

WA7MMGTW7

Two-dimensional space and structures

Core + Challenge

Classifying Triangles — Marking Key

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

For tutors and parents. Award method marks for correct working even if the final answer is wrong.

Marks summary

Section A Fluency: 16 Section B Core: 22 Section C Reasoning: 9 Section D Challenge: 11 **Total: 58**

Fluency: 1 mark each; accept an equivalent unsimplified answer for half credit at tutor's discretion.

A Fluency *answers and working*

/ 16 marks

Q	Answer	Working
1	equilateral	all sides equal
2	isosceles	two sides equal
3	scalene	no sides equal
4	acute (equilateral)	all angles $< 90^\circ$
5	right-angled	one 90° angle
6	obtuse-angled	one angle $> 90^\circ$
7	acute isosceles	two equal angles, all acute
8	right isosceles	90° and two equal
9	isosceles	two sides equal
10	right scalene	90° , all different
11	obtuse isosceles	120° and two equal
12	acute scalene	all different, all acute
13	no	equilateral angles are all 60°
14	2	opposite the equal sides
15	3	one through each vertex
16	no	$2 + 3 < 6$

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B

Core *answers, working and marks*

/ 22 marks

Q	Answer	Working / sample response	Marks
1	Isosceles, acute; 70° each	$(180^\circ - 40^\circ) \div 2 = 70^\circ$, all angles $< 90^\circ$ <i>1 mark: isosceles</i> <i>1 mark: acute</i> <i>1 mark: 70°</i>	3
2	90°; right scalene	$180^\circ - 90^\circ = 90^\circ$; all angles different <i>1 mark each</i>	2
3	Right-angled scalene	Right angle at the origin; sides 6, 4 and about 7.2 are all different <i>1 mark each</i>	2
4	Equilateral; 60°	$180^\circ \div 3$ <i>1 mark each</i>	2
5	130°; obtuse isosceles	$180^\circ - 50^\circ = 130^\circ$ <i>1 mark each</i>	2
6	Only (b)	(a) $4 + 5 < 10$ (b) $5 + 7 > 11$ (c) $6 + 6 = 12$ (flat) <i>1 mark each</i>	3
7	24 cm	$9 + 9 + 6$ <i>1 mark each</i>	2
8	9 cm	$27 \div 3$ <i>1 mark each</i>	2
9	Isosceles	The top vertex is directly above the midpoint of the base, so the two slanted sides are equal. <i>1 mark: isosceles</i> <i>1 mark: reason</i>	2
10	90°, 45°, 45°	Two equal angles share 90° <i>1 mark each</i>	2

C

Reasoning *sample answers and marking criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
1	3 equal sides includes 2 equal sides	Isosceles needs at least two equal sides; equilateral has three. <i>2 marks</i>	2
2	They would add to more than 180°	Two angles over 90° already sum to more than 180°. <i>2 marks</i>	2
3	The short straws can't meet	$3 + 4 = 7 < 8$ The two short sides can't reach each other to close the triangle. <i>1 mark: sum</i> <i>1 mark: comparison</i> <i>1 mark: explanation</i>	3

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Q	Answer	Working / sample response	Marks
4	90°, 45°, 45°	A right isosceles triangle has two equal sides. <i>2 marks</i>	2

D

Challenge *solutions and marking criteria*

/ 11 marks

Q	Answer	Working / sample response	Marks
1	11 cm	$(30 - 8) \div 2$ <i>1 mark each</i>	2
2	12 cm repeated; 29 cm	5, 5, 12: $5 + 5 < 12$, impossible 12, 12, 5 works Perimeter 29 cm <i>1 mark: reject</i> <i>1 mark: accept</i> <i>1 mark: 29</i>	3
3	3: (2, 5, 5), (3, 4, 5), (4, 4, 4)	Check each set with the triangle inequality <i>1 mark each</i>	3
4	Right-angled scalene (30°, 60°, 90°)	6 parts = 180°, 1 part = 30° <i>1 mark: angles</i> <i>1 mark: right</i> <i>1 mark: scalene</i>	3