

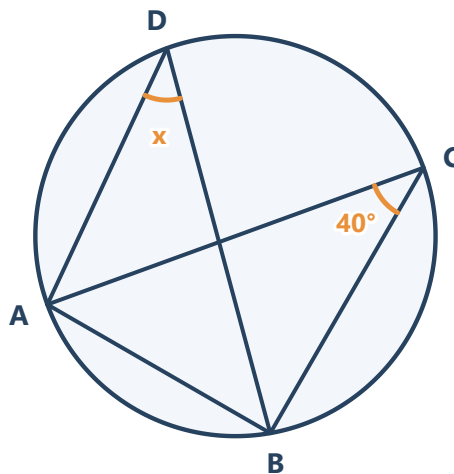
GCSE Maths: Angles in the same segment (Higher): answers

GCSE Maths - Circle Theorems - Higher - Lesson 26.4

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/angles-in-the-same-segment/

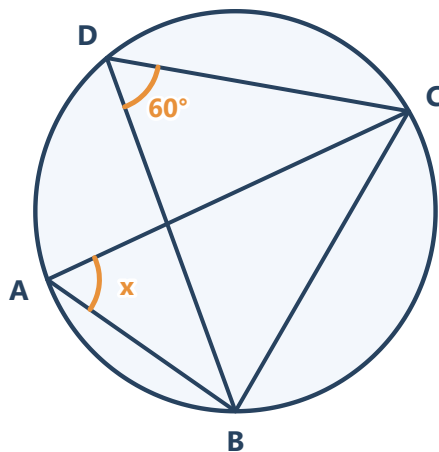
Exercise 26D Angles in the same segment Non-calculator

- 1 A, B, C and D are points on a circle. Angle $ACB = 40^\circ$. Work out the size of angle ADB . Give a reason for your answer.



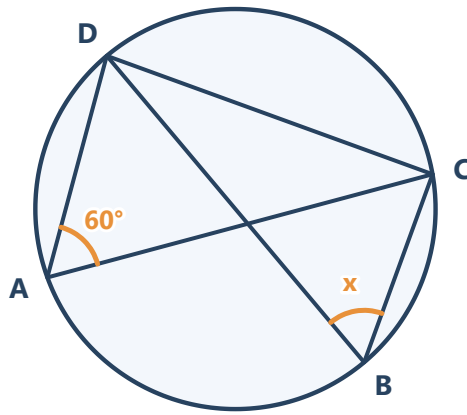
Answer: 40° (angles in the same segment are equal)

- 2 A, B, C and D are points on a circle. Angle $BDC = 60^\circ$. Work out the size of angle BAC . Give a reason for your answer.



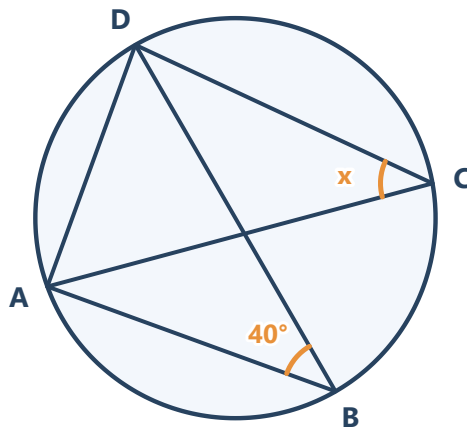
Answer: 60° (angles in the same segment are equal)

- 3 A, B, C and D are points on a circle. Angle $CAD = 60^\circ$. Work out the size of angle CBD . Give a reason for your answer.



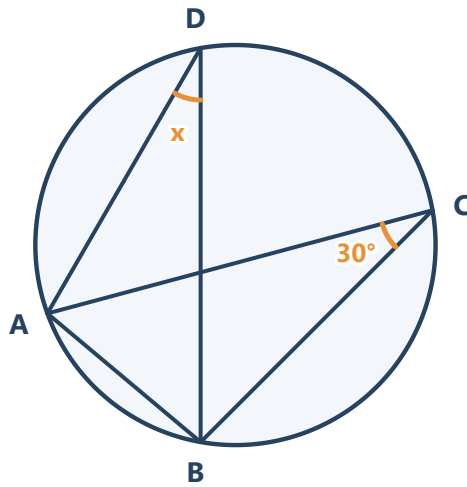
Answer: 60° (angles in the same segment are equal)

- 4 A, B, C and D are points on a circle. Angle $DBA = 40^\circ$. Work out the size of angle DCA . Give a reason for your answer.



