

Angle Rules

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Find x: angles on a straight line are $2x$, $3x$, and x .

Step 1 · Set up the equation

$$2x + 3x + x = 180$$

Step 2 · Simplify

$$6x = 180$$

Step 3 · Solve for x

$$x = 30$$

Answer: $x = 30^\circ$

Check: $2(30) + 3(30) + 30 = 60 + 90 + 30 = 180$ ✓

2. Now try one with the steps

Two parallel lines are cut by a transversal. One angle is $3x + 10$ and its co-interior pair is $2x$. Find x.

Step 1 · Co-interior angles sum to 180°

Step 2 · Simplify

Step 3 · Solve for x

Answer:

3. Practice

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

1. Two angles on a straight line are 35° and x° . Find x. [1]

2. Three angles meet at a point: 110° , 95° , and x° . Find x. [2]

3. A triangle has angles 62° and 48° . Find the third angle. [2]

4. Two parallel lines are cut by a transversal. One angle is 73° . Find the corresponding angle. [1]
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5. A quadrilateral has angles 90° , 105° , and 80° . Find the fourth angle. [2]
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6. Two parallel lines are cut by a transversal. A co-interior angle is 115° . Find its pair. [2]
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7. Two straight lines cross. One of the angles is 48° . Find the angle vertically opposite it. [1]
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8. Angles of 90° , 37° and x° lie on a straight line. Find x . [1]
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9. A right-angled triangle has one angle of 34° . Find the third angle. [1]
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10. An isosceles triangle has a top angle of 40° . Find each of the two equal base angles. [2]
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11. Two parallel lines are cut by a transversal. One angle is 58° . Find the angle alternate to it. [1]
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12. Three angles meet at a point: x , $2x$ and $3x$. Find x . [2]
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13. Two interior angles of a triangle are 45° and 70° . Find the exterior angle at the third corner. [2]
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14. A quadrilateral has angles x , x , $2x$ and $2x$. Find x . [2]
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15. Two parallel lines are cut by a transversal. Alternate angles are $3x$ and $2x + 30$. Find x . [2]

16. An isosceles triangle has two equal angles of $(2x + 5)^\circ$ and a third angle of x° . Find x . [3]

4. Before you hand it in

Confusing alternate (Z) angles with co-interior (C) angles — treating both

Alternate (Z) and Corresponding (F) angles are EQUAL. Co-interior (C) angles SUM TO 180° . Trace the shape the angles make (Z, F, or C) to identify which rule applies.

Assuming all angles in a quadrilateral are 90° just because it 'looks like a rectangle'

Only rectangles and squares have four 90° angles. Other quadrilaterals (kites, trapezia, parallelograms) have angles that sum to 360° but are not individually 90° unless stated.

Using parallel-line rules on lines that only look parallel

Look for matching arrow marks on the lines, or the word 'parallel'. Without them, alternate, corresponding and co-interior rules cannot be used.