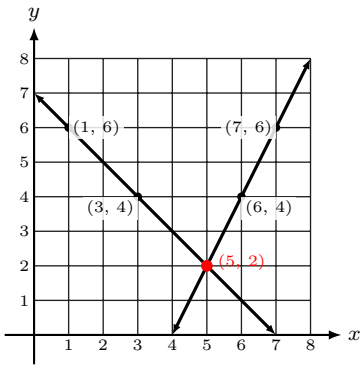
Artifact 17 – Points of Intersection

Driving Question: How do you find the point where two lines meet, verify it, and say what it means in a situation?

Example 1

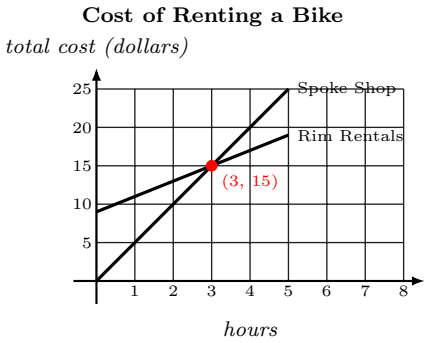


The graphs of $y = 2x - 8$ and $y = -x + 7$ are shown.

Write the coordinates of the point of intersection.
(5, 2)

Verify your ordered pair. Show the check for each equation.
$2 = 2(5) - 8 = 2$ ✓ $2 = -(5) + 7 = 2$ ✓

Example 2



Spoke Shop and Rim Rentals each rent bikes by the hour. The graph shows the total cost.

Write the coordinates of the point of intersection.
(3, 15)

What does the x-coordinate represent in this situation? What does the y-coordinate represent?
x: 3 hours, when the shops charge the same. y: 15 dollars, the shared cost.

Example 3

Two lines have the equations $y = 4x - 3$ and $y = x + 12$.

Determine the ordered pair where the graphs of the two equations intersect. Show your work, then show the check in both equations.
$4x - 3 = x + 12$, $3x = 15$, $x = 5$; $y = 5 + 12 = 17$. Point (5, 17). Check: $4(5) - 3 = 17$ ✓ $5 + 12 = 17$ ✓

Vocabulary

point of intersection	the point where two graphed lines cross; its coordinates satisfy both equations
satisfy (an equation)	a pair of values satisfies an equation if substituting them makes the equation true
substitution	replacing x and y in an equation with values to check whether the equation is true

Notes to Forgetful Self

Given	How to find the point of intersection	How to verify	What (x, y) tells you
two lines on a grid	find where the lines cross and read the ordered pair at that point	substitute the x and the y into both equations; both must be true	the one point that is on both lines
a real-world graph	find where the lines cross and read the coordinates, including the axis titles	the point sits on both lines at the same time	x: the input where the two are equal; y: the output they share
two equations $y = mx + b$	set the two expressions for y equal, solve for x, then substitute to find y	substitute the pair into both equations	the pair that satisfies both equations

A point that is on only one line _____ is not a solution of the pair of equations.