

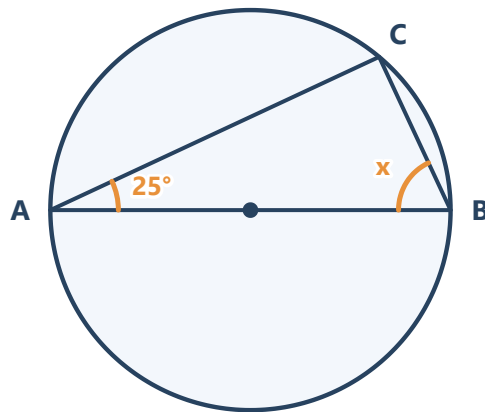
GCSE Maths: The angle in a semicircle (Higher): answers

GCSE Maths - Circle Theorems - Higher - Lesson 26.2

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/the-angle-in-a-semicircle/

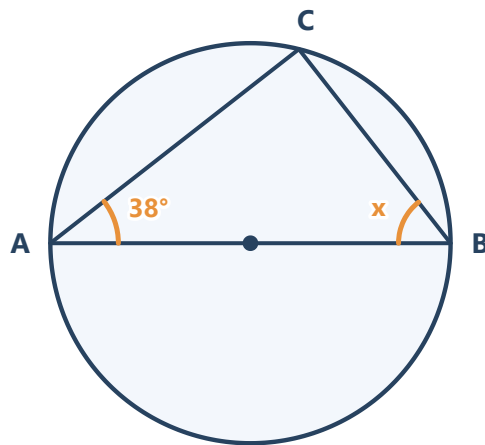
Exercise 26B The angle in a semicircle Non-calculator

- 1 AB is a diameter of the circle. C is a point on the circle. Angle $CAB = 25^\circ$. Work out the size of angle ABC . Give a reason for each step.



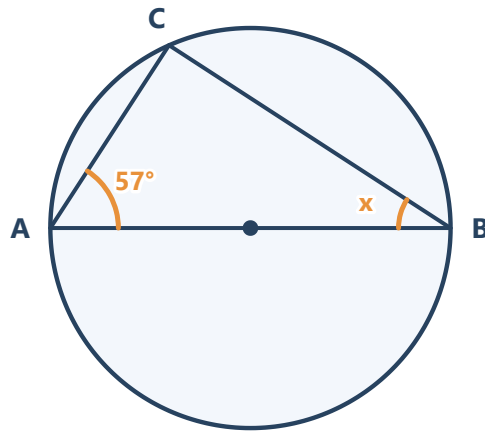
Answer: 65° (angle in a semicircle is 90° ; the angles in a triangle add up to 180°)

- 2 AB is a diameter of the circle. C is a point on the circle. Angle $CAB = 38^\circ$. Work out the size of angle ABC . Give a reason for each step.



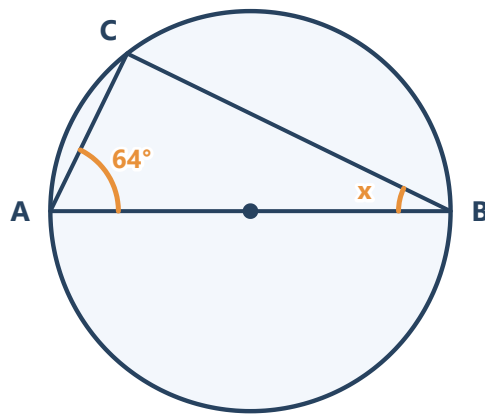
Answer: 52° (angle in a semicircle is 90° ; the angles in a triangle add up to 180°)

- 3 AB is a diameter of the circle. C is a point on the circle. Angle $CAB = 57^\circ$. Work out the size of angle ABC . Give a reason for each step.



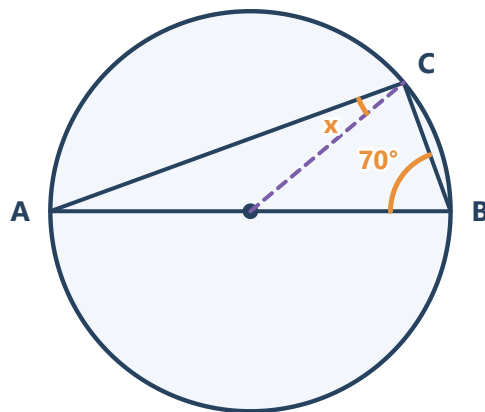
Answer: 33° (angle in a semicircle is 90° ; the angles in a triangle add up to 180°)

- 4 AB is a diameter of the circle. C is a point on the circle. Angle $CAB = 64^\circ$. Work out the size of angle ABC . Give a reason for each step.



