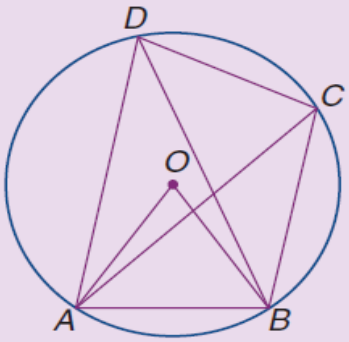
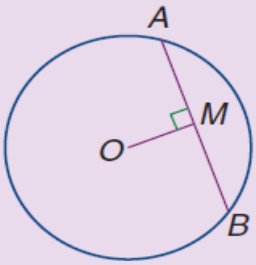
Revision on Circle Theorems

1 From the figure shown, name:
- a an angle subtended at the centre O
- b an angle standing on the arc AB, subtended at the circumference
- c an angle in the same segment as $\angle BAC$, standing on BC

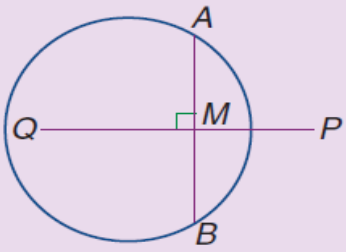


2 a



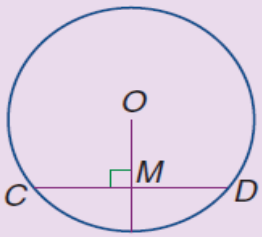
$AB = 9$ cm. Find the length of AM, giving reasons.

b



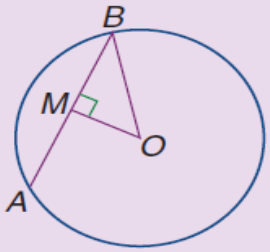
$AM = MB$. Give reasons why PQ must pass through the centre of the circle.

c



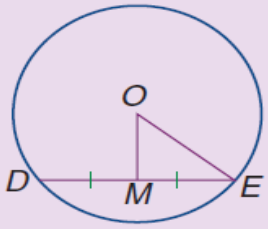
$CM = 18$ m. Find the length of CD, giving reasons.

3 a



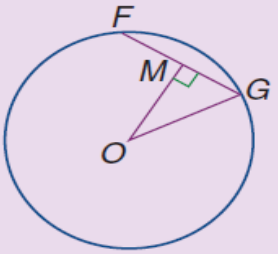
$BO = 26$ m, $AB = 48$ m. Find the length of OM.

b



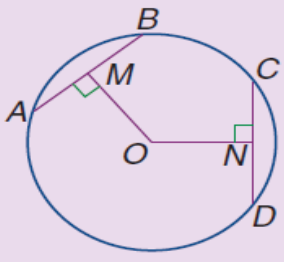
$OM = 9$ cm, $ME = 12$ cm. Find the length of OE.

c



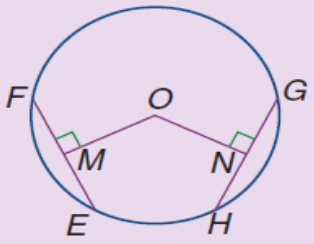
$OM = 40$ m, $OG = 50$ m. Find the length of FG.

4 a



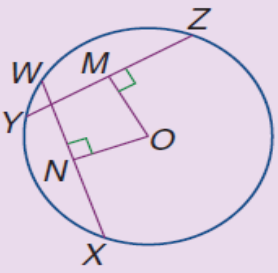
$AB = CD$, $OM = 8$ m. Find the length of ON, giving reasons.

b



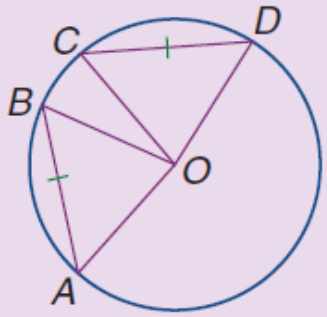
$OM = ON$, $EF = 11$ km. Find the length of GN, giving reasons.

c



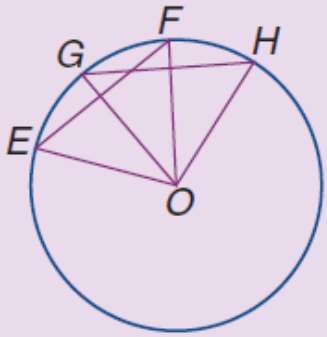
$OM = ON$, $WX = 14$ m. Find the length of YZ, giving reasons.

