

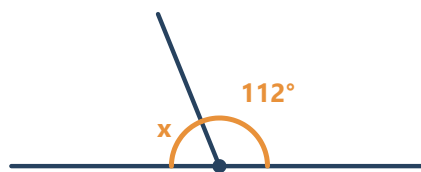
GCSE Maths: Angles on a line, around a point and vertically opposite (Higher): answers

GCSE Maths - Angles, Polygons and Symmetry - Higher - Lesson 17.2

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch17-angles-polygons-symmetry/higher/angles-on-a-line-around-a-point-and-vertically-opposite/

Exercise 17B Angles on a line, around a point and vertically opposite Non-calculator

- 1 The diagram shows angles on a straight line. Work out the value of x . Give a reason for your answer.



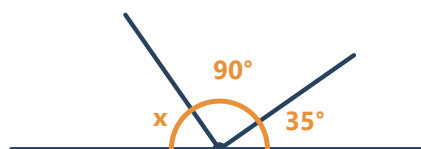
Answer: 68° (angles on a straight line add up to 180°)

- 2 The diagram shows angles on a straight line. Work out the value of x .



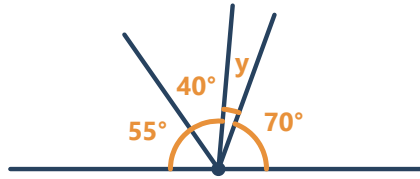
Answer: 132°

- 3 The diagram shows angles on a straight line. Work out the value of x . Give a reason for your answer.



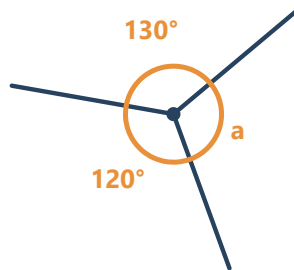
Answer: 55° (angles on a straight line add up to 180°)

- 4 The diagram shows angles on a straight line. Work out the value of y . Give a reason for your answer.



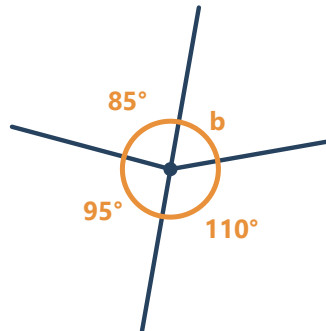
Answer: 15° (angles on a straight line add up to 180°)

- 5 The diagram shows angles around a point. Work out the value of a . Give a reason for your answer.



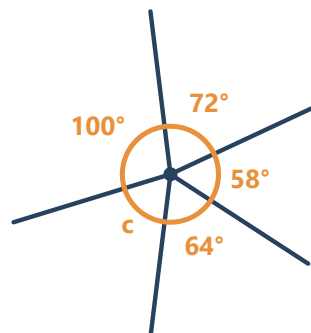
Answer: 110° (angles around a point add up to 360°)

- 6 The diagram shows angles around a point. Work out the value of b . Give a reason for your answer.



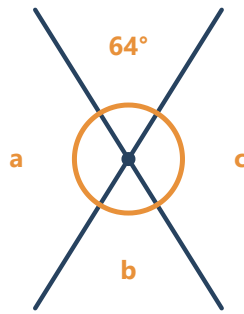
Answer: 70° (angles around a point add up to 360°)

- 7 The diagram shows angles around a point. Work out the value of c .



Answer: 66°

- 8 Two straight lines cross. Work out the size of each angle marked with a letter. Give a reason for each answer.



- (a) Work out angle a .

Answer: 116° (angles on a straight line add up to 180°)

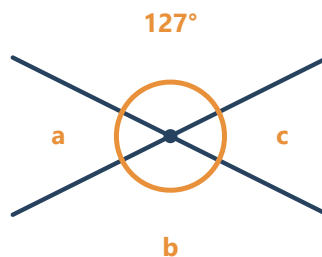
- (b) Work out angle b .

