

Geometry - Coordinate Geometry and Proofs - Worksheet

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

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

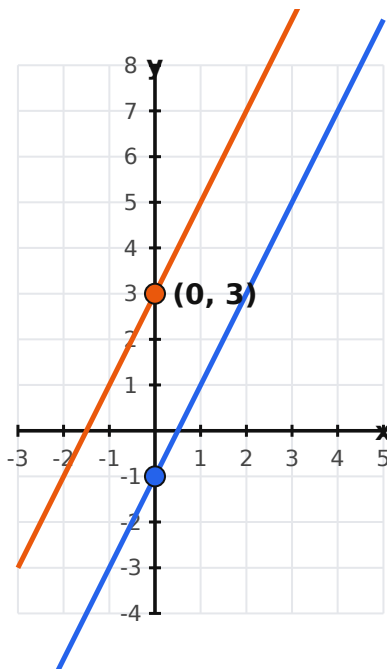
These 20 problems practice slopes of parallel and perpendicular lines, partitioning segments, distance and coordinate proofs (Common Core G-GPE.B.4 to G-GPE.B.7). The first problems are quick one-step checks of the definitions and formulas from the lesson. The middle problems ask for diagrams, equations and careful reasoning in the style of a high school Geometry class. The last six problems are applications with maps, roads and fences.

Geometry · Common Core State Standards: **G-GPE.B.4, G-GPE.B.5, G-GPE.B.6, G-GPE.B.7**

Exercise 1 - Find a slope

Find the slope of the line through (1,2) and (5,10).

Exercise 2 - Parallel line



Parallel lines have the same slope.

Write an equation of the line through (0,3) that is parallel to $y = 2x - 1$.

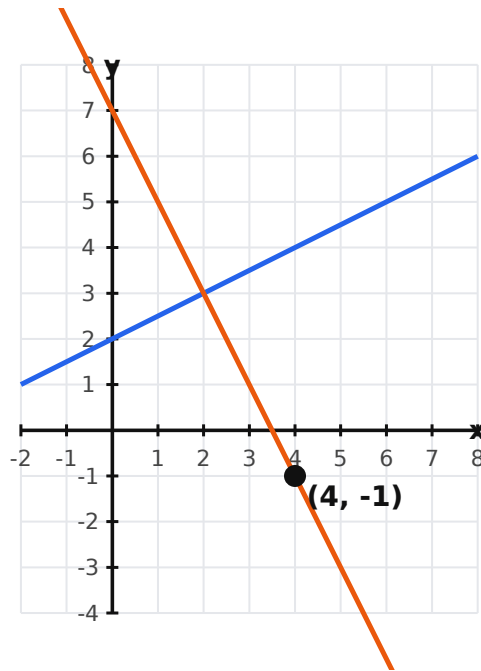
Exercise 3 - Are they parallel?

Line 1 passes through $(-2,1)$ and $(4,4)$. Line 2 passes through $(0,0)$ and $(6,3)$. Are they parallel?

Exercise 4 - Perpendicular slope

A line has slope $\frac{3}{4}$. Find the slope of every line perpendicular to it.

Exercise 5 - Perpendicular line



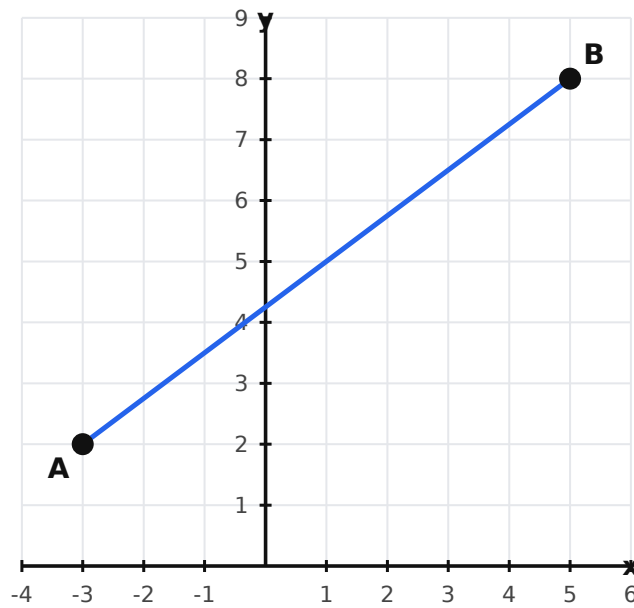
Perpendicular slopes are opposite reciprocals.

