

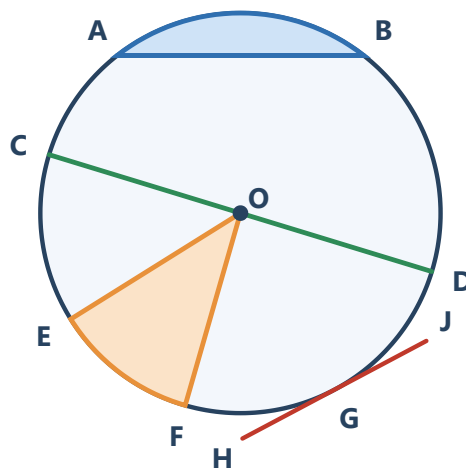
GCSE Maths: Circle words and isosceles triangles (Higher): answers

GCSE Maths - Circle Theorems - Higher - Lesson 26.1

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch26-circle-theorems/higher/circle-words-and-isosceles-triangles/

Exercise 26A Circle words and isosceles triangles Non-calculator

- 1 The diagram shows a circle with centre O . Name each of these.



- (a) The line AB

Answer: chord

- (b) The line CD

Answer: diameter

- (c) The line OE

Answer: radius

- (d) The orange shaded region OEF

Answer: sector

- (e) The blue shaded region next to AB

Answer: segment

- (f) The line HJ

Answer: tangent

- (g) The curved line from E to F

Answer: arc (minor arc)

- 2 Write the correct word for each description.

- (a) A straight line from the centre to the circle

Answer: radius

- (b) The distance all the way round the circle

Answer: circumference

- (c) A chord that passes through the centre

Answer: diameter

- (d) Half of a circle, cut off by a diameter

Answer: semicircle

- (e) A straight line that touches the circle at exactly one point

Answer: tangent

- (f) The region between a chord and the arc it cuts off

Answer: segment

3 Work out the missing measurement for each circle.

- (a) The radius is 9 cm. Work out the diameter.

Answer: 18 cm

- (b) The diameter is 26 cm. Work out the radius.

Answer: 13 cm

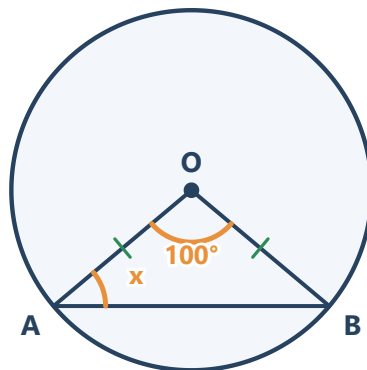
- (c) The radius is 6.5 m. Work out the diameter.

Answer: 13 m

- 4** Dev says: "A chord is a straight line from the centre of the circle to the circle." Dev is wrong. Explain his mistake and say what the line he described is called.

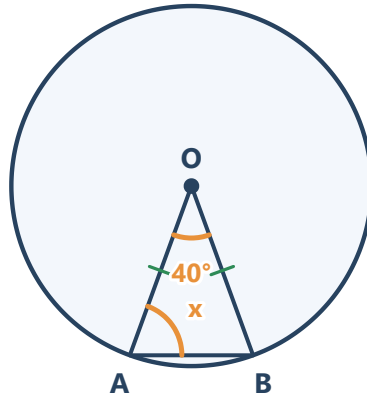
Answer: He described a radius. A chord joins two points on the circle.

- 5** The diameter is the longest chord of a circle. Use the triangle OAB in the diagram to explain why a chord AB that does not go through the centre must be shorter than the diameter.



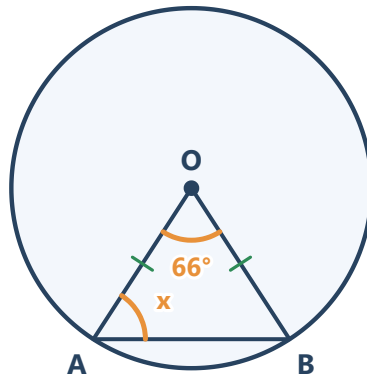
Answer: $AB < OA + OB = \text{diameter}$, because one side of a triangle is shorter than the other two added together.

- 6 O is the centre of the circle. A and B are points on the circle. Angle $AOB = 40^\circ$. Work out the size of angle OAB .



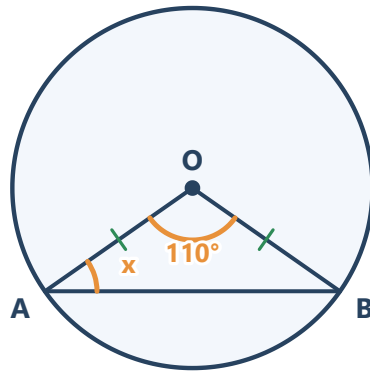
Answer: 70° (the base angles of an isosceles triangle are equal)

- 7 O is the centre of the circle. A and B are points on the circle. Angle $AOB = 66^\circ$. Work out the size of angle OAB .



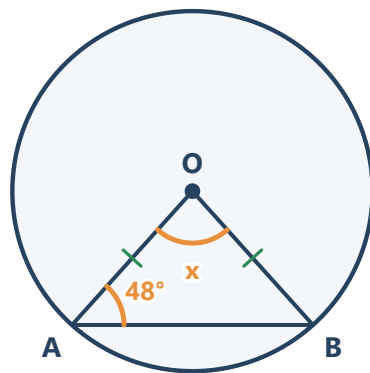
Answer: 57° (the base angles of an isosceles triangle are equal)

- 8 O is the centre of the circle. A and B are points on the circle. Angle $AOB = 110^\circ$. Work out the size of angle OAB .



