Classifying triangles/quadrilaterals

6 questions | 12 marks

Equivalent correct methods earn the corresponding marks.

1. A triangle has side lengths 6 cm, 6 cm and 6 cm. Give its most specific side-based name and each angle size. [2 marks]

All three sides are equal.

Its three equal angles total 180 degrees, so each is $180 \div 3 = 60$ degrees.

Answer: Equilateral; each angle is 60°.

2. A triangle has angles 90°, 35° and 55°. Classify it by angles and by sides. [2 marks]

It contains one right angle.

All angles differ, so their opposite side lengths differ.

Answer: Right-angled and scalene.

3. A simple quadrilateral has four sides each measuring 5 cm. No angle sizes are supplied. What family is guaranteed? Is it necessarily a square? [2 marks]

Four equal sides define a rhombus.

Four right angles have not been established.

Answer: It is a rhombus. It need not be a square.

4. A quadrilateral has two pairs of opposite parallel sides. State its guaranteed family. What angle property would establish that it is a rectangle? [3 marks]

Two pairs of opposite parallel sides define a parallelogram.

A right angle forces the adjacent supplementary angles and opposite angles to be right angles too.

Answer: Parallelogram; four right angles (or one right angle together with the parallelogram properties) establish a rectangle.

5. Using this chapter’s definition, name a quadrilateral with exactly one pair of opposite parallel sides. [1 mark]

The definition specifies exactly one parallel pair.

Answer: Trapezium.

6. Explain why a square belongs to both the rectangle and rhombus families. [2 marks]

The four right angles satisfy the rectangle definition.

The four equal sides satisfy the rhombus definition.

Answer: It has four right angles and four equal sides.