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Module 8 Writing Linear Equations of Two Variables
Lesson 4 Solving Linear Equations in Two Variables When Parameters Are Changed



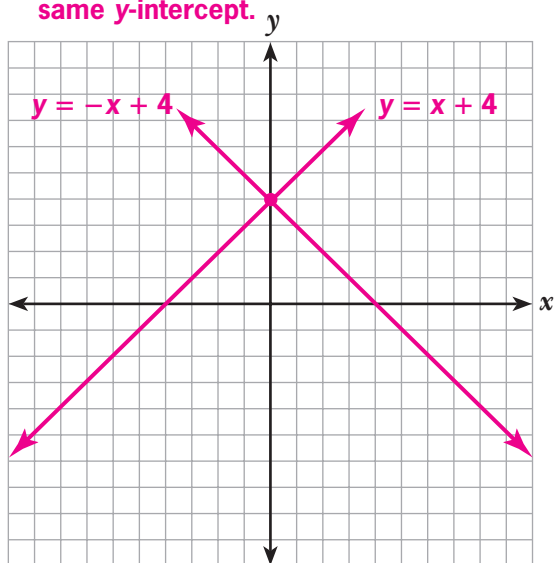
guided
practice

Set 1

1. Given $y = -x + 4$, determine the resulting equation when the slope is increased by two. Compare the graphs.

Equation: $y = -x + 4$ becomes $y = x + 4$

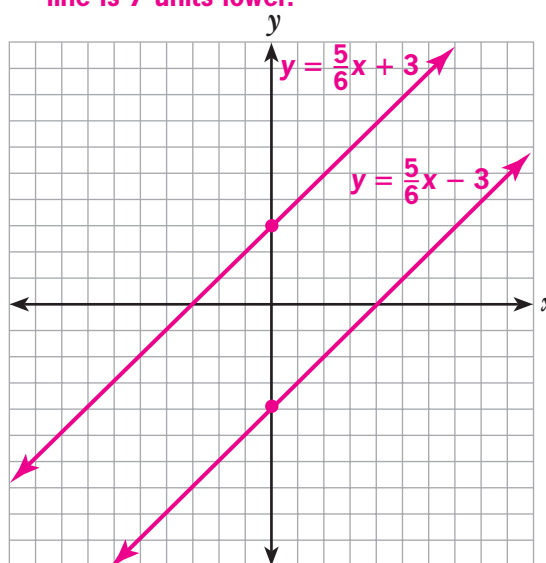
Graph: The lines are perpendicular with the same y-intercept.



2. Given $y = \frac{5}{6}x + 3$, determine the resulting equation when the y-intercept is decreased by 7. Compare the graphs.

Equation: $y = \frac{5}{6}x + 3$ becomes $y = \frac{5}{6}x - 4$

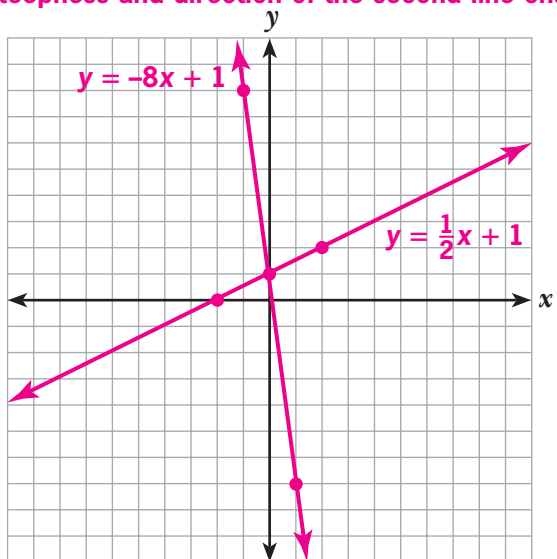
Graph: The slope does not change. The new line is 7 units lower.



3. Given $y = \frac{1}{2}x + 1$, determine the resulting equation when the slope is multiplied by negative sixteen. Compare the graphs.