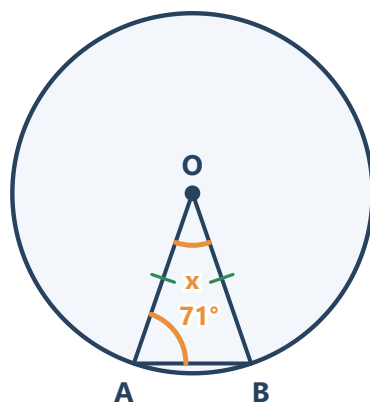
Answer: 35° (the base angles of an isosceles triangle are equal)

- 9 O is the centre of the circle. A and B are points on the circle. Angle $OAB = 48^\circ$. Work out the size of angle AOB .



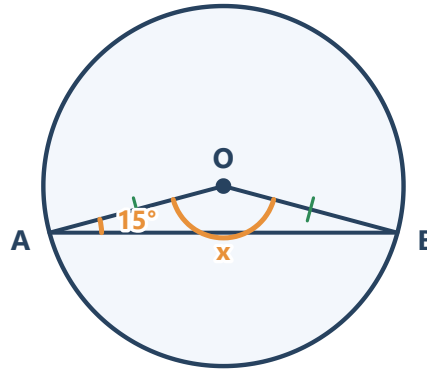
Answer: 84° (the angles in a triangle add up to 180°)

- 10 O is the centre of the circle. A and B are points on the circle. Angle $OAB = 71^\circ$. Work out the size of angle AOB .



Answer: 38° (the angles in a triangle add up to 180°)

- 11** O is the centre of the circle. A and B are points on the circle. Angle $OAB = 15^\circ$. Work out the size of angle AOB .



Answer: 150° (the angles in a triangle add up to 180°)

- 12** O is the centre of a circle and A and B are points on the circle. Angle $OAB = (2x + 5)^\circ$ and angle $AOB = (x + 10)^\circ$. Work out the value of x and the size of angle OAB .

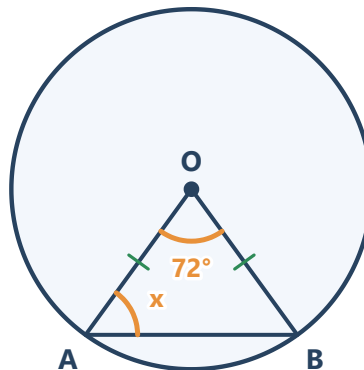
- (a) Work out the value of x .

Answer: $x = 32$

- (b) Work out the size of angle OAB .

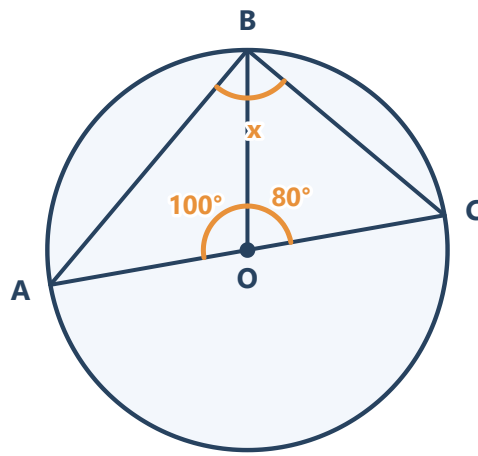
Answer: 69°

- 13** A circular cake with centre O is cut into 5 equal sectors. A straight cut AB across one sector makes triangle OAB , where A and B are on the edge of the cake. Work out angle OAB .



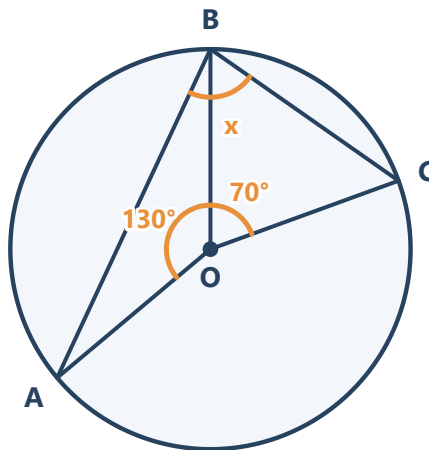
Answer: 54°

- 14** A , B and C are points on a circle with centre O . Angle $AOB = 100^\circ$ and angle $BOC = 80^\circ$. Work out the size of angle ABC . Give a reason for each step.



Answer: 90° (the base angles of an isosceles triangle are equal; the angles in a triangle add up to 180°)

- 15** A , B and C are points on a circle with centre O . Angle $AOB = 130^\circ$ and angle $BOC = 70^\circ$. Work out the size of angle ABC . Give a reason for each step.



Answer: 80° (the base angles of an isosceles triangle are equal; the angles in a triangle add up to 180°)

- 16** A and B are points on a circle with centre O . Angle $OAB = x$. Show that angle $AOB = 180^\circ - 2x$.

Answer: angle $AOB = 180^\circ - 2x$

- 17** Explain why each base angle of the isosceles triangle OAB (where OA and OB are radii) must be less than 90° .

Answer: The two base angles are equal, so if each were 90° or more they would add to 180° or more, leaving nothing for the angle at O .