5 **a**



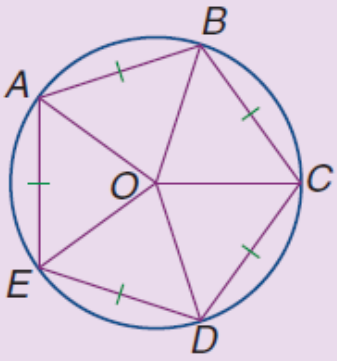
$AB = CD$, $\angle COD = 69°$. Find the size of $\angle AOB$, giving reasons.

b



$\angle GOH = \angle EOF$, $GH = 1{\cdot}1$ m. Find the length of EF, giving reasons.

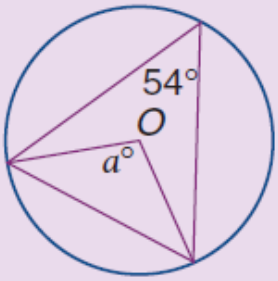
c



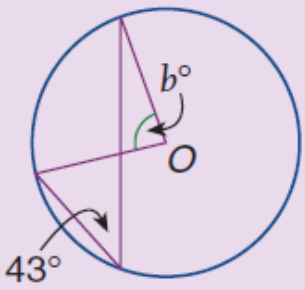
In this regular polygon, find the size of $\angle BOC$ and obtuse $\angle BOD$.

Find the value of the pronumerals in the following questions.

6 **a**



b



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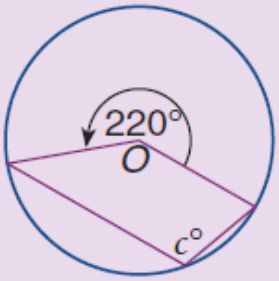
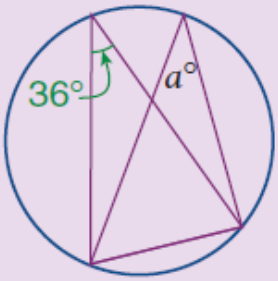


7 **a**



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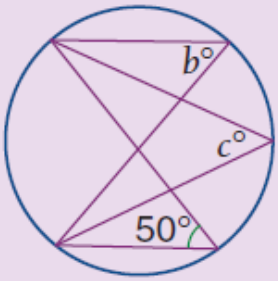

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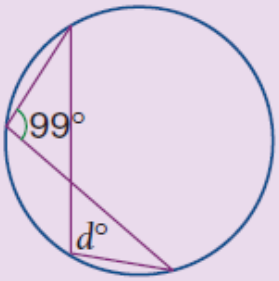
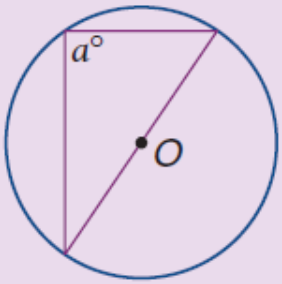


8 **a**



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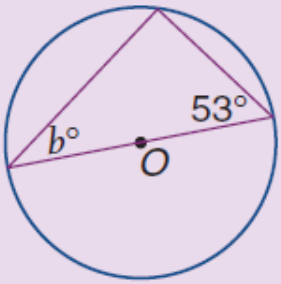

