2.94 Properties of Quadrilaterals and Symmetry: 30-minute Pack

GL ASSESSMENT GL-11PLUS-MATHS · Calculators not allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A quadrilateral has four lines of symmetry. What must its order of rotational symmetry be?

(1)

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2 Which quadrilateral always has all interior angles equal?

- ☐ A) Rectangle
- ☐ B) Rhombus
- ☐ C) Parallelogram
- ☐ D) Kite
- ☐ E) Trapezium

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3 Which property is true for every parallelogram?

- ☐ A) All angles are 90 degrees
- ☐ B) All sides are equal
- ☐ C) Opposite sides are equal and parallel
- ☐ D) Diagonals are perpendicular
- ☐ E) Has four lines of symmetry

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4 Which quadrilateral has all four sides equal but does not have to have all angles equal?

- ☐ A) Rhombus
- ☐ B) Rectangle
- ☐ C) Parallelogram
- ☐ D) Kite
- ☐ E) Trapezium

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5 How many lines of symmetry does a regular dodecagon have?

- [ ] A) 6
- [ ] B) 11
- [ ] C) 13
- [ ] D) 12
- [ ] E) 0

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6 How many lines of symmetry does a regular nonagon have?

- [ ] A) 7
- [ ] B) 8
- [ ] C) 10
- [ ] D) 18
- [ ] E) 9

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7 What is the order of rotational symmetry of a square?

- [ ] A) 4
- [ ] B) 8
- [ ] C) 0
- [ ] D) 5
- [ ] E) 3

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8 What is the sum of the interior angles of a regular octagon?

- [ ] A) 1,260°
- [ ] B) 1,080°
- [ ] C) 360°
- [ ] D) 900°
- [ ] E) 1,440°

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9 How many lines of symmetry does a square have?

- [ ] A) 5
- [ ] B) 3
- [ ] C) 4
- [ ] D) 2
- [ ] E) 0

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10 What is the sum of the interior angles of a square?

- [ ] A) 720°
- [ ] B) 180°
- [ ] C) 540°
- [ ] D) 361°
- [ ] E) 360°

---

11 How many lines of symmetry does a equilateral triangle have?

- [ ] A) 6
- [ ] B) 4
- [ ] C) 0
- [ ] D) 3
- [ ] E) 2

---

12 What is the order of rotational symmetry of a regular dodecagon?

- [ ] A) 24
- [ ] B) 13
- [ ] C) 12
- [ ] D) 6
- [ ] E) 11

---

13 What is the sum of the interior angles of a regular nonagon?

- [ ] A) 1,261°
- [ ] B) 1,620°
- [ ] C) 1,440°
- [ ] D) 1,260°
- [ ] E) 810°

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14 Which quadrilateral has diagonals that bisect each other and are equal in length, but are not perpendicular?

- ☐ A) Square
- ☐ B) Parallelogram
- ☐ C) Rhombus
- ☐ D) Kite
- ☐ E) Rectangle

---

15 What is the order of rotational symmetry of a regular nonagon?

- ☐ A) 10
- ☐ B) 18
- ☐ C) 1
- ☐ D) 8
- ☐ E) 9

---

16 What is the sum of the interior angles of a regular hexagon?

- ☐ A) 1,080°
- ☐ B) 720°
- ☐ C) 900°
- ☐ D) 540°
- ☐ E) 721°

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17 What is the size of each interior angle of a equilateral triangle?

- ☐ A) 60°
- ☐ B) 120°
- ☐ C) 70°
- ☐ D) 180°
- ☐ E) 61°

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18 What is the size of each interior angle of a regular hexagon?

- ☐ A) 180°
- ☐ B) 119°
- ☐ C) 120°
- ☐ D) 60°
- ☐ E) 130°

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19 How many lines of symmetry does a regular decagon have?

- ☐ A) 11
- ☐ B) 10
- ☐ C) 0
- ☐ D) 5
- ☐ E) 9

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20 What is the sum of the interior angles of a regular dodecagon?

- ☐ A) 1,800°
- ☐ B) 360°
- ☐ C) 1,080°
- ☐ D) 2,160°
- ☐ E) 1,980°

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21 What is the order of rotational symmetry of a regular octagon?

- ☐ A) 0
- ☐ B) 4
- ☐ C) 7
- ☐ D) 9
- ☐ E) 8

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22 How many lines of symmetry does a regular hexagon have?

