4.5 Properties of 2D Shapes: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 An isosceles triangle has two equal sides and a vertex angle of 40 degrees between the equal sides. Work out the two base angles.

(3)

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2 A polygon has 7 sides. How many diagonals can be drawn from one vertex?

(2)

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3 State how many lines of symmetry a square has.

(1)

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4 Write down (a) the number of lines of symmetry and (b) the order of rotational symmetry of a regular nonagon.

(2)

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5 Three angles of a quadrilateral are 86°, 114° and 76°. Work out the fourth angle and say whether the quadrilateral could be a parallelogram.

(3)

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6 A triangle has angles 30° and 68°. Work out the third angle and describe the triangle using the words equilateral, isosceles or scalene, and acute-angled, right-angled or obtuse-angled.

(3)

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7 What is the name of a polygon with 8 sides?

(1)

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8 Give the missing interior angle of this triangle. The other two angles are 50 degrees and 60 degrees.

(2)

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9 Classify the quadrilateral with four equal sides and opposite angles equal. Give its name.

(1)

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10 In a quadrilateral, two angles are 78 degrees and 102 degrees. The other two angles, x and y, are equal. Find x.

(2)

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11 A picture frame is a parallelogram shape. One interior angle is (2x + 10) degrees and the angle adjacent to it is (x + 50) degrees. Find x, and state the size of the two angles.

(3)

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Mark scheme · 4.5 Properties of 2D Shapes: 30-minute Pack

Question 1

uses fact that sum of angles in triangle is 180 or computes 180 - 40 = 140 oe	M1
divides 140 by 2 to find each base angle oe	M1
70 degrees and 70 degrees cao	A1

Answer: **70 degrees and 70 degrees**

Question 2

7 - 3 or counts all other vertices excluding the two neighbours	M1
4 cao	A1

Answer: **4**

Question 3

4 cao	B1

Answer: **4**

Question 4

(a) 9	B1
(b) 9	B1

Answer: **(a) 9, (b) 9**

Question 5

360 - 276	M1
84°	A1
parallelogram needs opposite angles equal; check pairs	B1

Answer: **84°; it cannot be a parallelogram**

Question 6

180 - 30 - 68	M1
82°	A1
scalene and acute-angled	B1

Answer: **82°; scalene, acute-angled**

Question 7

octagon cao	B1

Answer: **octagon**

Question 8

uses 180 = sum of angles in a triangle or computes 50 + 60 = 110 oe	M1
70 degrees cao	A1

Answer: **70 degrees**

Question 9

identifies shape as a rhombus or says rhombus cao	B1

Answer: **rhombus**

Question 10

uses 78 + 102 + x + y = 360 with x = y	M1
x = 90 degrees cao	A1

Answer: **90 degrees**

Question 11

uses adjacent angles sum to 180: (2x+10) + (x+50) = 180	M1
simplifies to 3x + 60 = 180 and solves x = 40	M1
both angles = 90 degrees cao	A1

Answer: **x = 40, both angles = 90 degrees**

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