Write an equation of the line through $(4,-1)$ that is perpendicular to $y = \frac{1}{2}x + 2$.

Exercise 6 - Are they perpendicular?

Line 1 has slope $\frac{2}{3}$ and line 2 has slope $-\frac{3}{2}$. Are the lines perpendicular?

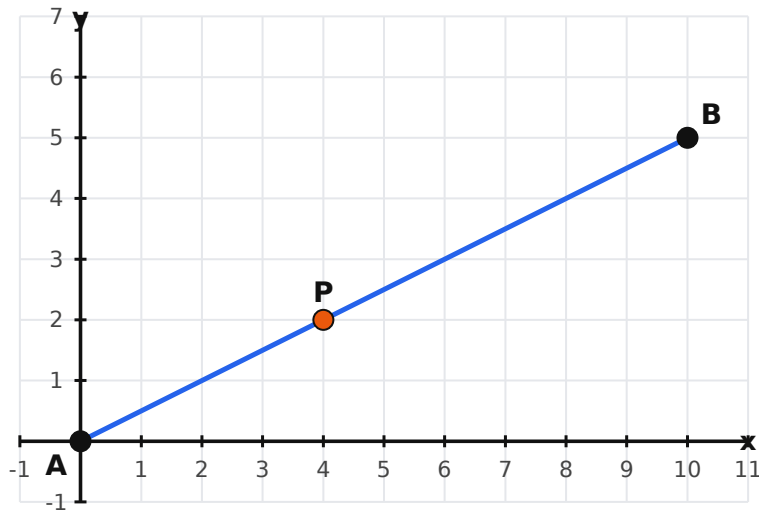
Exercise 7 - Distance



Segment AB.

Find the distance between $A(-3,2)$ and $B(5,8)$.

Exercise 8 - Partition 2 : 3



P splits AB in the ratio 2 : 3 from A.

Find the point P on segment AB with $A(0,0)$ and $B(10,5)$ so that $AP:PB = 2:3$.

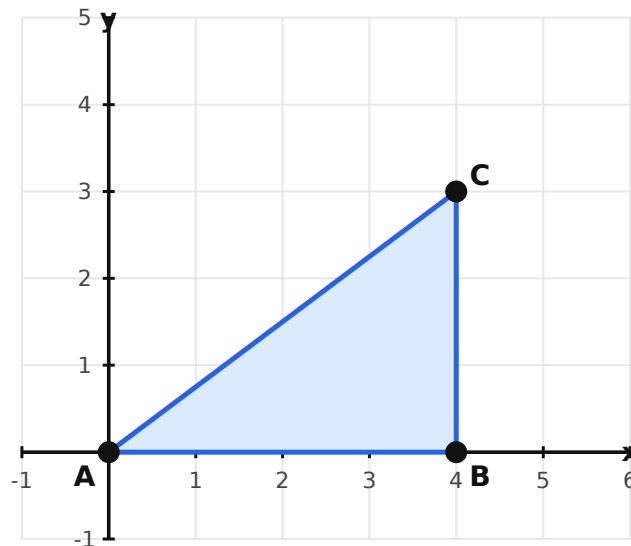
Exercise 9 - Partition 1 : 2

Find the point P on the segment from $A(-2,4)$ to $B(7,-5)$ so that $AP:PB = 1:2$.

Exercise 10 - Partition 3 : 1

Find the point P on the segment from $A(1,2)$ to $B(9,10)$ so that $AP:PB = 3:1$.