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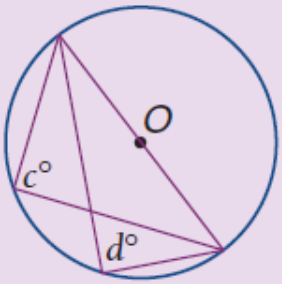
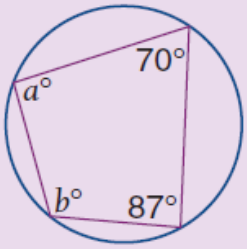


9 **a**



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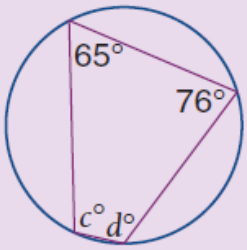

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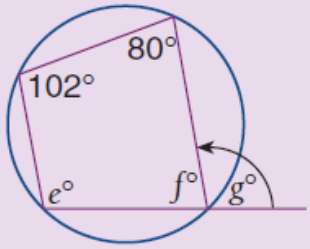
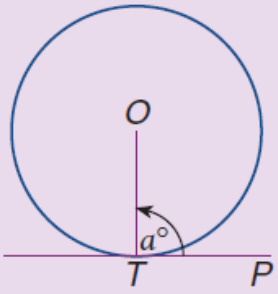


In questions **10** to **13**, PT and PW are tangents.

10 **a**



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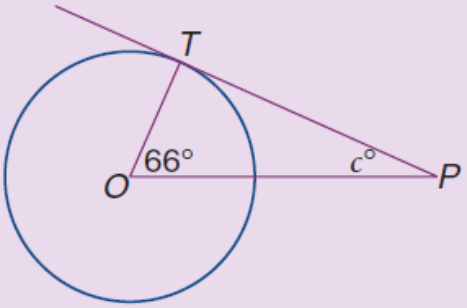

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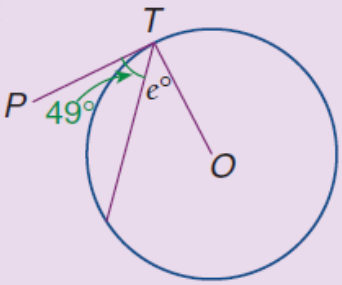
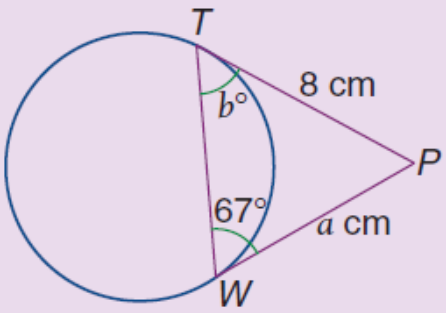


11 **a**



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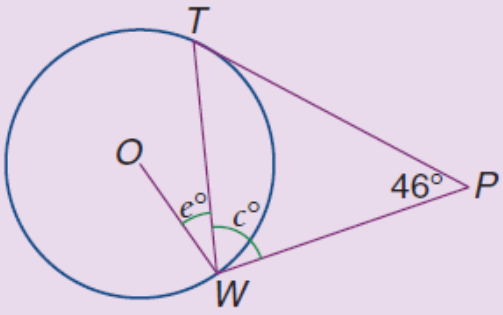

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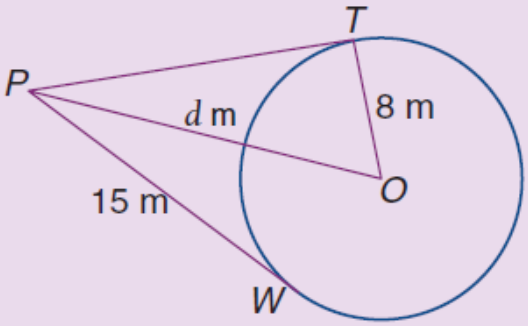
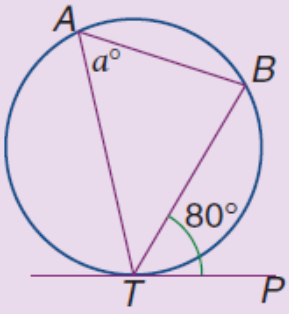


