

Answer Key — Classifying 2D Shapes by Properties

Year 4 Mathematics · Measurement and geometry · WA4MMGT11

Section A — Fluency (16 marks, 1 mark each)

1. Triangle
2. Square
3. Rectangle
4. Pentagon
5. Hexagon
6. Trapezium
7. Rhombus
8. Parallelogram
9. Equilateral triangle
10. Isosceles triangle
11. Scalene triangle
12. Right-angled triangle
13. Octagon
14. Circle
15. Rectangle
16. Irregular quadrilateral

Section B — Core (21 marks)

1. A square has all 4 sides equal in length (as well as 4 right angles, like a rectangle); a non-square rectangle only has opposite sides equal, not all four. [3 marks]
2. Quadrilaterals: square, rectangle, trapezium, rhombus. Not quadrilaterals: triangle, pentagon, circle, hexagon. [4 marks, for a fully correct sort]
3. The shape is a rhombus. You could check with a protractor, or a set-square/corner tool, to confirm the angles aren't 90° , since a square must have four right angles. [3 marks]
4. Both have two pairs of parallel sides; a rhombus has all four sides equal in length, while a general parallelogram's opposite sides are equal but adjacent sides can differ. A shape that is both is any rhombus, since every rhombus is also a parallelogram. [4 marks]
5. 6 sides, 6 angles, 6 vertices. [3 marks, 1 each]
6. An irregular quadrilateral: a 4-sided shape where no sides are equal, no sides are parallel, and the angles are all different — e.g. an irregularly shaped block of land with four mismatched sides and corners. [4 marks for a clear, accurate description with a valid example]

Section C — Reasoning (9 marks) — sample responses, award marks for valid reasoning

1. A square meets all the requirements of a rectangle (4 right angles, opposite sides equal), so it is a special type of rectangle. A rectangle only needs opposite sides equal, not all four, so it doesn't have the extra property that makes a square. [2 marks]

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2. A parallelogram only needs two pairs of parallel, equal opposite sides — it doesn't prevent all four sides from being equal. A rhombus (with all sides equal and opposite sides parallel) still satisfies the definition of a parallelogram. [2 marks]
3. Classifying by sides compares the lengths of the triangle's three sides to see how many are equal; classifying by angles looks at the size of the triangle's three angles (whether one is 90° , all are under 90° , or one is over 90°). A triangle can be described both ways at once. [2 marks]
4. False — a rhombus also has 4 equal sides but does not have right angles, so it is not a square. This shows equal side lengths alone do not guarantee right angles. [3 marks]

Section D — Challenge (7 marks)

1. Rectangle (not a square, since not all sides are equal). [2 marks]
2. Heptagon, with 7 sides. [2 marks]
3. Quadrilateral $\rightarrow$ parallelogram $\rightarrow$ rectangle AND rhombus (it has both properties) $\rightarrow$ square, the most specific. A shape that is both a rectangle (4 right angles) and a rhombus (4 equal sides) at the same time must be a square, since rectangle and rhombus are two different special cases of a parallelogram, not one contained inside the other. [3 marks]