

WA7MMGTW7

Two-dimensional space and structures

Core + Challenge

Classifying Triangles

I can classify triangles by their sides and angles, use tick marks and angle facts, and decide whether three lengths make a triangle.

Name: _____ Date: _____ Score: _____ / 58

Key idea

By sides: equilateral (3 equal sides) · isosceles (2 equal sides) · scalene (no equal sides). Tick marks show equal sides.

By angles: acute (all angles $< 90^\circ$) · right-angled (one 90°) · obtuse-angled (one angle $> 90^\circ$). Use both names: e.g. 'right isosceles'.

Equal sides are opposite equal angles. An equilateral triangle has three 60° angles.

Triangle inequality: the two shorter sides must add to **more** than the longest side. $2, 3, 6 \rightarrow 2 + 3 < 6$, so no triangle.

A Fluency *practise the skill*

/ 16 marks

Classify each triangle using both its sides and its angles where you can. 1 mark each.

1. Sides 5, 5, 5 cm _____

9. Sides 7, 9, 7 cm _____

2. Sides 6, 6, 4 cm _____

10. Angles 25° , 65° , 90° _____

3. Sides 3, 4, 5 cm _____

11. Angles 30° , 30° , 120° _____

4. Angles 60° , 60° , 60° _____

12. Angles 50° , 60° , 70° _____

5. Angles 90° , 40° , 50° _____

13. Can a triangle be right and equilateral? _____

6. Angles 110° , 40° , 30° _____

14. Equal angles in an isosceles triangle _____

7. Angles 70° , 70° , 40° _____

15. Lines of symmetry of an equilateral triangle _____

8. Angles 90° , 45° , 45° _____

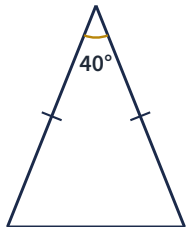
16. Do 2, 3 and 6 cm make a triangle? _____

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B**Core** *apply the skill to problems*

/ 22 marks

- 1 Classify this triangle by its sides and its angles, and find each base angle. [3 marks]



Answer: _____

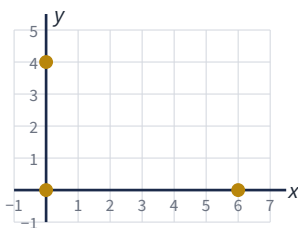
- 2 A triangle has angles of 35° and 55° . Find the third angle and classify the triangle. [2 marks]

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Answer: _____

- 3 Plot $(0, 0)$, $(6, 0)$ and $(0, 4)$. Classify the triangle. [2 marks]



Answer: _____

- 4 Each side of a triangle is 8 cm. Name the triangle and give the size of each angle. [2 marks]

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Answer: _____

- 5 A triangle has two angles of 25° . Find the third angle and classify the triangle. [2 marks]

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Answer: _____

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- 6 Which of these sets of lengths can make a triangle? (a) 4, 5, 10 cm (b) 5, 7, 11 cm (c) 6, 6, 12 cm. Explain. [3 marks]

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Answer: _____

- 7 An isosceles triangle has two sides of 9 cm and a base of 6 cm. Find its perimeter. [2 marks]

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Answer: _____

- 8 An equilateral triangle has a perimeter of 27 cm. How long is each side? [2 marks]

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Answer: _____

- 9 Plot (1, 1), (5, 1) and (3, 5). Classify the triangle by its sides. Explain how you know. [2 marks]

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Answer: _____

- 10 Describe a triangle that is both right-angled and isosceles. What are its angles? [2 marks]

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Answer: _____

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C

Reasoning *explain, justify and check*

/ 9 marks

- 1 Explain why every equilateral triangle is also isosceles, but not every isosceles triangle is equilateral. [2 marks]

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- 2 Explain why a triangle cannot have two obtuse angles. [2 marks]

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- 3 Explain the triangle inequality, using 3 cm, 4 cm and 8 cm straws. [3 marks]

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- 4 Leo says all right-angled triangles are scalene. Give a counterexample. [2 marks]

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D

Challenge *multi-step and problem-solving*

/ 11 marks

- 1 An isosceles triangle has a perimeter of 30 cm and a base of 8 cm. Find the length of each equal side. [2 marks]

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Answer: _____

- 2 An isosceles triangle has sides of 5 cm and 12 cm (one of them is repeated). Which side is repeated, and what is the perimeter? [3 marks]

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Answer: _____

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- 3 How many different triangles have whole-number side lengths and a perimeter of 12 cm? List them. [3 marks]

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Answer: _____

- 4 The angles of a triangle are in the ratio 1 : 2 : 3. Classify it by its angles and sides. [3 marks]

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Answer: _____

How did I go?

Fluency ____ / 16 Core ____ / 22 Reasoning ____ / 9 Challenge ____ / 11 **Total ____ / 58**

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