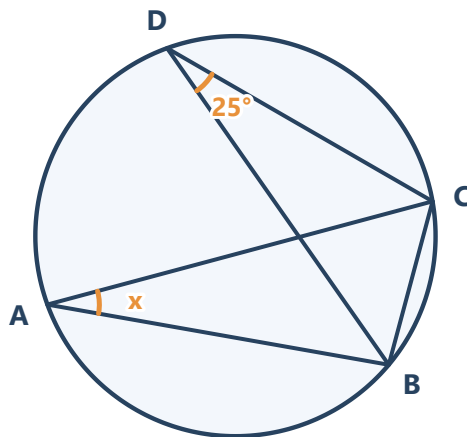
Answer: 40° (angles in the same segment are equal)

- 5 A, B, C and D are points on a circle. Angle $ACB = 30^\circ$. Work out the size of angle ADB . Give a reason for your answer.



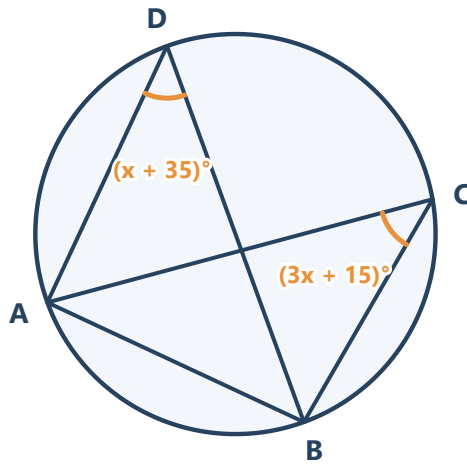
Answer: 30° (angles in the same segment are equal)

- 6 A, B, C and D are points on a circle. Angle $BDC = 25^\circ$. Work out the size of angle BAC . Give a reason for your answer.



Answer: 25° (angles in the same segment are equal)

- 7 A, B, C and D are points on a circle. Angle $ACB = (3x + 15)^\circ$ and angle $ADB = (x + 35)^\circ$.



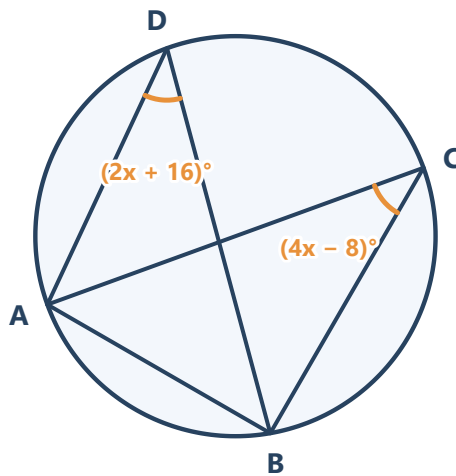
- (a) Work out the value of x .

Answer: $x = 10$

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

Answer: 45°

- 8 A, B, C and D are points on a circle. Angle $ACB = (4x - 8)^\circ$ and angle $ADB = (2x + 16)^\circ$.



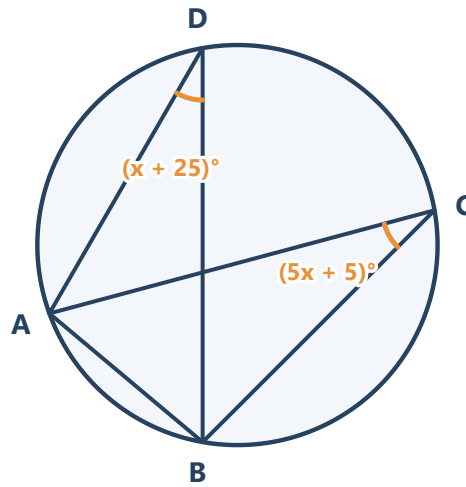
- (a) Work out the value of x .

Answer: $x = 12$

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

Answer: 40°

- 9 A, B, C and D are points on a circle. Angle $ACB = (5x + 5)^\circ$ and angle $ADB = (x + 25)^\circ$.



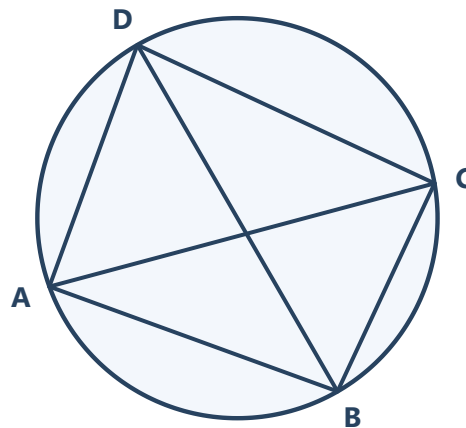
- (a) Work out the value of x .

