

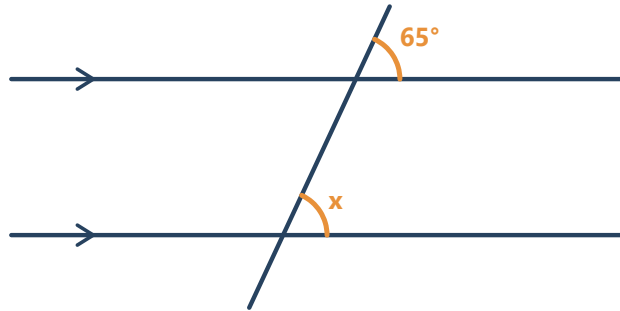
GCSE Maths: Parallel lines (Higher): answers

GCSE Maths - Angles, Polygons and Symmetry - Higher - Lesson 17.4

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/parallel-lines/

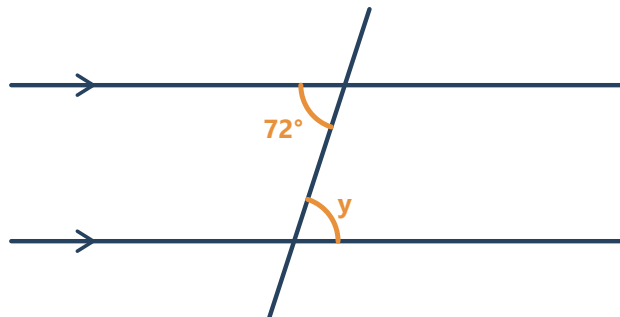
Exercise 17D Parallel lines: alternate, corresponding and co-interior angles Non-calculator

- 1 In the diagram the two horizontal lines are parallel. Work out the value of x . Give reasons for your answer.



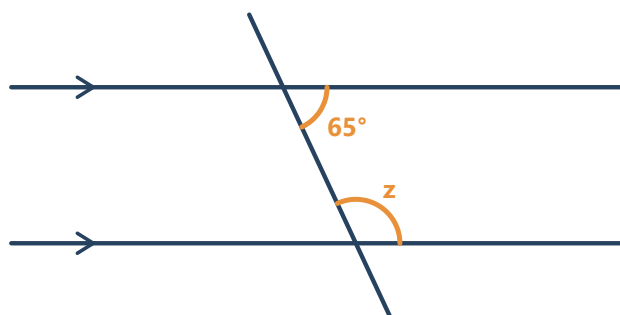
Answer: 65° (corresponding angles are equal)

- 2 In the diagram the two horizontal lines are parallel. Work out the value of y . Give reasons for your answer.



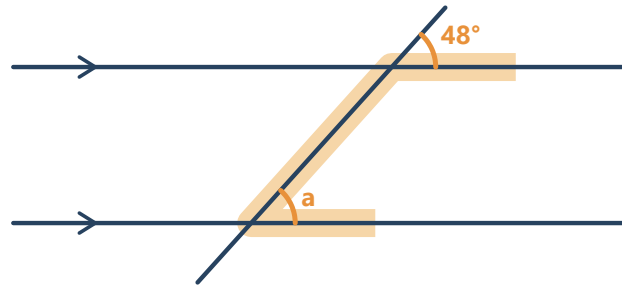
Answer: 72° (alternate angles are equal)

- 3 In the diagram the two horizontal lines are parallel. Work out the value of z . Give reasons for your answer.



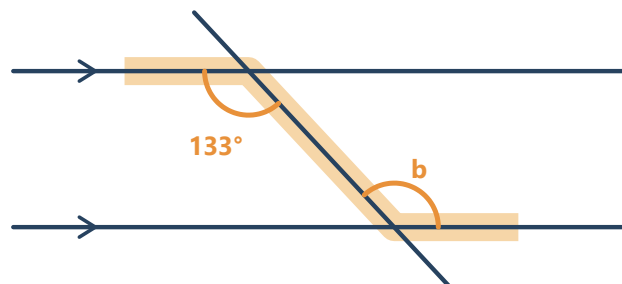
Answer: 115° (co-interior angles add up to 180°)

- 4 In the diagram the two horizontal lines are parallel. Work out the value of a . Give reasons for your answer.



