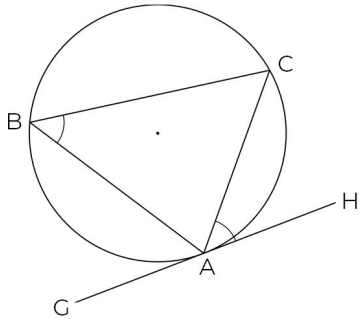
Circle Theorems: The alternate segment theorem

Maths

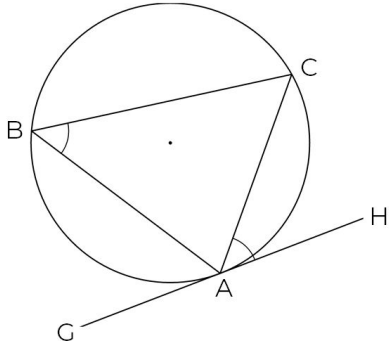
Mr Chan

Circle Theorems: The alternate segment theorem

1. Shade in the angle that chord AC makes with tangent GH.

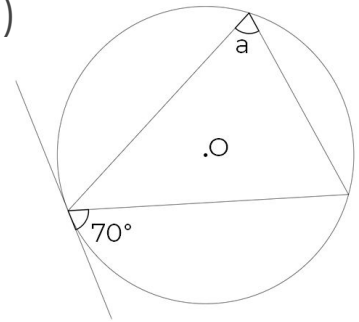


2. Shade in the angle subtended by the chord AC at the circumference.

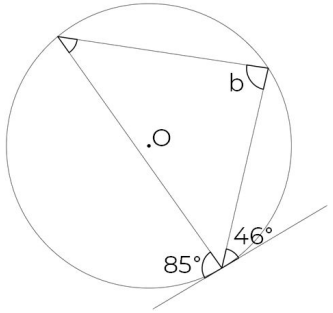


3. Work out the size of each angle marked with a letter.
Give a reason for your answers.

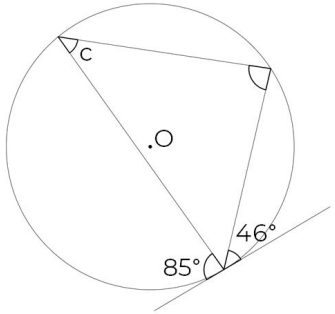
a)



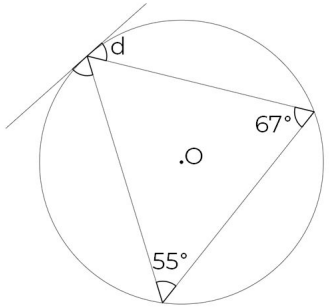
b)



c)



d)

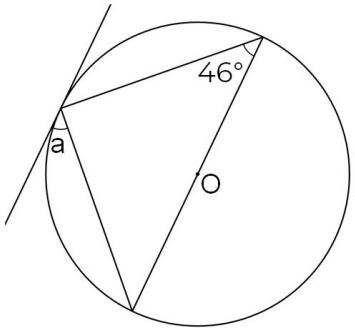


Circle Theorems: The alternate segment theorem

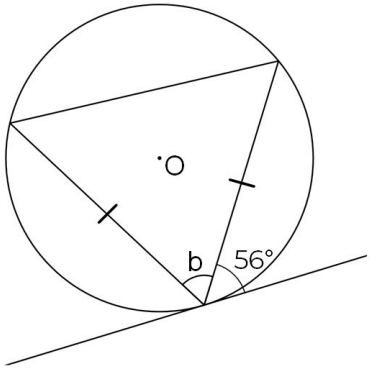
4. Work out the size of each angle.

Give reasons for your answers.

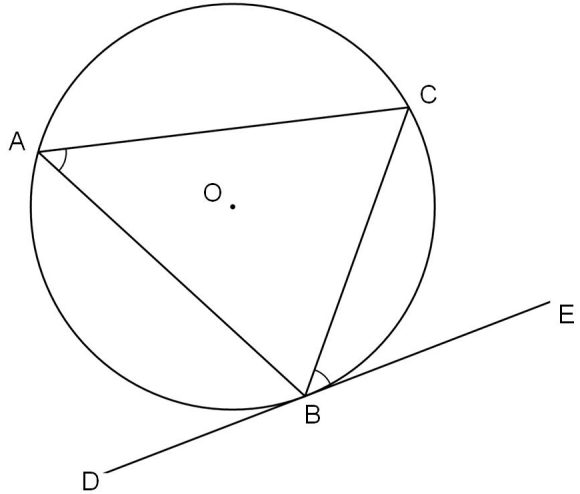
a)



b)



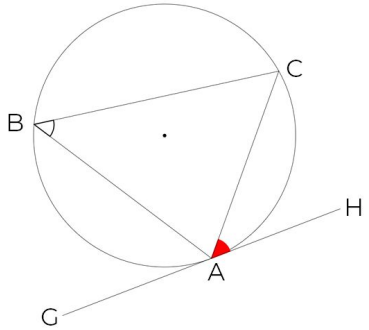
5. Prove the alternate segment theorem.



