



KS3.M-G5 Properties of 2D Shapes

AQA KS3.M-G5 · Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Name the shape with 3 straight sides and 3 angles.

(1)

- 2** State how many lines of symmetry a square has.

(1)

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

(2)

- 4** A rectangle has length 12 cm and width 5 cm. Work out the perimeter.

(2)

- 5** Classify the quadrilateral with four equal sides and opposite angles equal. Give its name.

(2)

- 6** A triangle has sides of lengths 5 cm, 5 cm and 8 cm. State whether the triangle is isosceles, equilateral or scalene.

(2)

- 7** A square is a quadrilateral with four equal sides and four right angles. How many of its interior angles are right angles?

(2)

- 8** A kite has diagonals that meet at right angles. The diagonals are 10 cm and 16 cm long. Calculate the area of the kite.

(3)

- 9** The angles in a quadrilateral are 90 degrees, 80 degrees and 110 degrees. Work out the fourth angle.

(2)

- 10** Draw a regular hexagon. State how many lines of symmetry it has.

(2)

- 11** Triangle ABC is isosceles with $AB = AC$. Angle ABC is 40 degrees. Find angles BAC and ACB.

(3)

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- 12** A regular pentagon has internal angle 108 degrees. Explain briefly why all internal angles are 108 degrees.

(2)

-
- 13** Classify this quadrilateral: it has one pair of parallel sides, opposite sides not equal, and no right angles. Give the name of the quadrilateral and a brief reason.

(2)

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- 14** A parallelogram has one angle equal to 70 degrees. Work out the measures of the other three interior angles.

(2)

-
- 15** A rectangle has sides 6 cm and 8 cm. Calculate the length of a diagonal of the rectangle.

(3)

- 16** A regular hexagon is a six sided polygon. Work out its interior angle and state how many lines of symmetry a regular hexagon has.

(3)

- 17** In a quadrilateral the angles are 85 degrees, 95 degrees, x degrees and y degrees. Given that $x = y$, find x and y .

(3)

- 18** 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)

Mark scheme · KS3.M-G5 Properties of 2D Shapes

Question 1

- **B1** triangle cao
- Answer: **triangle**

Question 2

- **B1** 4 cao
- Answer: **4**

Question 3

- **M1** uses $180 = \text{sum of angles in a triangle}$ or computes $50 + 60 = 110$ oe
- **A1** 70 degrees cao
- Answer: **70 degrees**

Question 4

- **M1** uses $P = 2(\text{length} + \text{width})$ or adds sides: $12 + 5 + 12 + 5$ oe
- **A1** 34 cm cao
- Answer: **34 cm**

Question 5

- **B1** identifies shape as a rhombus or says rhombus cao
- **B1** statement that four sides equal or opposite angles equal as justification oe
- Answer: **rhombus**

Question 6

- **B1** identifies that two sides equal so is isosceles cao
- **B1** brief reason: two equal sides or two sides of length 5 cm oe
- Answer: **isosceles**

Question 7

- **B1** 4 cao
- **B1** optional reason: each corner is 90 degrees oe
- Answer: **4**

Question 8

- **M1** uses $\text{area} = \frac{1}{2} \times d1 \times d2$ or computes $0.5 \times 10 \times 16$ oe
- **M1** calculates 80 oe
- **A1** 80 cm^2 cao
- Answer: **80 cm^2**

Question 9

- **M1** uses sum of angles in quadrilateral = 360 and computes $90 + 80 + 110 = 280$ oe
- **A1** 80 degrees cao
- Answer: **80 degrees**

Question 10

- **M1** reasonable regular hexagon drawn with six equal sides and roughly equal angles
- **A1** 6 lines of symmetry for a regular hexagon stated cao
- Answer: **6**

Question 11

- **M1** uses base angles equal since $AB = AC$ or states $ACB = ABC$ oe
- **M1** sets up $40 + 2x = 180$ or computes $2x = 140$ oe
- **A1** $BAC = 100$ degrees, $ACB = 40$ degrees cao
- Answer: **BAC = 100 degrees; ACB = 40 degrees**

Question 12

- **M1** states regular means all sides and angles equal or states interior angle formula for n-gon $= (n-2) \times 180/n$ oe
- **A1** substitutes $n = 5$ to get $540/5 = 108$ degrees cao
- Answer: **Because regular means all angles equal and $(5-2) \times 180/5 = 540/5 = 108$ degrees**

Question 13

- **B1** identifies trapezium or says trapezium cao
- **B1** gives reason: one pair of parallel sides oe
- Answer: **trapezium**

Question 14

- **M1** uses fact opposite angles equal and adjacent angles sum to 180 or computes $180 - 70 = 110$ oe
- **A1** angles are 70, 110, 70, 110 degrees cao
- Answer: **70 degrees, 110 degrees, 70 degrees, 110 degrees**

Question 15

- **M1** uses Pythagoras: $\text{diagonal}^2 = 6^2 + 8^2$ or states method oe
- **M1** calculates $36 + 64 = 100$ oe
- **A1** 10 cm cao
- Answer: **10 cm**

Question 16

- **M1** uses interior angle formula $(n-2) \times 180/n$ or states it oe
- **M1** calculates $(6-2) \times 180/6 = 720/6 = 120$ oe
- **A1** states 6 lines of symmetry for a regular hexagon cao
- Answer: **interior angle 120 degrees; 6 lines of symmetry**

Question 17

- **M1** uses sum of angles 360 and computes $85 + 95 = 180$ so $x + y = 180$ oe
- **M1** uses $x = y$ to set $2x = 180$ or similar oe
- **A1** $x = 90$ degrees, $y = 90$ degrees cao
- Answer: **$x = 90$ degrees; $y = 90$ degrees**

Question 18

- **M1** 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
- **A1** 70 degrees and 70 degrees cao
- Answer: **70 degrees and 70 degrees**