- ☐ A) 1
- ☐ B) 5
- ☐ C) 3
- ☐ D) 6
- ☐ E) 7

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23 What is the sum of the interior angles of a equilateral triangle?

- [ ] A) 180°
- [ ] B) 360°
- [ ] C) 540°
- [ ] D) 179°
- [ ] E) 0°

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24 What is the size of each interior angle of a square?

- [ ] A) 180°
- [ ] B) 100°
- [ ] C) 89°
- [ ] D) 90°
- [ ] E) 91°

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25 Which quadrilateral always has four lines of symmetry?

- [ ] A) Parallelogram
- [ ] B) Square
- [ ] C) Kite
- [ ] D) Rectangle
- [ ] E) Rhombus

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26 What is the size of each interior angle of a regular pentagon?

- [ ] A) 72°
- [ ] B) 180°
- [ ] C) 108°
- [ ] D) 109°
- [ ] E) 36°

---

27 What is the order of rotational symmetry of a regular hexagon?

- [ ] A) 7
- [ ] B) 6
- [ ] C) 1
- [ ] D) 5
- [ ] E) 3

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28 What is the size of each interior angle of a regular nonagon?

- ☐ A) 180°
- ☐ B) 1,260°
- ☐ C) 20°
- ☐ D) 40°
- ☐ E) 140°

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29 A quadrilateral has all four sides equal and its diagonals are equal in length. Name this quadrilateral.

(1)

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30 In parallelogram ABCD, angle A is 65 degrees. Work out the sizes of angles B, C and D.

(3)

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Mark scheme · 2.94 Properties of Quadrilaterals and Symmetry: 30-minute Pack

Question 1

Order 4 cao **B1**

Answer: 4

Question 2

correct option A (Rectangle) cao **B1**

Answer: A) Rectangle

Question 3

correct option C (Opposite sides are equal and parallel) cao **B1**

Answer: C) Opposite sides are equal and parallel

Question 4

correct option A (Rhombus) cao **B1**

Answer: A) Rhombus

Question 5

correct option D (12) cao **B1**

Answer: D) 12

Question 6

correct option E (9) cao **B1**

Answer: E) 9

Question 7

correct option A (4) cao **B1**

Answer: A) 4

Question 8

correct option B (1,080°) cao **B1**

Answer: B) 1,080°

Question 9

correct option C (4) cao **B1**

Answer: C) 4

Question 10

correct option E (360°) cao **B1**

Answer: E) 360°

Question 11

correct option D (3) cao **B1**

Answer: D) 3

Question 12

correct option C (12) cao **B1**

Answer: C) 12

Question 13

correct option D (1,260°) cao **B1**

Answer: D) 1,260°

Question 14

correct option E (Rectangle) cao **B1**

Answer: E) Rectangle

Question 15

correct option E (9) cao **B1**

Answer: E) 9

Question 16

correct option B (720°) cao **B1**

Answer: B) 720°

Question 17

correct option A (60°) cao **B1**

Answer: A) 60°

Question 18

correct option C (120°) cao **B1**

Answer: C) 120°

Question 19

correct option B (10) cao **B1**

Answer: B) 10

Question 20

correct option A (1,800°) cao **B1**

Answer: A) 1,800°

Question 21

correct option E (8) cao **B1**

Answer: E) 8

Question 22

correct option D (6) cao **B1**

Answer: D) 6

Question 23

correct option A (180°) cao **B1**

Answer: A) 180°

Question 24

correct option D (90°) cao **B1**

Answer: D) 90°

Question 25

correct option B (Square) cao **B1**

Answer: B) Square

Question 26

correct option C (108°) cao **B1**

Answer: C) 108°

Question 27

correct option B (6) cao **B1**

Answer: B) 6

Question 28

correct option E (140°) cao **B1**

Answer: E) 140°

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Question 29

Square cao **B1**

Answer: Square

Question 30

Use that opposite angles in a parallelogram are equal; deduce angle C = 65 **M1**

Use that adjacent angles are supplementary; deduce angle B = 180 - 65 = 115 **M1**

All three angles correct: B = 115, C = 65, D = 115 cao **A1**

Answer: Angle B = 115 degrees, angle C = 65 degrees, angle D = 115 degrees

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