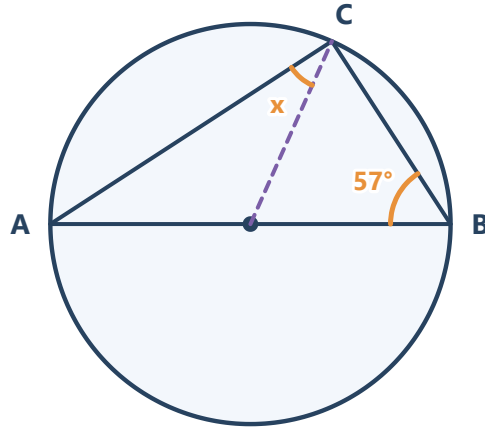
Answer: 26° (angle in a semicircle is 90° ; the angles in a triangle add up to 180°)

- 5 AB is a diameter of the circle with centre O . C is a point on the circle. Angle $ABC = 70^\circ$. Work out the size of angle ACO . Give a reason for each step.



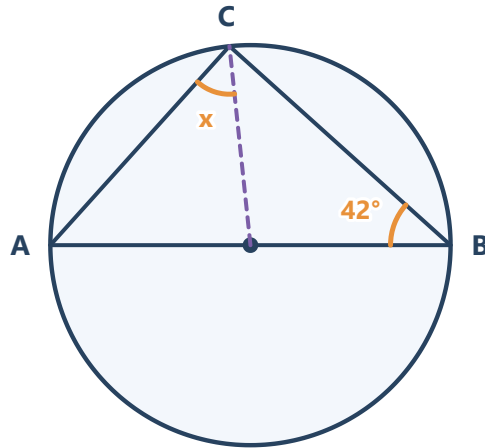
Answer: 20° (angle in a semicircle is 90° ; the base angles of an isosceles triangle are equal)

- 6 AB is a diameter of the circle with centre O . C is a point on the circle. Angle $ABC = 57^\circ$. Work out the size of angle ACO . Give a reason for each step.



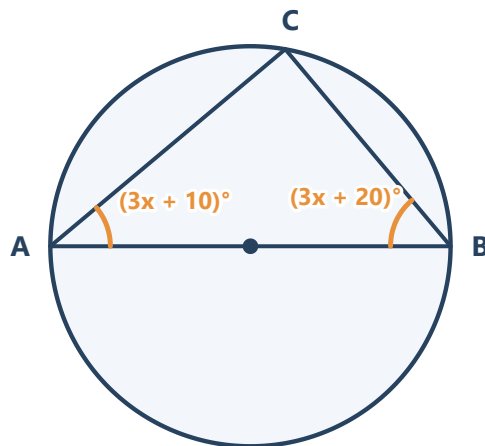
Answer: 33° (angle in a semicircle is 90° ; the base angles of an isosceles triangle are equal)

- 7 AB is a diameter of the circle with centre O . C is a point on the circle. Angle $ABC = 42^\circ$. Work out the size of angle ACO . Give a reason for each step.



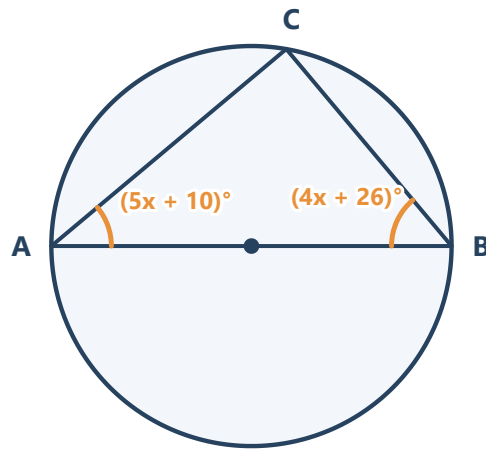
Answer: 48° (angle in a semicircle is 90° ; the base angles of an isosceles triangle are equal)

- 8 AB is a diameter of the circle. Angle $CAB = (3x + 10)^\circ$ and angle $ABC = (3x + 20)^\circ$. Work out the value of x .



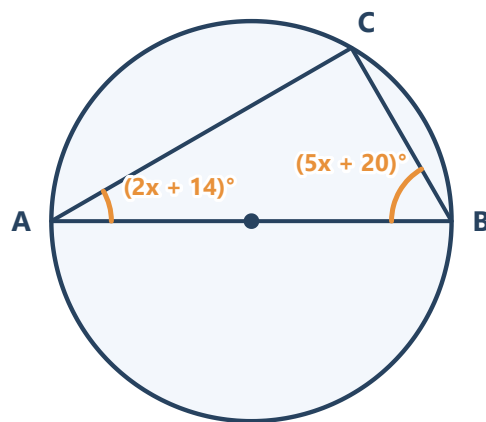
Answer: $x = 10$

- 9 AB is a diameter of the circle. Angle $CAB = (5x + 10)^\circ$ and angle $ABC = (4x + 26)^\circ$. Work out the value of x .



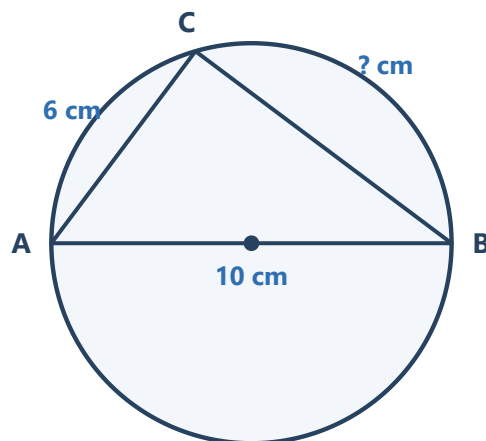
Answer: $x = 6$

- 10 AB is a diameter of the circle. Angle $CAB = (2x + 14)^\circ$ and angle $ABC = (5x + 20)^\circ$. Work out the value of x .