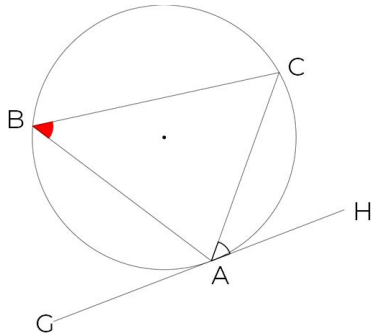
Answers

Circle Theorems: The alternate segment theorem

1. Shade in the angle that chord AC makes with tangent GH.

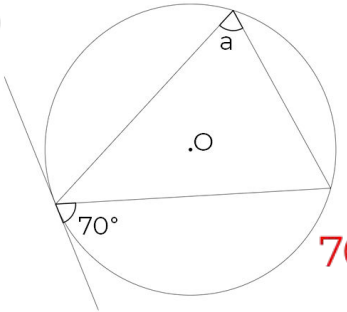


2. Shade in the angle subtended by the chord AC at the circumference.



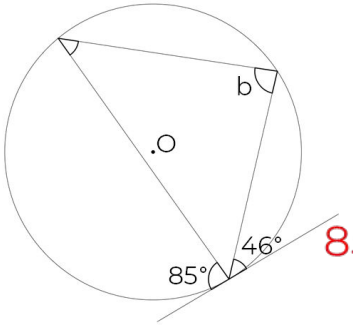
3. Work out the size of each angle marked with a letter.
Give a reason for your answers.

a)



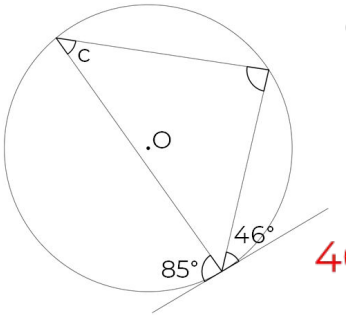
70°

b)



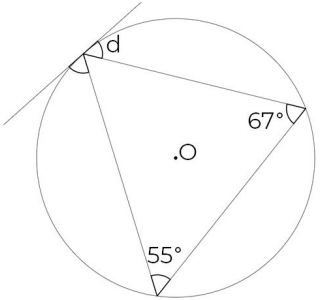
85°

c)



46°

d)



55°

The alternate segment theorem.

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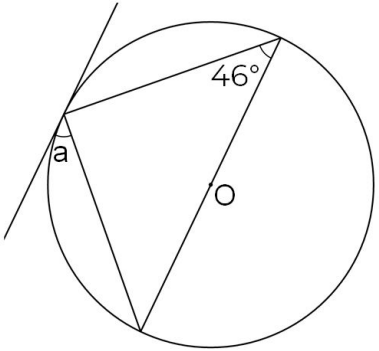
4. Work out the size of each angle.

Give reasons for your answers.

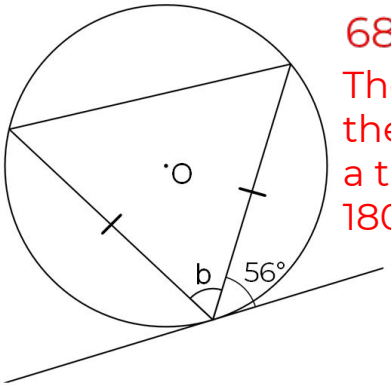
a)



46°

The alternate segment theorem.

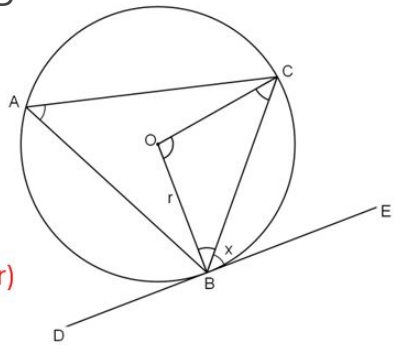
b)



68°

The alternate segment theorem and angles in a triangle add up to 180°.

5. Prove the alternate segment theorem.



Draw radii from centre O to B and C

let angle CBE = x

angle OBC = 90 – x

(radius and tangent are perpendicular)

angle OBC = angle BCO = 90-x

(base angles in an isosceles triangle are equal)

angle COB = 180 – angle OBC – angle BCO (angles in a triangle add up to 180°)

angle COB = 180 – (90 - x) - (90 - x) = 2x

2 x angle BAC = angle COB (angle at the centre is twice the angle at the circumference)

2 x angle BAC= 2x

angle BAC = x