Equation: $y = \frac{1}{2}x + 1$ becomes $y = -8x + 1$

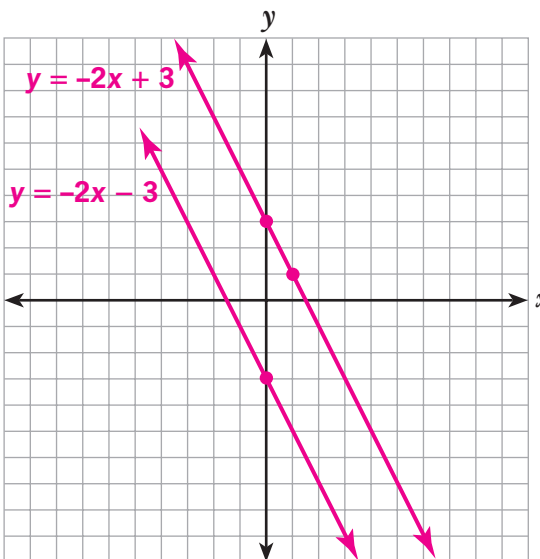
Graph: The y-intercept does not change. The steepness and direction of the second line change.



2. Find an equation of the line with the same slope and opposite y-intercept as the line $2x + y = 3$. Compare the graphs.

Equation: $y = -2x - 3$

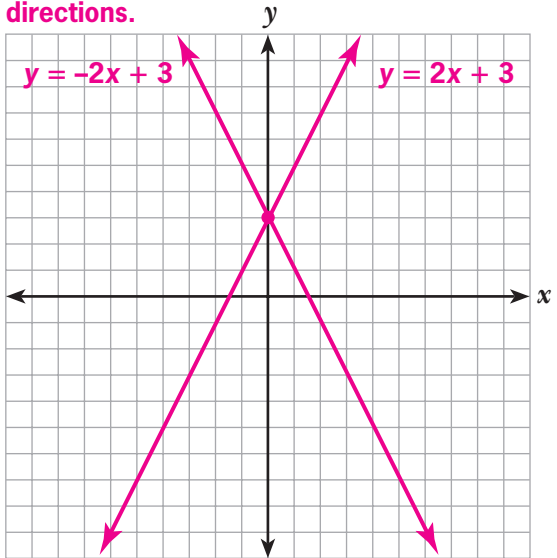
Comparison: The lines are parallel.



Set 2

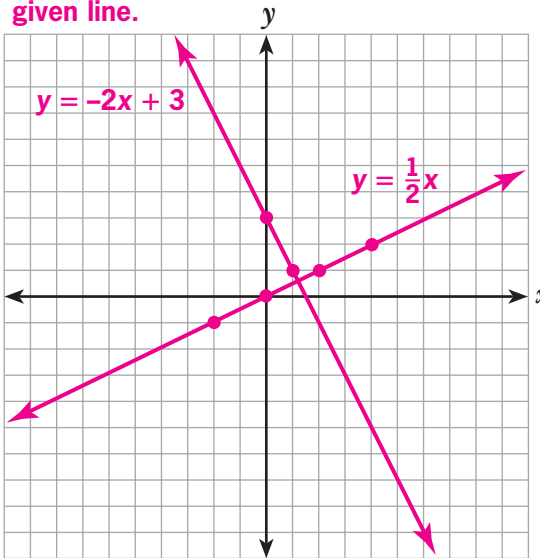
1. Find an equation of the line with the same y-intercept and opposite slope as the line $2x + y = 3$. Compare the graphs.

Equation: $y = 2x + 3$; **Comparison:** The lines intersect the y-axis at the same point. The lines have the same steepness but in opposite directions.



3. Find the slope and y-intercept of $2x + y = 3$. Find an equation of the line whose slope is negative one-fourth times the slope of the given line and whose y-intercept is three less than the y-intercept of the given line. Compare the graphs of the two lines. **slope $m = -2$. y-intercept $b = 3$.**

Equation: $y = \frac{1}{2}x$; **Comparison:** The new line is perpendicular to the given line. The new line also intersects the y-axis three units below the given line.



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