

Geometry - Symmetry of Polygons and Rigid Motions - Quiz

Common Core G-CO.A.3, G-CO.B.6 · maths-pdf.fr/en/

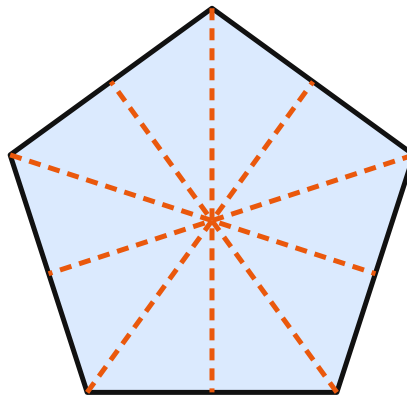
Name: _____ Class: _____ Date: ____/____/____

Test your understanding of symmetry of polygons with this 10-question multiple-choice quiz. Each question has one correct answer, and the explanation after it names the typical mistake behind the wrong choices. Take it after the lesson or before the test.

Geometry · Common Core State Standards: **G-CO.A.3, G-CO.B.6**

Questions

Question 1



How many lines of symmetry does this regular pentagon have?

- A. 5
- B. 1
- C. 10
- D. 0

Question 2

What is the smallest rotation that maps a regular decagon onto itself?

- A. 18 degrees
- B. 36 degrees

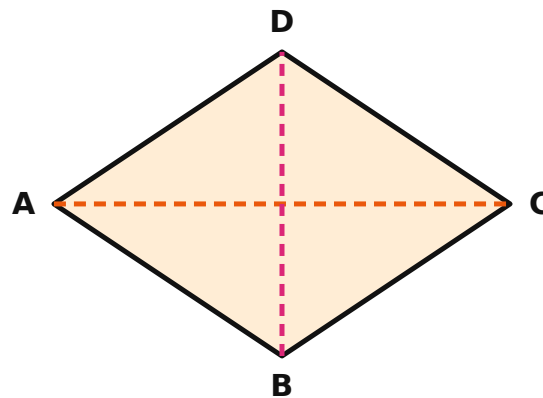
- C. 10 degrees
- D. 72 degrees

Question 3

Which figure has rotational symmetry but no line of symmetry?

- A. A parallelogram with no right angles
- B. A rectangle
- C. An isosceles trapezoid
- D. A kite

Question 4



How many lines of symmetry does this rhombus, which is not a square, have?

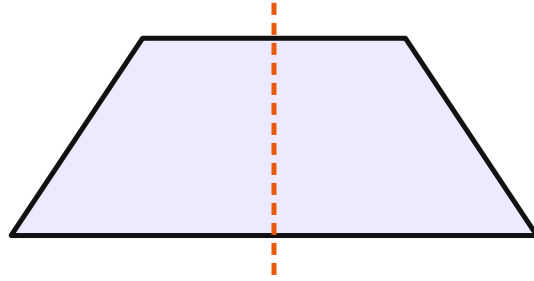
- A. 4
- B. 1
- C. 2
- D. 0

Question 5

A rotation maps triangle ABC to triangle DEF. If $AB = 8$ and angle $A = 35$ degrees, what is true?

- A. $DE = 16$ and angle $D = 70$ degrees
- B. $DE = 8$ and angle $D = 35$ degrees
- C. $DE = 8$ and angle $D = 55$ degrees
- D. $DE = 4$ and angle $D = 35$ degrees

Question 6



What symmetry does this isosceles trapezoid have?

- A. Two lines of symmetry
- B. A 180 degree rotation
- C. One line of symmetry and no rotational symmetry
- D. No symmetry at all

Question 7

A regular polygon maps onto itself under a rotation of 24 degrees and no smaller positive rotation. How many sides does it have?

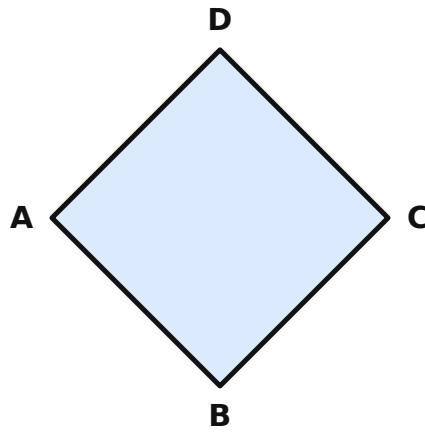
- A. 24
- B. 12
- C. 16
- D. 15

Question 8

Which letter has a 180 degree rotational symmetry but no line of symmetry in a standard block style?

- A. Z
- B. H
- C. A
- D. T

Question 9



Rotating this square 90 degrees counterclockwise about its center maps vertex A to which vertex?

- A. A
- B. B
- C. C
- D. D

Question 10

A bike wheel has 12 evenly spaced spokes. Which rotation maps the spokes onto themselves?

- A. 20 degrees
- B. 40 degrees
- C. 50 degrees
- D. 90 degrees

Answers

1. **A** – A regular n -gon has n lines of symmetry, so a pentagon has 5. Doubling the count (10) counts each line twice.
2. **B** – 360 divided by 10 sides is 36 degrees. The angle 72 degrees is two steps, not the smallest.
3. **A** – A parallelogram maps onto itself under a 180 degree rotation, but no reflection works. A rectangle also has two lines of symmetry.
4. **C** – Each diagonal of a rhombus is a line of symmetry, so there are 2. A square has 4 because its midlines also work.
5. **B** – Rigid motions preserve both distance and angle measure. Doubling or halving would be a dilation.
6. **C** – The perpendicular bisector of the bases is its only symmetry. Different base lengths rule out a 180 degree rotation.
7. **D** – The number of sides is 360 divided by 24, which is 15. Using 24 itself confuses the angle with the side count.
8. **A** – Z looks the same upside down, but no reflection maps it to itself. H has line symmetry, and A and T have vertical lines of symmetry.
9. **B** – Rule (x, y) to $(-y, x)$ sends $(-4, 0)$ to $(0, -4)$, which is B. A clockwise turn would give D.
10. **D** – The spokes are 30 degrees apart, so rotations must be multiples of 30. Of the choices only 90 degrees is a multiple of 30.

Remember

- A regular n -gon has n lines of symmetry and rotational symmetry every $360/n$ degrees.
- A rectangle that is not a square has 2 lines of symmetry and a 180 degree rotation.
- A parallelogram that is not a rectangle or rhombus has no line of symmetry but has a 180 degree rotation.
- Rigid motions preserve distance and angle measure.
- To test a symmetry, check that every vertex maps to a vertex.