

Circle Theorems: Angle at the centre and angle at the circumference

Maths

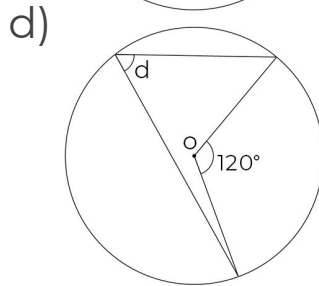
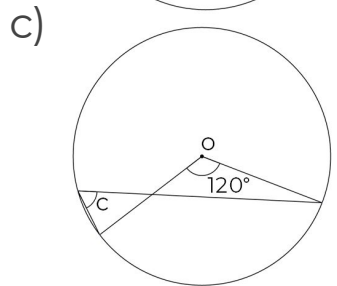
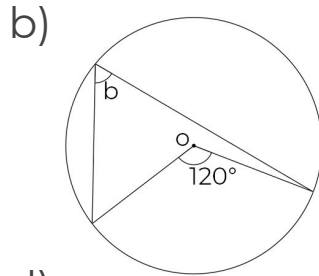
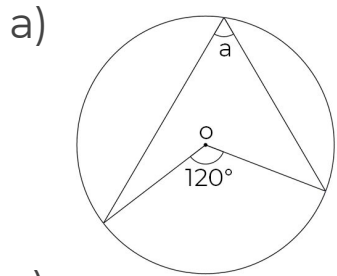
Mr Chan



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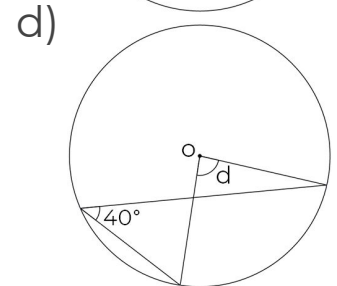
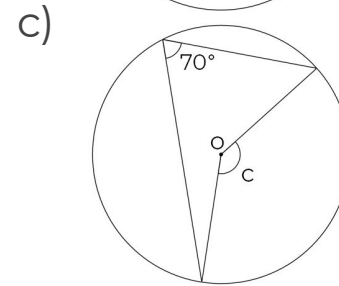
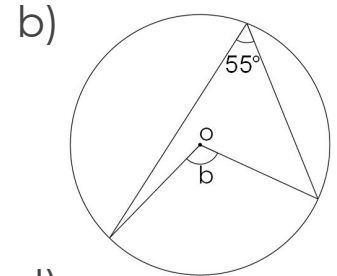
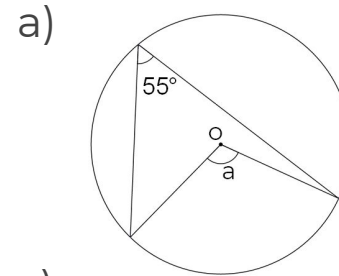
1. Work out the size of each angle marked with a letter.

Give a reason for your answers.



2. Work out the size of each angle marked with a letter.

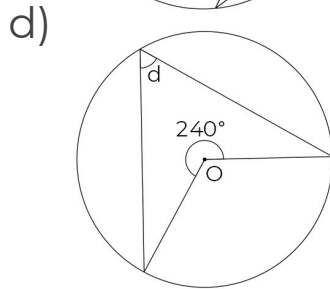
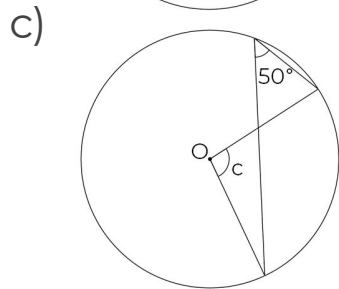
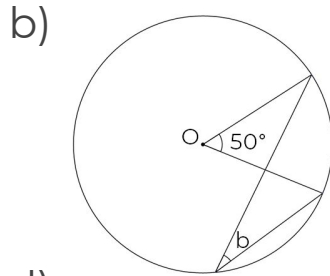
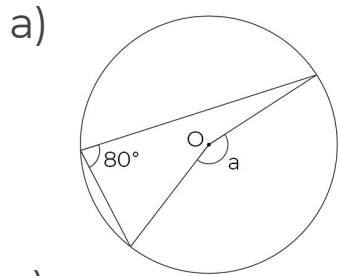
Give a reason for your answers.



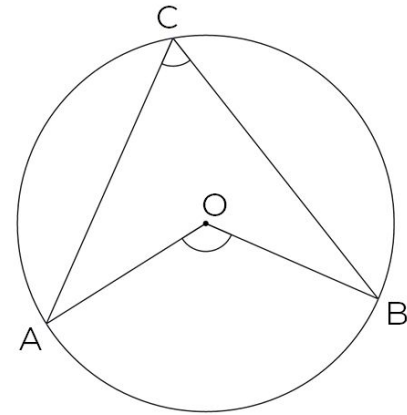
Circle Theorems: Angle at the centre and angle at the circumference

3. Work out the size of each angle marked with a letter.

Give a reason for your answers.



4. Prove that the angle at the centre of a circle is twice the angle at the circumference when both are subtended by the same arc.