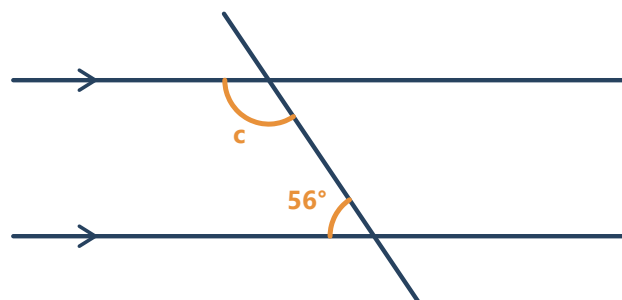
Answer: 48° (corresponding angles are equal)

- 5 In the diagram the two horizontal lines are parallel. Work out the value of b .



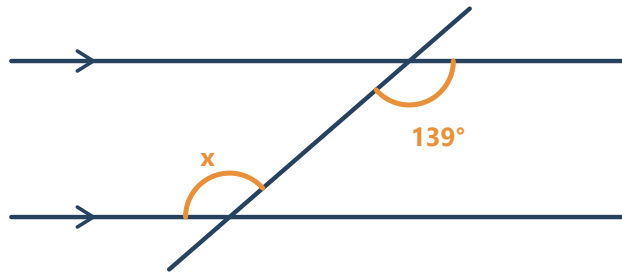
Answer: 133°

- 6 In the diagram the two horizontal lines are parallel. Work out the value of c . Give reasons for your answer.



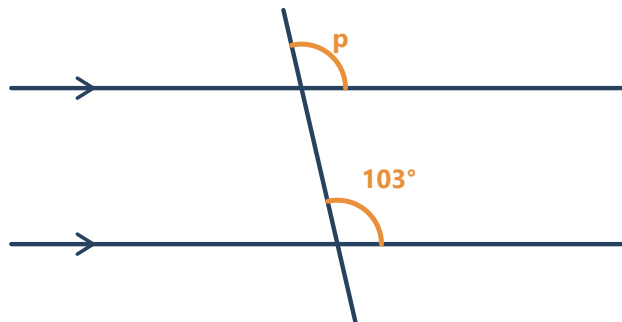
Answer: 124° (co-interior angles add up to 180°)

- 7 In the diagram the two horizontal lines are parallel. Work out the value of x . Give reasons for your answer.



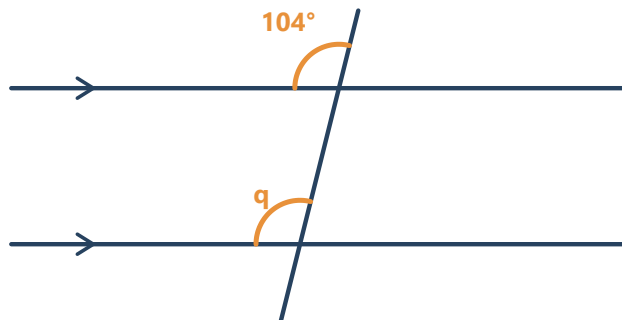
Answer: 139° (alternate angles are equal)

- 8 In the diagram the two horizontal lines are parallel. Work out the value of p . Give reasons for your answer.



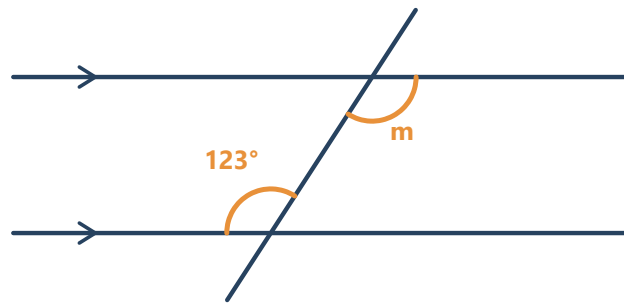
Answer: 103° (corresponding angles are equal)

- 9 In the diagram the two horizontal lines are parallel. Work out the value of q . Give reasons for your answer.



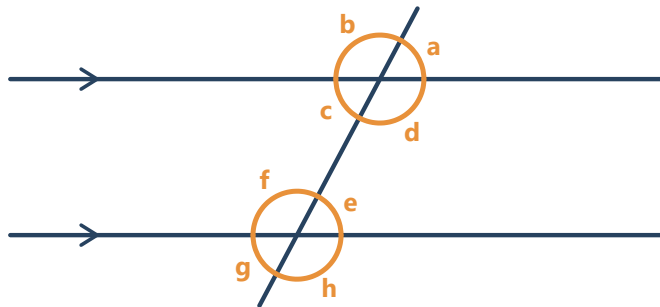
Answer: 104° (corresponding angles are equal)

- 10 In the diagram the two horizontal lines are parallel. Work out the value of m .



