

Properties 2d Shapes

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Find the sum of interior angles in a pentagon (5 sides).

Step 1 · Use the formula

$$\text{Sum} = (n - 2) \times 180^\circ$$

Step 2 · Substitute $n = 5$

$$(5 - 2) \times 180 = 3 \times 180$$

Step 3 · Calculate

$$540^\circ$$

Answer: 540°

Check: A pentagon can be split into 3 triangles, each summing to 180° : $3 \times 180 = 540$ ✓

2. Now try one with the steps

A kite has angles of 120° , 50° and two equal angles x . Find x .

Step 1 · Angles in a quadrilateral add to 360°

Step 2 · Simplify

Step 3 · Solve

Answer:

3. Practice

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

1. Name a quadrilateral with exactly one pair of parallel sides. [1]

2. How many lines of symmetry does a rhombus have? [1]

3. State three properties of a parallelogram. [3]

4. Calculate the sum of interior angles in a regular hexagon, and find the size of each angle. [3]

5. Explain the difference between a kite and a rhombus. [3]

6. A regular polygon has interior angles of 150° . How many sides does it have? [3]

7. How many lines of symmetry does a square have? [1]

8. What is the order of rotational symmetry of an equilateral triangle? [1]

9. What name is given to a triangle with exactly two equal sides? [1]

10. How many lines of symmetry does a regular pentagon have? [1]

11. What is the order of rotational symmetry of a parallelogram? [1]

12. A kite has angles of 110° , 110° , 80° and x° . Find x . [2]

13. One angle of a parallelogram is 65° . Find the other three angles. [2]

14. Which quadrilateral has diagonals that are equal in length and cross at right angles, cutting each other in half? [2]

15. An isosceles trapezium has one angle of 70° . Find the other three angles. [3]

16. The diagonals of a rhombus are drawn. What size are the angles where they cross? [1]

4. Before you hand it in

Saying all quadrilaterals have angles summing to different totals depending on shape

ALL quadrilaterals (square, rectangle, kite, trapezium, etc.) have interior angles summing to 360° — this is fixed by the number of sides, regardless of the specific shape.

Confusing a rhombus with a square because both have 4 equal sides

A square has 4 equal sides AND 4 right angles. A rhombus has 4 equal sides but angles are NOT necessarily 90° (unless it happens to also be a square).

Saying a parallelogram has two lines of symmetry along its diagonals

Try it with a paper parallelogram: the halves do not match. A general parallelogram has NO lines of symmetry, but it does have rotational symmetry of order 2.