

Geometry - Coordinate Geometry and Proofs - Test Answer Key

Common Core G-GPE.B.4, G-GPE.B.5, G-GPE.B.6, G-GPE.B.7 · maths-pdf.fr/en/

Use this answer key and scoring guide for the coordinate geometry 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-GPE.B.4, G-GPE.B.5, G-GPE.B.6, G-GPE.B.7**

Question 1 - Parallel and perpendicular [2 pts]

Slope of m: $\frac{7-5}{6-2} = \frac{1}{2}$.

(a) $y = \frac{1}{2}x + 1$. (b) The perpendicular slope is -2 .

Scoring: 1 point each part.

Question 2 - Perpendicular through a point [2 pts]

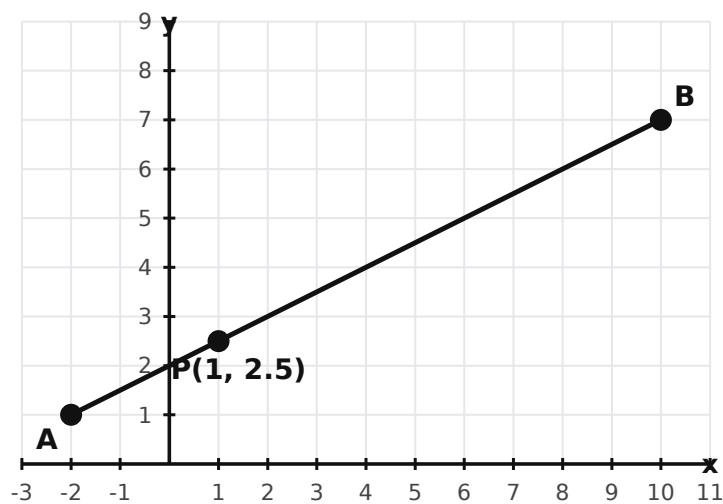
The perpendicular slope is $-\frac{1}{3}$.

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

$y = -\frac{1}{3}x - 1$

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

Question 3 - Partition and distance [3 pts]



P is one quarter of the way from A.

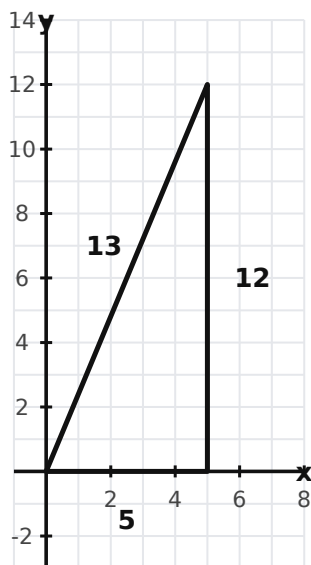
a. $\frac{1}{4}$ of the way: $(-2+3, 1+1.5)=(1,2.5)$

b. $AB = \sqrt{12^2 + 6^2} = \sqrt{180} = 6\sqrt{5}$

c. $AP = \frac{1}{4} \cdot 6\sqrt{5} = \frac{3\sqrt{5}}{2}$

Scoring: 1 point per part.

Question 4 - Perimeter [2 pts]



Sides 5, 12 and 13.

$AB = 5, BC = 12, AC = \sqrt{5^2 + 12^2} = 13.$

$$5+12+13=30$$

30

Scoring: 1 point for AC, 1 point for the perimeter.

Question 5 - Area [2 pts]

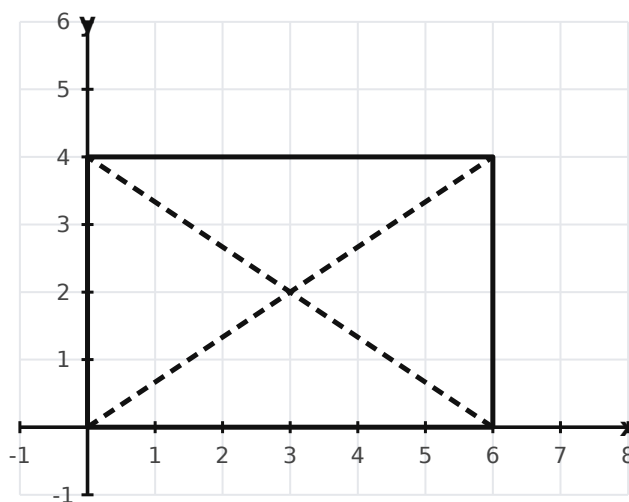
Base 8 on $y = 1$, height $7-1=6$.

$$\frac{1}{2} \cdot 8 \cdot 6 = 24$$

24 square units

Scoring: 1 point for base and height, 1 point for the area.

Question 6 - Rectangle proof [3 pts]



Both diagonals have length $2\sqrt{13}$.

AB has slope 0 and BC is vertical, so $AB \perp BC$ (a right angle). The same holds at every corner, since DC has slope 0 and AD is vertical.

Opposite sides have equal slopes, so it is a parallelogram with a right angle: a rectangle.

Diagonal AC: $\sqrt{6^2+4^2}=\sqrt{52}=2\sqrt{13}$; diagonal BD has the same length.

Scoring: 1 point for the right angle, 1 point for the rectangle conclusion, 1 point for the diagonals.

Question 7 - Isosceles triangle [2 pts]

$AC = \sqrt{2^2 + 6^2} = \sqrt{40} = 2\sqrt{10}$ and $BC = \sqrt{2^2 + 6^2} = 2\sqrt{10}$. Two sides are equal.

Perimeter: $4 + 4\sqrt{10}$.

Isosceles; $4 + 4\sqrt{10}$

Scoring: 1 point for the proof, 1 point for the perimeter.

Question 8 - Meeting point [2 pts]

$$(1 + \frac{2}{3} \cdot 12, 2 + \frac{2}{3} \cdot 12) = (9, 10)$$

(9, 10)

Scoring: 1 point for the fraction, 1 point for the point.

Question 9 - Parallelogram [2 pts]

Midpoint of AC: (3, 2.5). Midpoint of BD: $(\frac{4+2}{2}, \frac{1+4}{2}) = (3, 2.5)$.

The diagonals bisect each other, so ABCD is a parallelogram.

Scoring: 1 point for each midpoint, accept either method.

Total
20 points