Answer: 123°

- 11** The diagram shows two parallel lines and a transversal, with the angles labelled a to h .



- (a) angle a : corresponding

Answer: e

- (b) angle c : alternate

Answer: e

- (c) angle d : co-interior

Answer: e

- (d) angle d : corresponding

Answer: h

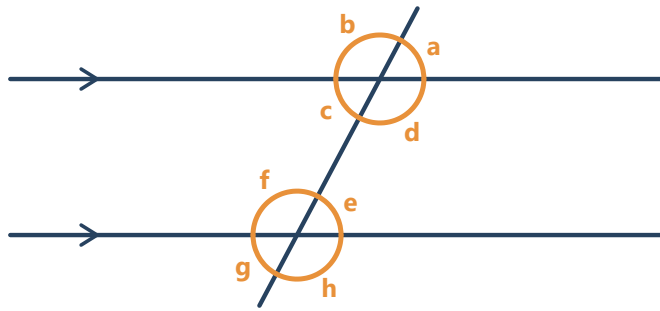
- (e) angle d : alternate

Answer: f

- (f) angle c : co-interior

Answer: f

- 12** In the diagram of the eight angles (a to h), angle $a = 62^\circ$. Work out the size of every other angle and give a reason for each.



(a) angle b

Answer: 118° (angles on a straight line add up to 180°)

(b) angle c

Answer: 62° (vertically opposite angles are equal)

(c) angle d

Answer: 118° (angles on a straight line add up to 180°)

(d) angle e

Answer: 62° (corresponding angles are equal)

(e) angle f

Answer: 118° (angles on a straight line add up to 180° ; corresponding angles are equal)

(f) angle g

Answer: 62° (vertically opposite angles are equal; corresponding angles are equal)

(g) angle h

Answer: 118° (angles on a straight line add up to 180° ; corresponding angles are equal)

13 Write **true** or **false** and give a reason.

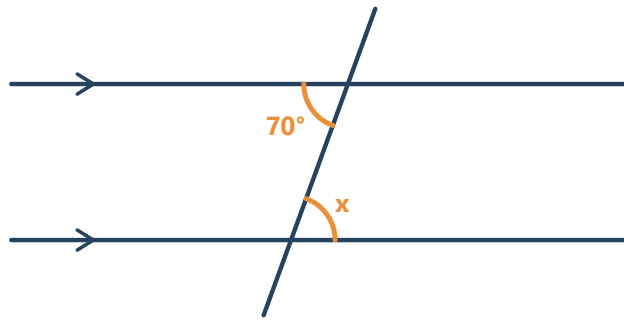
(a) Co-interior angles are always equal.

Answer: False: co-interior angles add up to 180°

(b) Alternate angles are equal when the lines are not parallel.

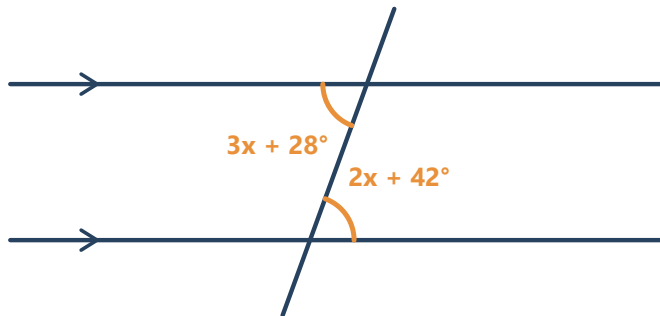
Answer: False: they are only equal for parallel lines

14 Ali says that angle x is 110° because co-interior angles add up to 180° . Explain his mistake and give the correct value.



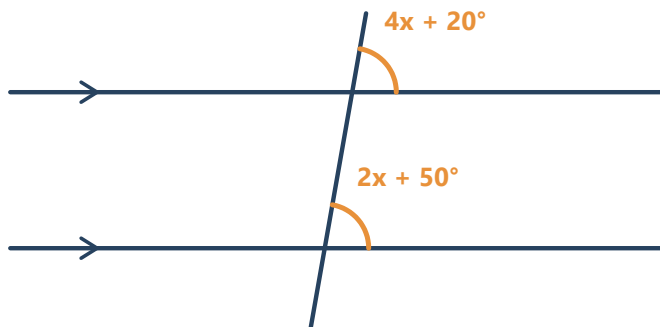
Answer: The angles are alternate, so $x = 70^\circ$

- 15** The lines are parallel. The two marked angles are $(3x + 28)^\circ$ and $(2x + 42)^\circ$. Work out the value of x .