Answer: 64° (vertically opposite angles are equal)

- (c) Work out angle c .

Answer: 116° (vertically opposite angles are equal)

- 9 Two straight lines cross. Work out the size of each angle marked with a letter. Give a reason for each answer.



- (a) Work out angle a .

Answer: 53° (angles on a straight line add up to 180°)

- (b) Work out angle b .

Answer: 127° (vertically opposite angles are equal)

- (c) Work out angle c .

Answer: 53° (vertically opposite angles are equal)

- 10 Two angles on a straight line are 107° and 83° . Karl says that the angles must be on a straight line. Is he correct? Give a reason.

Answer: No: $107 + 83 = 190$, which is not 180

- 11 Work out the size of the angle between the hands of a clock at each time. (The 12 numbers are equally spaced round the clock face.)

- (a) 3 o'clock

Answer: 90°

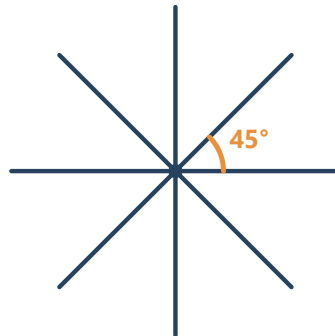
(b) 5 o'clock

Answer: 150°

(c) 8 o'clock (the smaller angle)

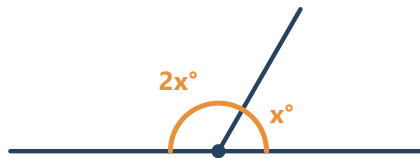
Answer: 120°

- 12 A pizza is cut into 8 equal slices. Anna takes 3 slices. What angle is left at the centre of the pizza for the remaining slices?



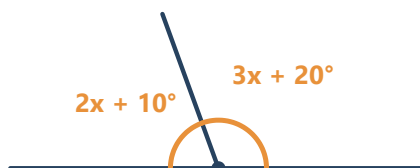
Answer: 225°

- 13 The diagram shows angles on a straight line. Work out the size of each angle.



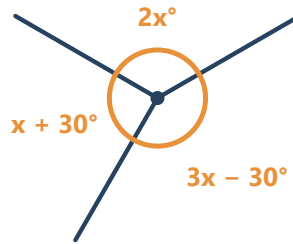
Answer: 60° , 120°

- 14 The diagram shows angles on a straight line. Work out the value of x .



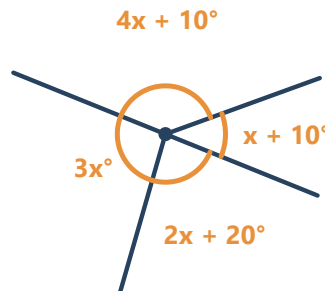
Answer: $x = 30$

- 15 The diagram shows angles around a point. Work out the value of x .



Answer: $x = 60$

- 16** The diagram shows angles around a point. Work out the size of the angle marked $4x + 10^\circ$.



Answer: 138°

- 17** Dan has worked out the angle on a straight line next to a 112° angle. He writes $360 - 112 = 248^\circ$. Explain his mistake and find the correct angle.

Answer: He used 360° (for a full turn); the answer is 68°

- 18** Lines AB and CD cross at E. Angle AEC is three times angle AED. (a) Work out angle AED. (b) Write down the size of angle BEC. Give reasons.

- (a) Work out angle AED.

Answer: 45°

- (b) Write down the size of angle BEC.

Answer: 45°

- 19** Two straight lines cross. Prove that the angles that are opposite each other are equal. (Use a and b for two opposite angles and c for an angle next to both.)

Answer: $a = 180^\circ - c = b$

- 20** The angles on a straight line are x , $2x$ and $3x + 12^\circ$. Two lines cross to make the angle $2x$ as one of the angles at the crossing point. Work out x and the size of the angle vertically opposite $3x + 12^\circ$.

Answer: $x = 28$; vertically opposite angle = 96°