Exercise 11 - Perimeter of a triangle



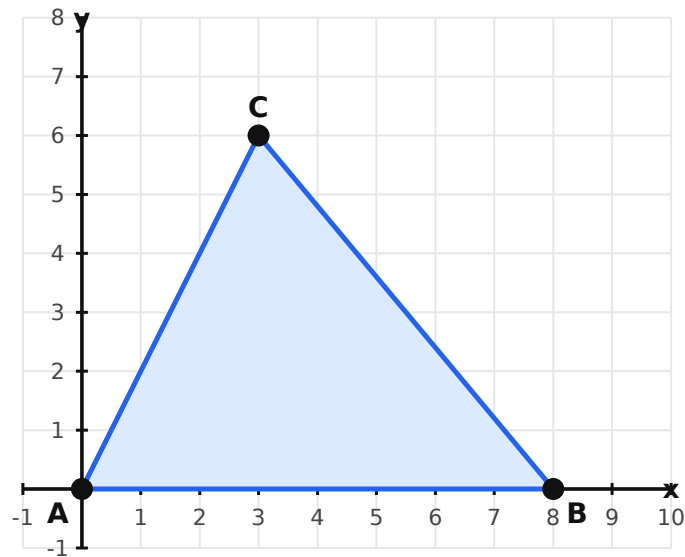
Triangle ABC.

Find the perimeter of triangle ABC with $A(0, 0)$, $B(4, 0)$ and $C(4, 3)$.

Exercise 12 - Area of a rectangle

A rectangle has vertices $(1,1)$, $(7,1)$, $(7,5)$ and $(1,5)$. Find its area and perimeter.

Exercise 13 - Area of a triangle



Triangle ABC.

Find the area of the triangle with vertices $A(0, 0)$, $B(8, 0)$ and $C(3, 6)$.

Exercise 14 - Area of a trapezoid

A trapezoid has vertices $(0,0)$, $(6,0)$, $(4,4)$ and $(0,4)$. Find its area.

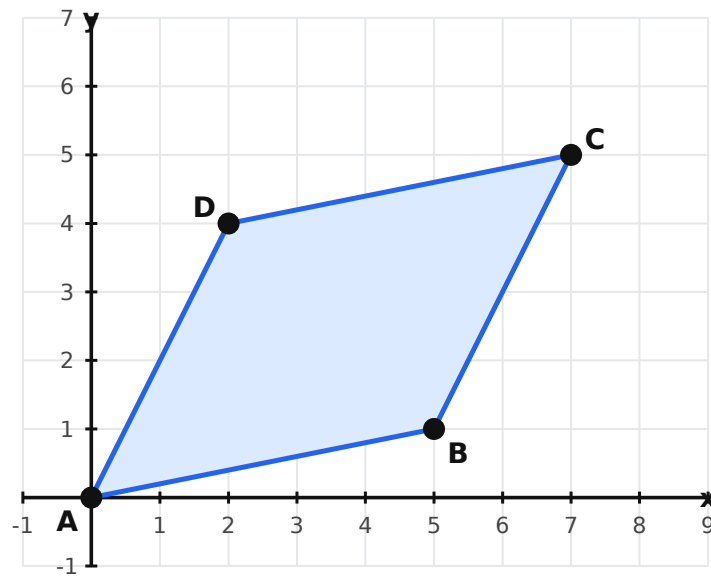
Exercise 15 - Isosceles triangle

Show that the triangle with vertices $A(0,0)$, $B(4,0)$ and $C(2,5)$ is isosceles.

Exercise 16 - Right angle test

Show that the triangle with vertices $A(0,0)$, $B(6,2)$ and $C(-1,3)$ has a right angle at A.

Exercise 17 - Parallelogram proof



Quadrilateral ABCD.

Show that ABCD with $A(0, 0)$, $B(5, 1)$, $C(7, 5)$ and $D(2, 4)$ is a parallelogram.

Exercise 18 - Meeting point on a map

Two towns are at $A(2, 3)$ and $B(10, 11)$ on a map grid where one unit is 1 mile. Mei wants to meet at the point that is $\frac{3}{4}$ of the way from A to B. Find the meeting point and its distance from A to the nearest tenth of a mile.

Exercise 19 - New road

An existing road runs through points $(0, 4)$ and $(5, 2)$. A new road must be perpendicular to it. What slope should the new road have?

Exercise 20 - Fence cost

A triangular lot has vertices $(0, 0)$, $(12, 0)$ and $(12, 9)$ with coordinates in feet. Fencing costs \$3.50 per foot. Find the perimeter and the cost of fencing the whole lot.