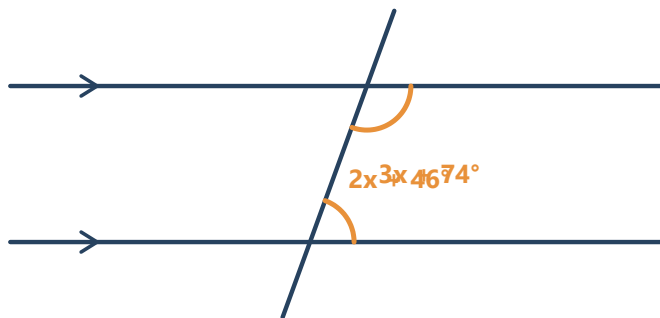
Answer: $x = 14$

- 16** The lines are parallel. The two marked angles are $(4x + 20)^\circ$ and $(2x + 50)^\circ$. Work out the value of x . Hence write down the size of each angle.



Answer: $x = 15$; angles 80° and 80°

- 17** The lines are parallel. The two marked angles are $(3x + 74)^\circ$ and $(2x + 46)^\circ$. Work out the value of x .



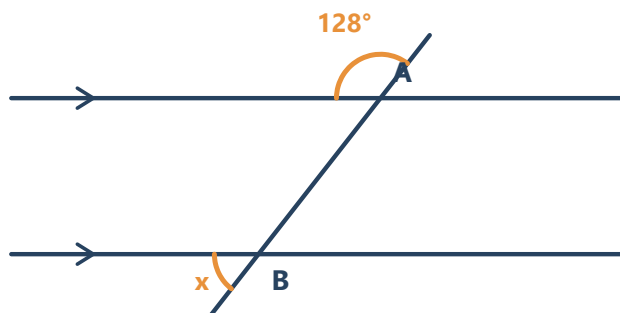
Answer: $x = 12$

- 18** Two parallel lines are crossed by a transversal. One of the angles is 90° . What can you say about all the other seven angles? Explain.

Answer: All eight angles are 90°

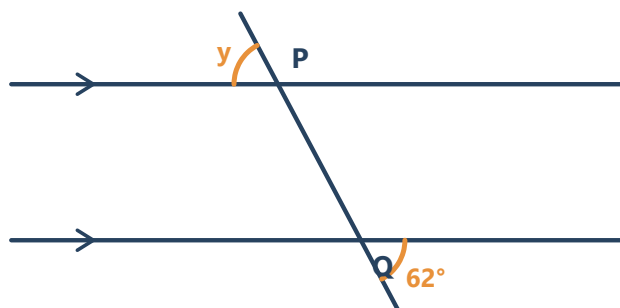
Exercise 17E Parallel lines: multi-step angle problems and reasons Non-calculator

- 1** In the diagram the two horizontal lines are parallel. Work out the value of x . Give reasons for your answer.



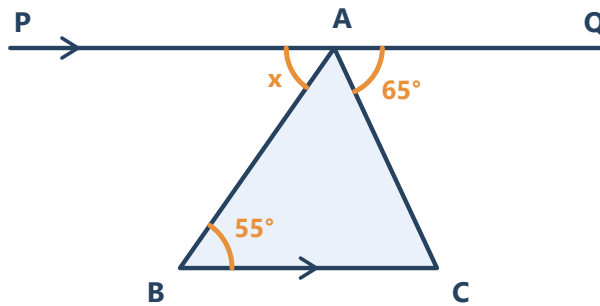
Answer: 52° (angles on a straight line add up to 180° ; corresponding angles are equal)

- 2** In the diagram AB and CD are parallel (the arrows show this). Work out the size of angle y . Give reasons.



Answer: 62° (vertically opposite angles are equal; corresponding angles are equal)

- 3** In the diagram, PAQ is parallel to BC. Work out (a) the size of angle x (angle PAB), (b) the size of angle BAC. Give reasons.



