Quadrilateral Properties Quiz

Grade Level: Grade 8 | **Date:** 2025-11-17 16:29:45

Instructions: Answer all questions. Show your work where applicable.

Question 1: If one diagonal of a rectangle measures 12 cm, what is the length of the other diagonal?

A) 6 cm
B) 12 cm
C) 18 cm
D) 24 cm

Question 2: At what angle do the diagonals of a square intersect each other?

A) 45°
B) 60°
C) 90°
D) 180°

Question 3: A rectangle can be defined as a quadrilateral in which all the angles are 90°. Explain why this definition is sufficient to conclude that its opposite sides must also be equal.

Answer: _____

Question 4: Which of the following statements is TRUE for ALL parallelograms?

A) Diagonals are always equal in length.
B) Diagonals always bisect each other at 90°.
C) Diagonals always bisect each other.
D) All angles are 90°.

Question 5: If a diagonal is drawn in a square, what is the measure of the angle it forms with each side of the square?

Answer: _____

Answer Key

Question 1: B) 12 cm

Explanation: The diagonals of a rectangle are always equal in length. If one is 12 cm, the other must also be 12 cm.

Question 2: C) 90°

Explanation: The diagonals of a square bisect each other at right angles, meaning they form a 90° angle at their intersection.

Question 3: If all angles of a quadrilateral are 90°, then opposite sides are parallel. By drawing a diagonal, two triangles are formed. Using the AAS (Angle-Angle-Side) congruence condition, it can be proven that these triangles are congruent, which implies their corresponding sides (the opposite sides of the quadrilateral) are equal.

Explanation: The text explains that if all angles are 90°, then by using congruence (e.g., $\Delta BAD \cong \Delta DCB$), it can be deduced that opposite sides are equal (AD=CB and DC=BA), thus confirming it's a rectangle.

Question 4: C) Diagonals always bisect each other.

Explanation: While rectangles and squares (which are special types of parallelograms) have equal or perpendicular diagonals, the property that diagonals bisect each other is true for all parallelograms.

Question 5: 45°

Explanation: The diagonals of a square bisect the angles of the square. Since each angle of a square is 90°, the diagonal divides it into two equal halves, making each angle 45°.