Angles Parallel Lines

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Two straight lines cross. One angle is 65°. Find the angle opposite it, and an angle next to it.

Step 1 · Vertically opposite angles are equal

Opposite angle = 65°

Step 2 · Angles on a straight line add up to 180°

Next to it: 180° − 65° = 115°

Answer: 65° and 115°

Check: 65 + 115 + 65 + 115 = 360, the total at a point ✓

2. Now try one with the steps

A transversal crosses two parallel lines. The angle above the top line, to the right, is 112°. Find the angle in the same position at the bottom line.

Step 1 · Same position at each crossing

Step 2 · Corresponding angles are equal

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Two lines cross. One angle is 38°. What is the angle vertically opposite it? [1]

2. Angles of 115° and x lie on a straight line. Find x. [1]

3. A transversal crosses two parallel lines. One angle is 72°. What is the corresponding angle? [1]

4. Between two parallel lines, an angle is 129°. What is the angle alternate to it? [1]

5. Between two parallel lines, an angle is 64°. What is the angle co-interior with it? [1]

6. Which pair adds up to 180°: alternate, corresponding or co-interior angles? [1]

7. Which letter shape do alternate angles make? [1]

8. Alternate angles are 2x and 80°. Find x. [2]

9. Corresponding angles are (3x + 15)° and 105°. Find x. [2]

10. Co-interior angles are x and 2x. Find x. [2]

11. Between parallel lines an angle is 47°. Angle y lies on a straight line with the angle alternate to it. Find y. [2]

12. One angle of a parallelogram is 58°. Using co-interior angles, find the angle next to it. [2]

13. Co-interior angles are (4x + 10)° and (2x + 20)°. Find x. [3]

14. Alternate angles are (5x – 20)° and (3x + 30)°. Find x. [3]

15. Two angles of 70° form a Z shape between parallel lines. What is the correct reason they are equal? [1]

4. Before you hand it in

Saying co-interior angles are equal

Alternate (Z) and corresponding (F) angles are equal. Co-interior (C) angles ADD UP TO 180°. If one is acute, the other must be obtuse.

Using alternate or corresponding angles when the lines are not marked parallel

Check for arrow marks or the word 'parallel'. Without them, only vertically opposite and straight-line facts can be used.

Writing 'because of Z angles' reason

Write the full reason: 'alternate angles are equal'. Exam mark schemes need the correct mathematical words.

Picking a corresponding angle on the wrong side of the transversal

Corresponding angles are in the SAME position at each crossing (for example, both above the line and to the right of the transversal).