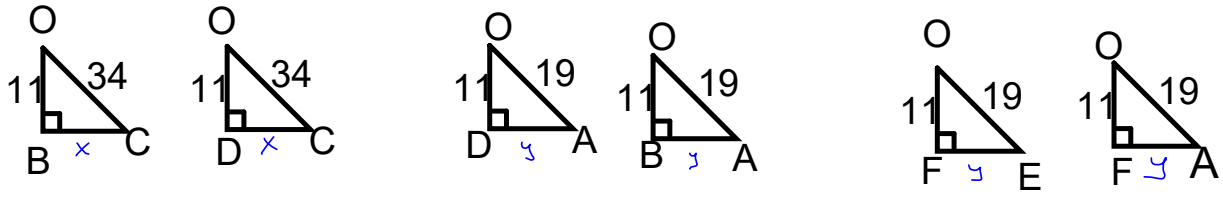
18. AC, AE, and CE are tangents to this circle. The points of tangency are: B, F, and D
The circle has radius 11. The distance from the centre of the circle to each vertex of the triangle is: OC = 34, OA = OE = 19
Determine the side lengths of △ACE, to the nearest tenth.



<OBC= 90° (Tang P)
<OBA= 90° (Tang P)

<ODC= 90° (Tang P)
<ODE= 90° (Tang P)

<OFA= 90° (Tang P)
<OFE= 90° (Tang P)

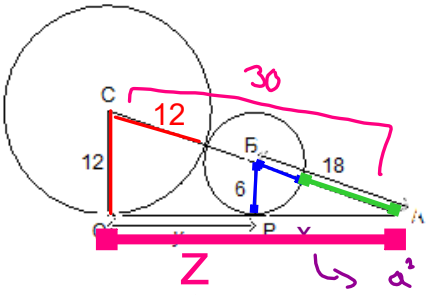


$a^2 = c^2 - b^2$
$a^2 = 34^2 - 11^2$
$a^2 = 1156 - 121$
$a^2 = 1035$
$a = \sqrt{1035}$
$a = 32.2$

$a^2 = c^2 - b^2$
$a^2 = 19^2 - 11^2$
$a^2 = 361 - 121$
$a^2 = 240$
$a = \sqrt{240}$
$a = 15.5$

$AC = 32.2 + 15.5 = 47.7$
$AE = 15.5 + 15.5 = 31$
$EC = 32.2 + 15.5 = 47.7$
126.4

19. AQ is a tangent to the circle with centre B and to the circle with centre C.
The points of tangency are P and Q.
Determine the value of y to the nearest tenth.



<OQA= 90° (Tang P)

<BPA= 90° (Tang P)

$a^2 = c^2 - b^2$

$a^2 = 18^2 - 6^2$

$a^2 = 324 - 36$

$a^2 = 288$

$a = \sqrt{288}$

$a = 16.97$

$\hookrightarrow 17$

$a^2 = c^2 - b^2$

$a^2 = 30^2 - 12^2$

$a^2 = 900 - 144$

$\sqrt{a^2} = \sqrt{756}$

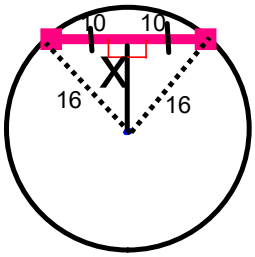
$a = 27.5$

$y = z - x$

$y = 27.5 - 17$

$y = 10.5$

20. A circle has diameter 32 cm. How far from the centre of the circle, to the nearest centimetre, is a chord 20 cm long?



$X \Rightarrow a^2 = c^2 - b^2$

$a^2 = 16^2 - 10^2$

$a^2 = 256 - 100$

$a^2 = 156$

$a = \sqrt{156}$

$a = 12.5$

$= 13\text{cm}$