Answer: $x = 5$

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

Answer: 30°

- 10** $ABCD$ is a cyclic quadrilateral. The diagonals AC and BD are drawn. Use the circle theorem about angles in the same segment.



- (a) Write down an angle that is equal to angle BAC .

Answer: angle BDC (angles in the same segment are equal)

- (b) Write down an angle that is equal to angle ADB .

Answer: angle ACB (angles in the same segment are equal)

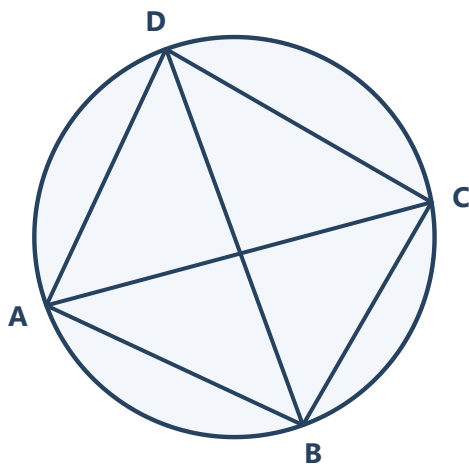
- (c) Write down an angle that is equal to angle CAD .

Answer: angle CBD (angles in the same segment are equal)

- (d) Write down an angle that is equal to angle ACD .

Answer: angle ABD (angles in the same segment are equal)

- 11** $ABCD$ is a cyclic quadrilateral. The diagonals AC and BD are drawn. Use the circle theorem about angles in the same segment.



- (a) Write down an angle that is equal to angle BAC .

Answer: angle BDC (angles in the same segment are equal)

- (b) Write down an angle that is equal to angle ADB .

Answer: angle ACB (angles in the same segment are equal)

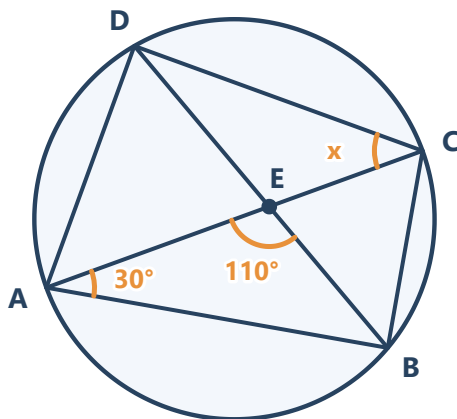
- (c) Write down an angle that is equal to angle CAD .

Answer: angle CBD (angles in the same segment are equal)

- (d) Write down an angle that is equal to angle ACD .

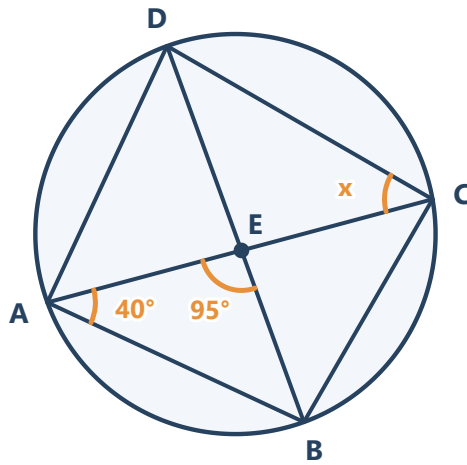
Answer: angle ABD (angles in the same segment are equal)

- 12** A, B, C and D are points on a circle. The chords AC and BD meet at E . Angle $BAC = 30^\circ$ and angle $AEB = 110^\circ$. Work out the size of angle ACD . Give a reason for each step.



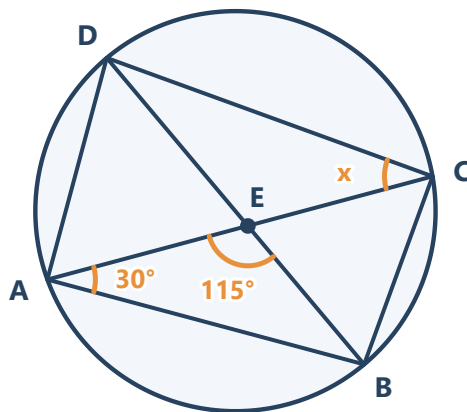
Answer: 40° (the angles in a triangle add up to 180° ; angles in the same segment are equal)

- 13** A, B, C and D are points on a circle. The chords AC and BD meet at E . Angle $BAC = 40^\circ$ and angle $AEB = 95^\circ$. Work out the size of angle ACD . Give a reason for each step.