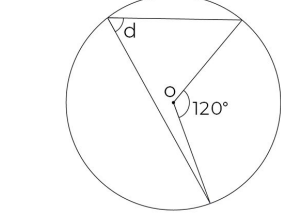
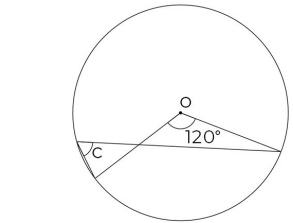
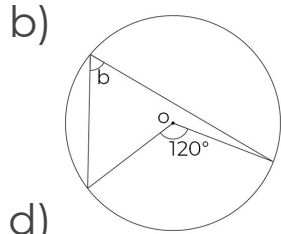
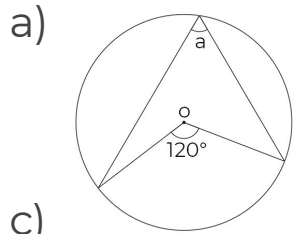
Answers



Circle Theorems: Angle at the centre and angle at the circumference

1. Work out the size of each angle marked with a letter.

Give a reason for your answers.



60°

60°

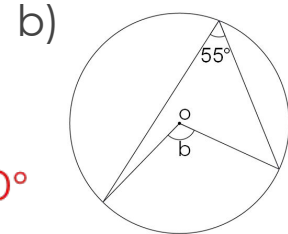
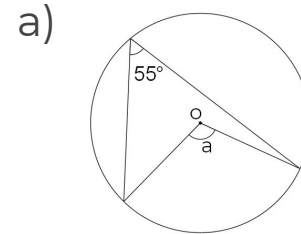
60°

60°

The angle at the centre is twice the angle at the circumference.

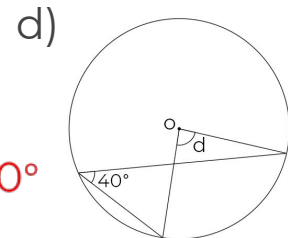
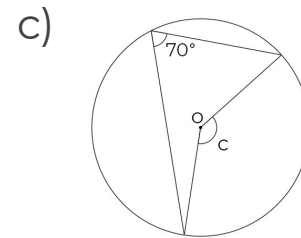
2. Work out the size of each angle marked with a letter.

Give a reason for your answers.



110°

110°



140°

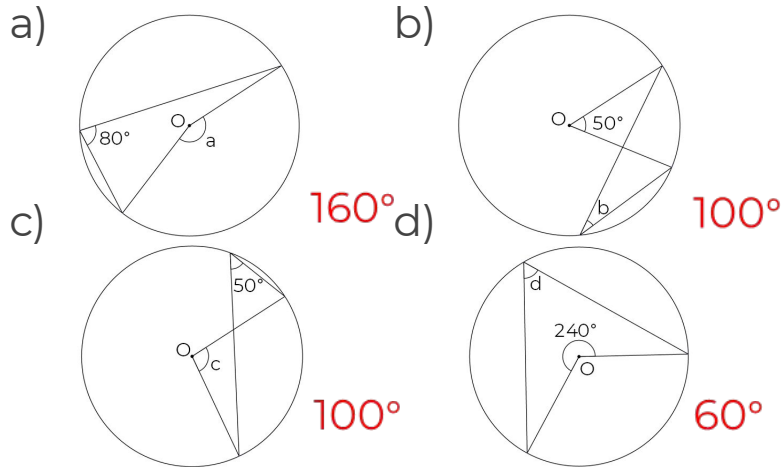
80°



Circle Theorems: Angle at the centre and angle at the circumference

3. Work out the size of each angle marked with a letter marked with a letter.

Give a reason for your answers.

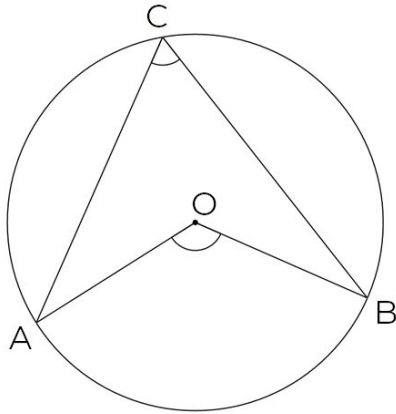


The angle at the centre is twice the angle at the circumference.



Circle Theorems: Angle at the centre and angle at the circumference

4. Prove that the angle at the centre of a circle is twice the angle at the circumference when both are subtended by the same arc.



Draw line from O to C (radius).

Let angle $ACO = x$ and $BCO = y$ and $AOB = z$

angle $ACO = \text{angle } CAO = x$ (base angles in an isosceles triangle)

angle $BCO = \text{angle } CBO = y$ (base angles in an isosceles triangle)

angle $AOC = 180 - 2x$ (angles in a triangle add up to 180°)

angle $BOC = 180 - 2y$ (angles in a triangle add up to 180°)

angle $z = 360 - \text{AOC} - \text{BOC}$ (angles around a point add up to 360°)

$$z = 360 - (180 - 2x) - (180 - 2y)$$

$$z = 360 - 180 + 2x - 180 + 2y$$

$$z = 2x + 2y$$

$$z = 2(x + y)$$

$$AOB = 2ACB$$

