

Geometry - Geometric Constructions - Test

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

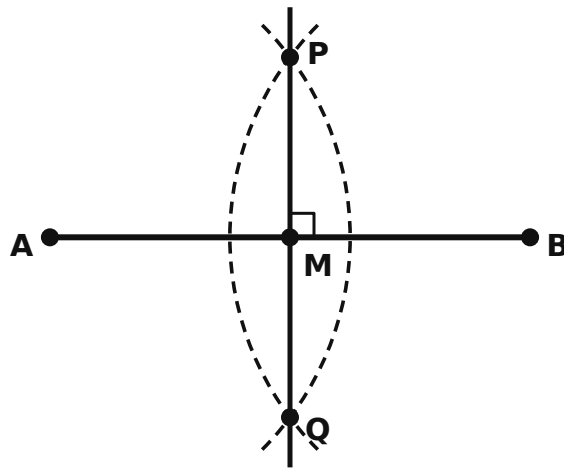
Name: _____ Class: _____ Date: ____/____/____

This 45-minute test checks compass and straightedge constructions and the reasons they work. It has 9 questions worth 20 points in total. Show every step of the work, label diagrams, and include units where they apply. Calculators are allowed unless the teacher says otherwise.

About this test

- Grade: Geometry
- Chapter: Geometric Constructions
- Standards: G-CO.D.12, G-CO.D.13
- Time: 45 minutes
- Total: 20 points

Question 1 - Perpendicular bisector [3 pts]



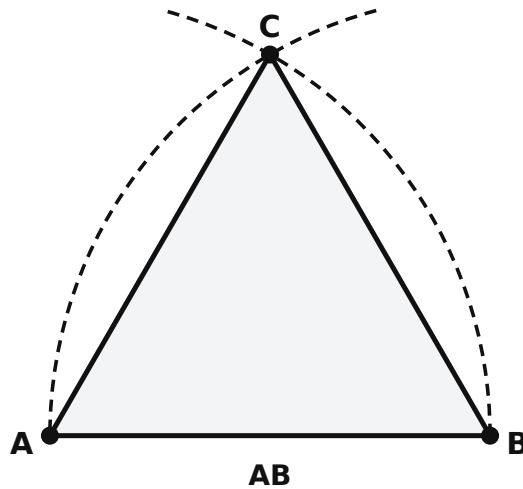
Segment AB with M the midpoint.

- Why must the compass radius be more than half of AB? (1 point)
- $AB = 20$ and $AP = 13$. Find PM. (1 point)
- P is on the bisector with $PA = 3x + 5$ and $PB = 5x - 9$. Find x. (1 point)

Question 2 - Angle bisector [2 pts]

Ray VR bisects angle PVQ. $m\angle PVR = (5x+6)^\circ$ and $m\angle RVQ = (7x-14)^\circ$. Find x and $m\angle PVQ$.

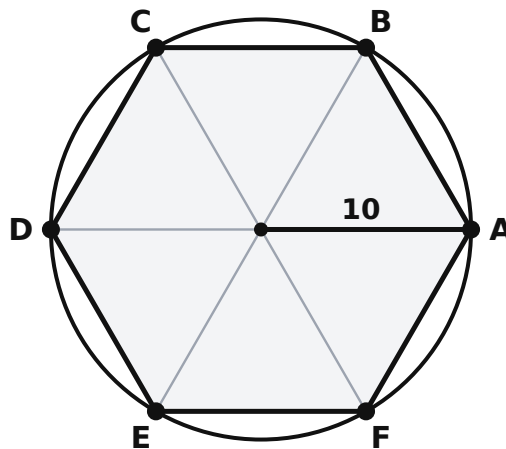
Question 3 - Equilateral triangle [2 pts]



Triangle ABC.

Explain why triangle ABC, constructed by drawing arcs of radius AB from A and from B, is equilateral. If $AB = 9$, find the height of the triangle.

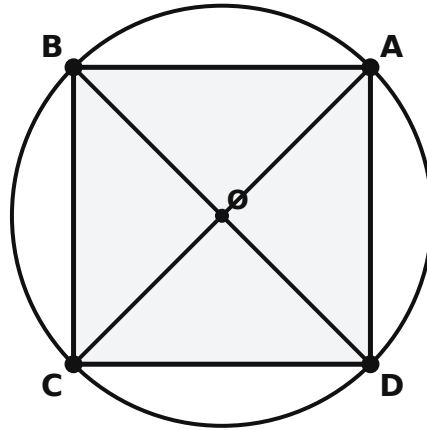
Question 4 - Hexagon [2 pts]



Regular hexagon in a circle.

A regular hexagon is inscribed in a circle of radius 10. Find its perimeter and the length of the longest diagonal.

Question 5 - Square [2 pts]



Square in a circle.

A square is inscribed in a circle of radius 7. Find the side length and the area of the square.

Question 6 - Order the steps [2 pts]

List in order the steps to bisect an angle: (a) draw the ray from the vertex through the crossing point, (b) from each of the two points on the rays, draw arcs of equal radius that cross, (c) draw an arc centered at the vertex that crosses both rays.

Question 7 - Parallel line [2 pts]

Describe how to construct a line through a point P that is parallel to a given line l, and name the angle relationship that makes your lines parallel.

Question 8 - Coordinates [2 pts]

Find an equation of the perpendicular bisector of the segment with endpoints $(-2, 3)$ and $(4, 7)$.

Question 9 - Fountain [3 pts]

A fountain is to be placed at a point equally far from two park entrances A and B, which are 60 yards apart. The fountain must also be 50 yards from A. Describe where the fountain lies, find its distance from B, and find its distance from the midpoint of AB.