

Geometry - Geometric Constructions - Quiz

Common Core G-CO.D.12, G-CO.D.13 · maths-pdf.fr/en/

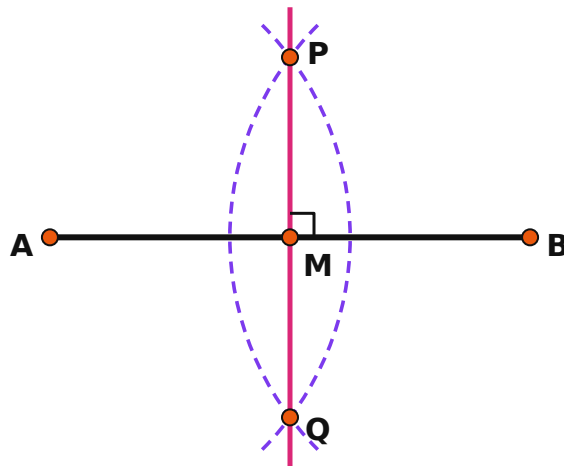
Name: _____ Class: _____ Date: ____/____/____

Test your understanding of geometric constructions 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.D.12, G-CO.D.13**

Questions

Question 1



Perpendicular bisector: arcs of the same radius (more than half of AB) from A and from B.

To construct this perpendicular bisector, the compass radius must be

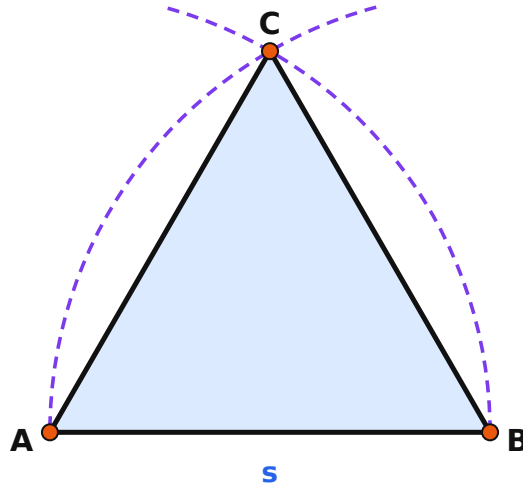
- A. more than half of AB
- B. exactly half of AB
- C. less than half of AB
- D. equal to AB only

Question 2

Which shape is formed by joining A, P, B and Q in a perpendicular bisector construction, using the same compass radius?

- A. A rectangle
- B. A trapezoid
- C. A rhombus
- D. A kite with unequal sides

Question 3



Equilateral triangle on AB: arcs of radius AB from A and from B meet at C.

Arcs of radius AB are drawn from A and B and meet at C. What is triangle ABC?

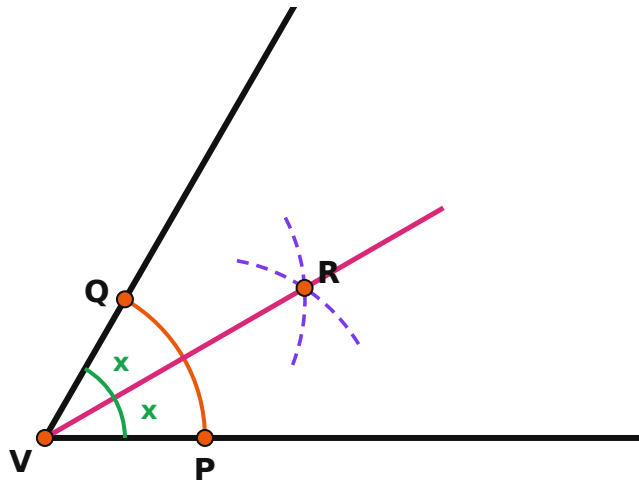
- A. Right
- B. Equilateral
- C. Scalene
- D. Isosceles but not equilateral

Question 4

A regular hexagon is inscribed in a circle of radius 9. What is its side length?

- A. 9
- B. 18
- C. 4.5
- D. 9 times the square root of 3

Question 5



Angle bisector: arc across both rays, then two equal arcs meet at R.

Ray VR bisects the angle. If the original angle is 70 degrees, what is angle PVR?

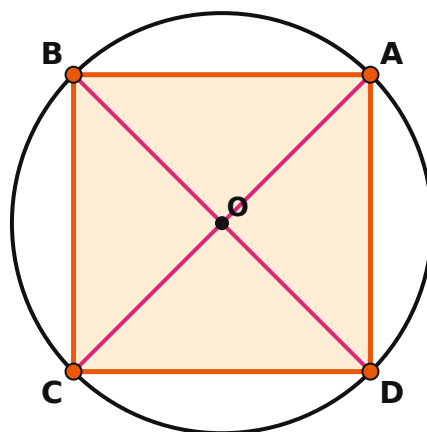
- A. 70 degrees
- B. 140 degrees
- C. 20 degrees
- D. 35 degrees

Question 6

Which test proves that the two small triangles in an angle bisector construction are congruent?

- A. SSS
- B. ASA
- C. SAS
- D. AAA

Question 7



A square: draw two perpendicular diameters and join their endpoints.

A square is inscribed in a circle of diameter 10. What is the square's area?

- A. 100
- B. 50
- C. 25
- D. 10

Question 8

How do you construct a 30 degree angle with compass and straightedge?

- A. Bisect a right angle
- B. Copy a 15 degree angle
- C. Bisect a 60 degree angle from an equilateral triangle
- D. Double a 45 degree angle

Question 9

P is on the perpendicular bisector of AB and $PA = 17$. What is PB?

- A. 34
- B. 17
- C. 8.5
- D. Cannot be found

Question 10

Two corresponding angles are copied so that they are congruent. What does this prove?

- A. The lines are perpendicular
- B. The lines are the same
- C. The transversal is parallel
- D. The two lines are parallel

Answers

1. **A** – Arcs from A and B only cross when the radius is more than half the segment.
2. **C** – All four sides equal the compass radius, so APBQ is a rhombus. Its diagonals AB and PQ are perpendicular bisectors of each other.
3. **B** – AC and BC both equal the radius AB, so all three sides are equal.
4. **A** – The side of a regular hexagon equals the radius of its circumscribed circle.
5. **D** – A bisector splits the angle into two equal halves: $70 / 2 = 35$.
6. **A** – $VP = VQ$, $PR = QR$ and VR is shared, so the triangles are congruent by SSS.
7. **B** – The diagonal is 10, so the side squared is $100 / 2 = 50$. The value 100 is the diagonal squared.
8. **C** – An equilateral triangle gives 60 degrees, and bisecting it gives 30. Bisecting a right angle gives 45 degrees.
9. **B** – Every point on the perpendicular bisector is equidistant from A and B.
10. **D** – Congruent corresponding angles imply parallel lines (converse).

Remember

- Constructions use only a compass and a straightedge.
- Perpendicular bisector: equal arcs from both endpoints with radius more than half the segment.
- Angle bisector: arc at the vertex, then equal arcs from the two crossing points.
- Equilateral triangle: arcs of radius AB from A and from B.
- A regular hexagon has side length equal to the radius of its circumscribed circle.