

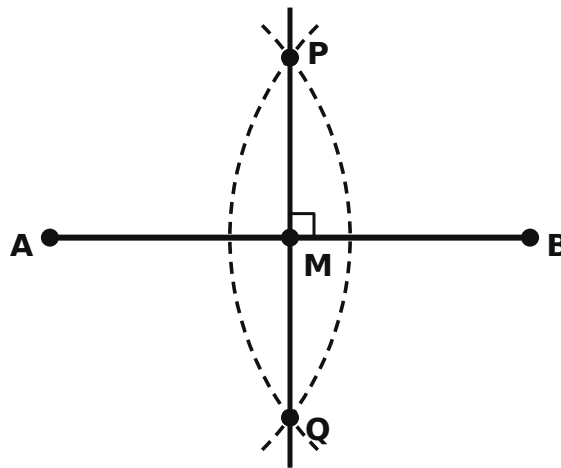
Geometry - Geometric Constructions - Test Answer Key

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

Use this answer key and scoring guide for the constructions test. Each solution shows the full work, and the scoring note tells how the points are split between method and final answer. Partial credit is listed so that grading stays consistent from one paper to the next.

Geometry · Common Core State Standards: **G-CO.D.12, G-CO.D.13**

Question 1 - Perpendicular bisector [3 pts]

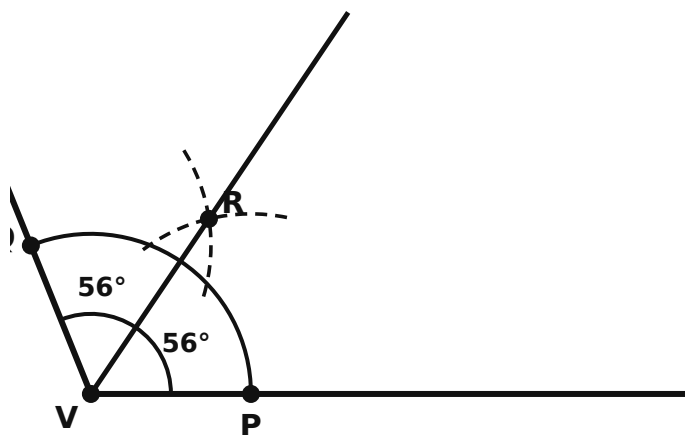


$$AM = 10, AP = 13.$$

- a. If the radius is half of AB or less, the arcs from A and B do not cross at two points.
- b. $AM = 10$, so $PM = \sqrt{13^2 - 10^2} = \sqrt{69}$.
- c. $3x + 5 = 5x - 9$, so $x = 7$.

Scoring: 1 point per part.

Question 2 - Angle bisector [2 pts]



Each half is 56° .

$$5x+6=7x-14$$

$$x=10$$

$$5(10)+6=56^\circ, \text{ so } m\angle PVQ=112^\circ.$$

$$x = 10; 112^\circ$$

Scoring: 1 point for x , 1 point for the angle.

Question 3 - Equilateral triangle [2 pts]

Both arcs have radius AB , so $AC = AB$ and $BC = AB$. All three sides are equal.

$$\text{Height: } \sqrt{9^2 - 4.5^2} = \sqrt{60.75} = \frac{9\sqrt{3}}{2}.$$

Height $9\sqrt{3}/2$, about 7.8

Scoring: 1 point for the explanation, 1 point for the height.

Question 4 - Hexagon [2 pts]

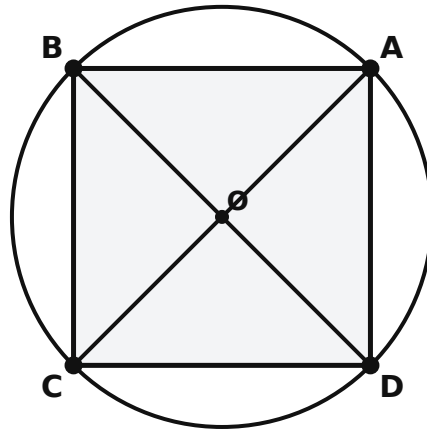
Side = radius = 10, so perimeter $6 \cdot 10 = 60$.

The longest diagonal passes through the center: $2 \cdot 10 = 20$.

Perimeter 60; diagonal 20

Scoring: 1 point each.

Question 5 - Square [2 pts]



Diagonal = 14.

The diagonal is 14, so $s = \frac{14}{\sqrt{2}} = 7\sqrt{2}$.

Area $(7\sqrt{2})^2 = 98$.

Side $7\sqrt{2}$; area 98

Scoring: 1 point for the side, 1 point for the area.

Question 6 - Order the steps [2 pts]

The order is (c), (b), (a).

Scoring: 2 points for the correct order, 1 point if two steps are swapped.

Question 7 - Parallel line [2 pts]

Draw a transversal through P that meets l. Copy the angle that the transversal makes with l at P so that the two angles are corresponding.

Congruent corresponding angles prove the lines are parallel.

Scoring: 1 point for the method, 1 point for corresponding angles.

Question 8 - Coordinates [2 pts]

Midpoint (1,5). Slope $\frac{7-3}{4-(-2)} = \frac{2}{3}$, so the perpendicular slope is $-\frac{3}{2}$.

$$y-5 = -\frac{3}{2}(x-1), \text{ so } y = -\frac{3}{2}x + \frac{13}{2}.$$

$$y = -\frac{3}{2}x + \frac{13}{2}$$

Scoring: 1 point for the midpoint and slope, 1 point for the equation.

Question 9 - Fountain [3 pts]

The fountain lies on the perpendicular bisector of AB.

It is 50 yards from B as well.

Distance from the midpoint: $\sqrt{50^2 - 30^2} = \sqrt{1600} = 40$ yards.

On the perpendicular bisector; 50 yd from B; 40 yd from the midpoint

Scoring: 1 point for the bisector, 1 point for the distance from B, 1 point for the 40 yards.

Total**20 points**