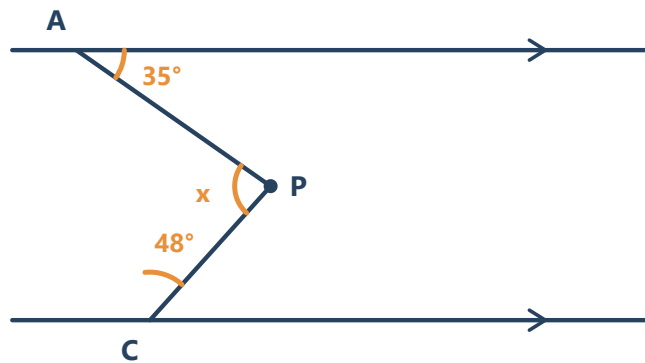
(a) Angle PAB

Answer: 55° (alternate angles are equal)

(b) Angle BAC

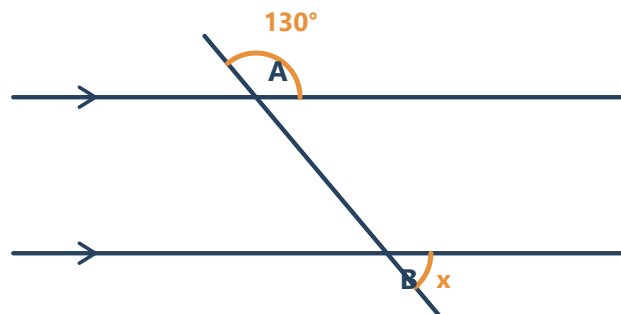
Answer: 60° (angles on a straight line add up to 180°)

- 4 In the diagram, the horizontal lines through A and C are parallel. Work out the size of angle x (angle APC). Give reasons.



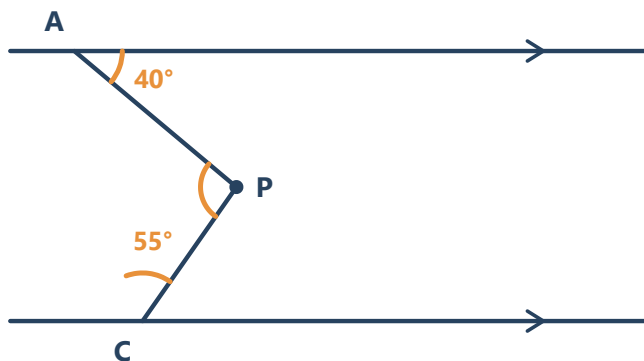
Answer: 83°

- 5 In the diagram the horizontal lines are parallel. Work out the size of angle x. Give reasons.



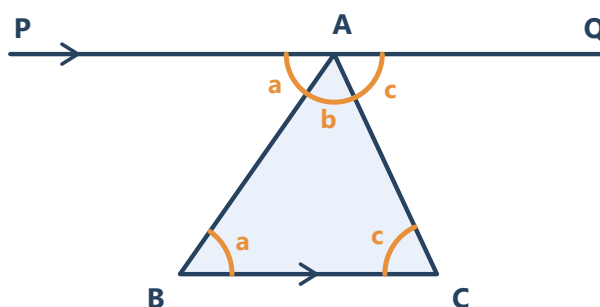
Answer: 50° (angles on a straight line add up to 180° ; corresponding angles are equal)

- 6 The diagram shows two parallel lines and a point P between them. Write down the size of angle APC and explain how you know.



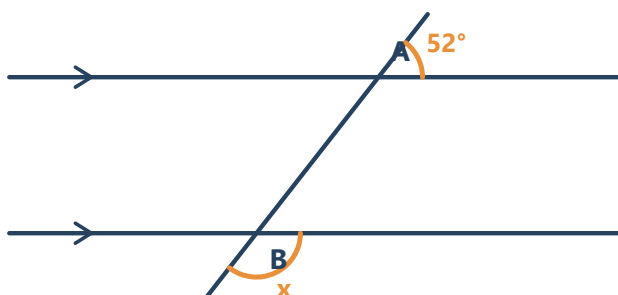
Answer: 95°

- 7 ABC is a triangle. The line through A is parallel to BC. Prove that angles in the triangle add up to 180° .



Answer: See the solution

- 8 In the diagram AB and CD are parallel. Work out the size of angle x . Give reasons for your working.



Answer: 128° (angles on a straight line add up to 180° ; corresponding angles are equal)