12 **a**



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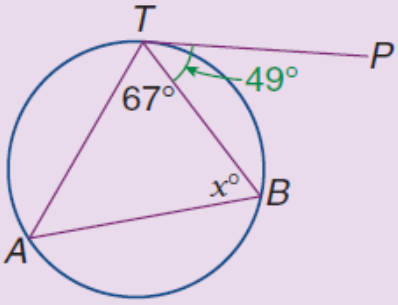

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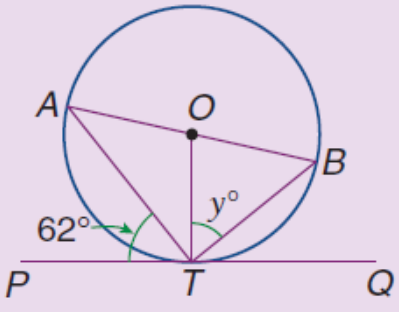
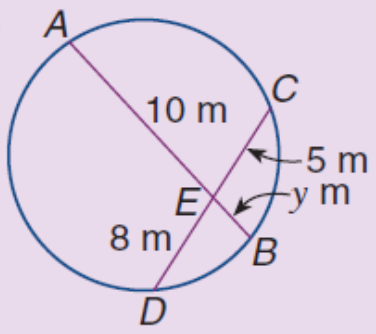
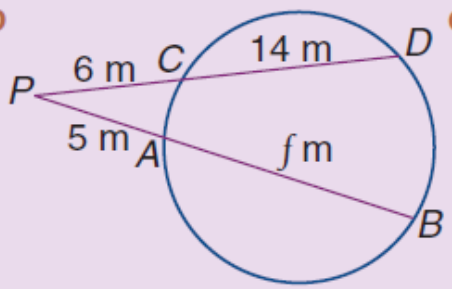
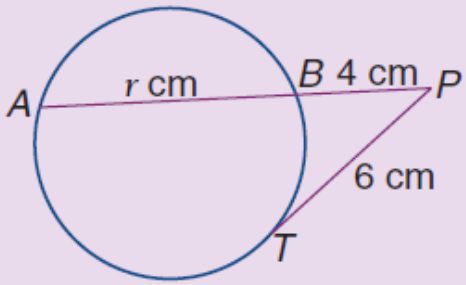


13 a 

b 

c 

Answers:

1 a $\angle AOB$ b $\angle ADB$ or $\angle ACB$ c $\angle BDC$

2 a $AM = 4{\cdot}5$ cm (perp. from O bisects AB)
b The perp. bisector of a chord passes through the centre (as it is an axis of symmetry).
c $CD = 36$ m (perp. from O bisects CD)

3 a $OM = 10$ m b $OE = 15$ cm c $FG = 60$ m

4 a $ON = 8$ m (equal chords are the same distance from the centre)
b $GH = 11$ km (chords equidistant from the centre are equal) $\therefore$ $GN = 5{\cdot}5$ km (perp. from centre bisects the chord)
c $YZ = 14$ m (chords equidistant from the centre are equal)

5 a $\angle AOB = 69°$ (angles subtended at centre by equal chords)
b $EF = 1{\cdot}1$ m (equal angles at the centre are subtended by equal chords at circumference)
c $\angle BOC = 72°$, $\angle BOD = 144°$

6 a $a = 108$ b $b = 86$ c $c = 110$ 7 a $a = 36$ b $b = 50$, $c = 50$ c $d = 99$

8 a $a = 90$ b $b = 37$ c $c = 90$, $d = 90$

9 a $a = 93$, $b = 110$ b $c = 104$, $d = 115$ c $e = 100$, $f = 78$, $g = 102$

10 a $a = 90$ b $c = 24$ c $e = 41$ 11 a $a = 8$, $b = 67$ b $c = 67$, $e = 23$ c $d = 17$

12 a $a = 80$ b $x = 64$ c $y = 62$ 13 a $x = 4$ b $f = 19$ c $r = 5$