

WA7MMGTW6

Two-dimensional space and structures

Core + Challenge

Angle Sum of a Triangle — Marking Key

I can use the angle sum of a triangle and the exterior angle rule to find unknown angles and explain why the rule works.

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	70°	$180^\circ - 50^\circ - 60^\circ$
2	55°	$180^\circ - 90^\circ - 35^\circ$
3	90°	$180^\circ - 45^\circ - 45^\circ$
4	35°	$180^\circ - 120^\circ - 25^\circ$
5	70°	$180^\circ - 33^\circ - 77^\circ$
6	40°	$180^\circ - 100^\circ - 40^\circ$
7	60°	$180^\circ - 62^\circ - 58^\circ$
8	73°	$180^\circ - 17^\circ - 90^\circ$
9	60°	$180^\circ \div 3$
10	70°	$(180^\circ - 40^\circ) \div 2$
11	50°	$180^\circ - 130^\circ$
12	45°	$90^\circ \div 2$
13	105°	$40^\circ + 65^\circ$
14	60°	$130^\circ - 70^\circ$
15	60°	$180^\circ - 120^\circ$
16	40°	$(180^\circ - 100^\circ) \div 2$

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B

Core answers, working and marks

/ 22 marks

Q	Answer	Working / sample response	Marks
1	$x = 57^\circ$	$180^\circ - 48^\circ - 75^\circ$ 1 mark: working 1 mark: 57°	2
2	$y = 52^\circ$	$180^\circ - 90^\circ - 38^\circ$ 1 mark: working 1 mark: 52°	2
3	72° each	$(180^\circ - 36^\circ) \div 2$ 1 mark: working 1 mark: 72°	2
4	$x = 65^\circ, y = 65^\circ$	Exterior angle: $115^\circ = 50^\circ + x$, so $x = 65^\circ$ Straight line: $y = 180^\circ - 115^\circ = 65^\circ$ 1 mark: x 1 mark: y 1 mark: reasons	3
5	$30^\circ, 60^\circ, 90^\circ$	$6x = 180^\circ$ 1 mark: $x = 30^\circ$ 1 mark: all three	2
6	130°	$180^\circ - 2 \times 25^\circ$ 1 mark each	2
7	No	$95^\circ + 90^\circ = 185^\circ > 180^\circ$ 1 mark: no 1 mark: reason	2
8	$x = 40; 50^\circ, 60^\circ, 70^\circ$	$3x + 60 = 180$ $x = 40$ 1 mark: equation 1 mark: x 1 mark: angles	3
9	60°	$180^\circ - 90^\circ - 30^\circ$ 1 mark each	2
10	120°	$180^\circ - 60^\circ$ (or $60^\circ + 60^\circ$) 1 mark each	2

C

Reasoning *sample answers and marking criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
1	They make a straight line	Placing the three corners side by side forms a straight angle (180°). <i>1 mark: method</i> <i>1 mark: straight line</i> <i>1 mark: conclusion</i>	3
2	$90^\circ + 90^\circ = 180^\circ$ leaves 0°	The third angle would be 0° , so there would be no triangle. <i>2 marks</i>	2
3	Equal angles share 180°	All three angles are equal: $180^\circ \div 3 = 60^\circ$. <i>2 marks</i>	2
4	Both make 180° with y	$x + 50^\circ + y = 180^\circ$ and $115^\circ + y = 180^\circ$, so $115^\circ = x + 50^\circ$ <i>2 marks</i>	2

D

Challenge *solutions and marking criteria*

/ 11 marks

Q	Answer	Working / sample response	Marks
1	$50^\circ, 50^\circ, 80^\circ$ or $50^\circ, 65^\circ, 65^\circ$	50° is a base angle: apex 80° 50° is the apex: base angles 65° <i>1 mark: first</i> <i>1 mark: second</i> <i>1 mark: both</i>	3
2	75°	$2 \times 180^\circ = 360^\circ$ $360^\circ - 285^\circ = 75^\circ$ <i>1 mark: 360°</i> <i>1 mark: working</i> <i>1 mark: 75°</i>	3
3	18° and 72°	$x + 4x = 90^\circ$ <i>1 mark: equation</i> <i>1 mark: both</i>	2
4	angle A = 20° , angle ACB = 120°	$3A = A + 40^\circ$ $A = 20^\circ$, exterior 60° angle ACB = $180^\circ - 60^\circ$ <i>1 mark: equation</i> <i>1 mark: 20°</i> <i>1 mark: 120°</i>	3