4.10 Angles in Polygons: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 In a regular polygon, three exterior angles are removed and their total is 108 degrees. If the remaining exterior angles are all equal and there are 12 exterior angles in total, find the measure of each of the remaining exterior angles.

(3)

2 A regular decagon has 10 equal exterior angles. Work out the size of one exterior angle.

(2)

3 Three angles of a quadrilateral are 62°, 117° and 84°. Work out the fourth angle.

(2)

4 7 of the interior angles of a octagon are 93°, 153°, 97°, 147°, 116°, 158°, 144°. Is it possible for the last angle to be 192°? Give a reason.

(3)

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5 Three angles of a quadrilateral are 92°, 65° and 90°. Work out the fourth angle and say whether the quadrilateral could be a parallelogram.

(3)

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6 A regular octagon has interior angles all equal. Calculate the size of one interior angle.

(2)

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7 A regular polygon has each interior angle equal to 150 degrees. Find the number of sides of the polygon.

(3)

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8 Each exterior angle of a regular polygon is 24 degrees. How many sides does the polygon have?

(2)

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9 Write down the sum of the interior angles of a hexagon.

(1)

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10 A regular decagon (10 sides) has all interior angles equal. Calculate the size of one interior angle.

(1)

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11 Each exterior angle of a regular polygon is 20 degrees. How many sides does the polygon have?

(1)

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Mark scheme · 4.10 Angles in Polygons: 30-minute Pack

Question 1

total of all exterior angles = 360 so remaining sum = 360 - 108 = 252	M1
number of remaining angles = 12 - 3 = 9 so each = 252/9	M1
each remaining exterior angle = 28 degrees cao	A1

Answer: **28 degrees**

Question 2

360 ÷ 10	M1
36° cao	A1

Answer: **36°**

Question 3

360 - 62 - 117 - 84 or 360 - 263	M1
97° cao	A1

Answer: **97°**

Question 4

(8 - 2) x 180 = 1080	M1
1080 - 908 = 172	M1
No, as the last angle must be 172°	B1

Answer: **No**

Question 5

360 - 247	M1
113°	A1
parallelogram needs opposite angles equal; check pairs	B1

Answer: **113°; it cannot be a parallelogram**

Question 6

use sum formula: (8-2)*180 = 1080 or divide by 8	M1
135 degrees cao	A1

Answer: **135 degrees**

Question 7

use relation interior = 180 - 360/n leading to 150 = 180 - 360/n or 360/n = 30	M1
rearrange to n = 360/30	M1
n = 12 cao	A1

Answer: **12**

Question 8

use n = 360/exterior = 360/24	M1
n = 15 cao	A1

Answer: **15**

Question 9

720 cao	B1

Answer: **720 degrees**

Question 10

144 cao	B1

Answer: **144 degrees**

Question 11

18 cao	B1

Answer: **18**

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