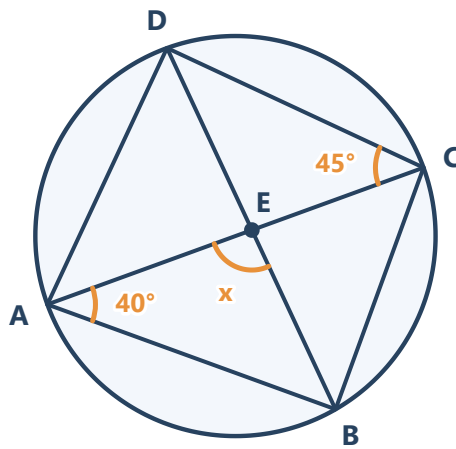
Answer: 45° (the angles in a triangle add up to 180° ; angles in the same segment are equal)

- 14** A, B, C and D are points on a circle. The chords AC and BD meet at E . Angle $BAC = 30^\circ$ and angle $AEB = 115^\circ$. Work out the size of angle ACD . Give a reason for each step.



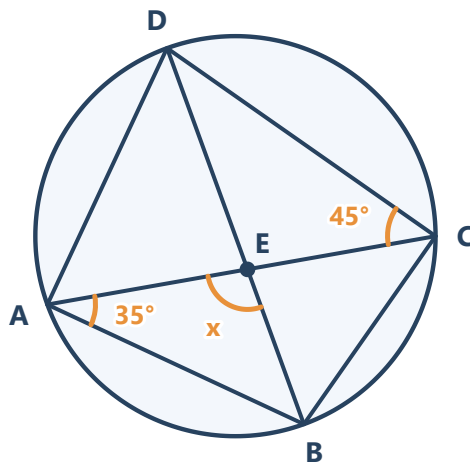
Answer: 35° (the angles in a triangle add up to 180° ; angles in the same segment are equal)

- 15** A, B, C and D are points on a circle. The chords AC and BD meet at E . Angle $BAC = 40^\circ$ and angle $ACD = 45^\circ$. Work out the size of angle AEB . Give a reason for each step.



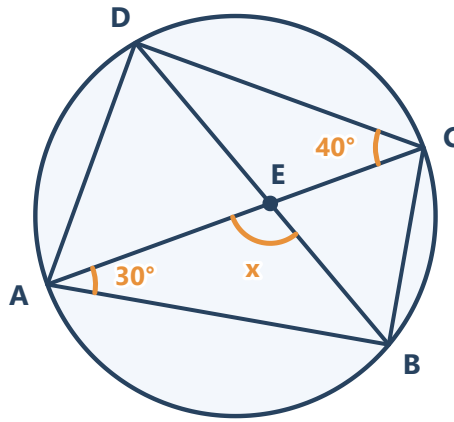
Answer: 95° (angles in the same segment are equal; the angles in a triangle add up to 180° ; vertically opposite angles are equal)

- 16** A, B, C and D are points on a circle. The chords AC and BD meet at E . Angle $BAC = 35^\circ$ and angle $ACD = 45^\circ$. Work out the size of angle AEB . Give a reason for each step.



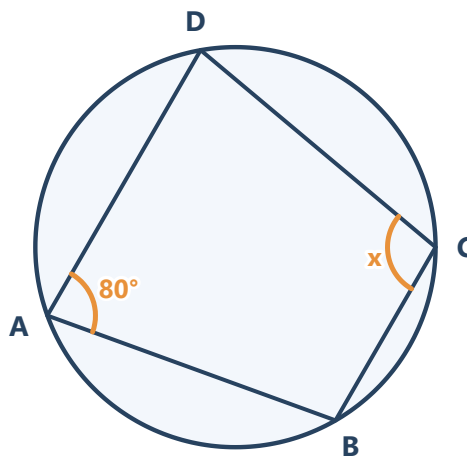
Answer: 100° (angles in the same segment are equal; the angles in a triangle add up to 180° ; vertically opposite angles are equal)

- 17** A, B, C and D are points on a circle. The chords AC and BD meet at E . Angle $BAC = 30^\circ$ and angle $ACD = 40^\circ$. Work out the size of angle AEB . Give a reason for each step.



Answer: 110° (angles in the same segment are equal; the angles in a triangle add up to 180° ; vertically opposite angles are equal)

- 18** Ali says: "Angle BAD and angle BCD both stand on the chord BD , so they are equal." Angle $BAD = 80^\circ$. Is Ali right? Work out angle BCD and explain.



Answer: Ali is wrong. Angle $BCD = 100^\circ$, because A and C are on opposite sides of BD (opposite angles of a cyclic quadrilateral add up to 180°).

- 19** A, B, C and D are points on a circle. C and D are on the same side of the chord AB. Explain, using the circle theorems, why angle $ACB =$ angle ADB even though C and D are in different places.

Answer: Both angles are half the angle at the centre AOB , so they are equal.