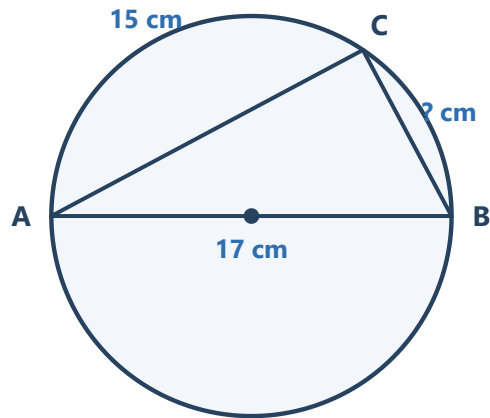
Answer: $x = 8$

- 11 AB is a diameter of the circle. $AB = 10$ cm and $AC = 6$ cm. Work out the length of BC .



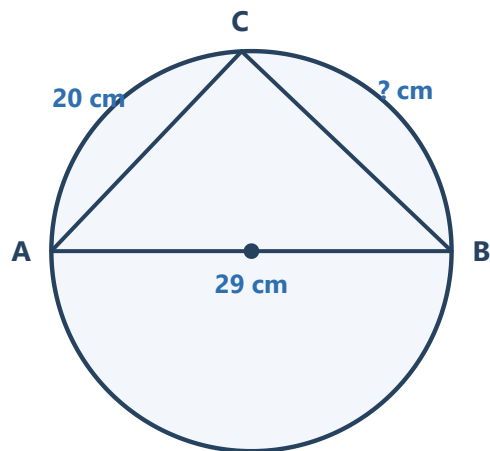
Answer: 8 cm

- 12 AB is a diameter of the circle. $AB = 17$ cm and $AC = 15$ cm. Work out the length of BC .



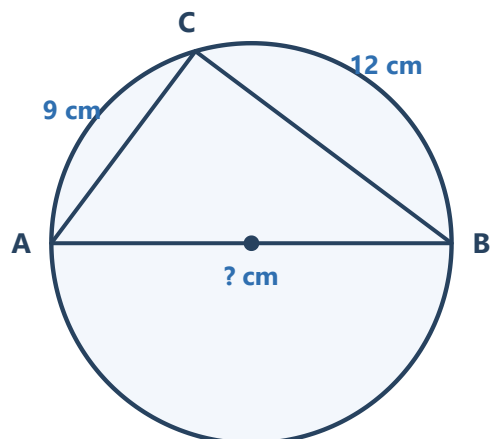
Answer: 8 cm

- 13** AB is a diameter of the circle. $AB = 29$ cm and $AC = 20$ cm. Work out the length of BC .



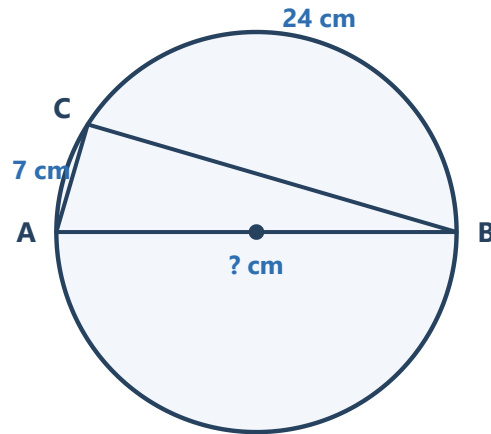
Answer: 21 cm

- 14** AB is a diameter of the circle. $AC = 9$ cm and $BC = 12$ cm. Work out the radius of the circle.



Answer: 7.5 cm

- 15** AB is a diameter of the circle. $AC = 7$ cm and $BC = 24$ cm. Work out the radius of the circle.



Answer: 12.5 cm

- 16** Mia says: "Angle ACB must be 90° , because C is on the circle." What important information is missing from her reason?

Answer: She has not said that AB is a diameter.

- 17** A right-angled triangle has sides of 9 cm, 12 cm and 15 cm. A circle is drawn through all three corners of the triangle. Work out the radius of the circle.

Answer: 7.5 cm

- 18** A , B and C are on a circle and angle $ACB = 90^\circ$. Explain why AB must be a diameter.

Answer: By the angle at the centre theorem, angle $AOB = 2 \times 90^\circ = 180^\circ$, so A , O and B are in a straight line.

- 19** Complete this proof that the angle in a semicircle is 90° . AB is a diameter of a circle with centre O , and C is on the circle. Join OC . Triangle OAC is isosceles with base angles a . Triangle OBC is isosceles with base angles b . Write down the three angles of triangle ABC and finish the proof.

Answer: Angles: a , b , $a + b$. Then $2a + 2b = 180^\circ$ so $a + b = 90^\circ$.