Lesson 13: Graphing *x*- & *y*-Intercepts

Lesson Notes

The graph of a linear equation is a line. A linear equation can be graphed using two-points: the x-intercept point and the y-intercept point.

Example:

Graph the equation: $2x + 3y = 9$.

Replace x with zero, and solve for y to determine the y-intercept point.

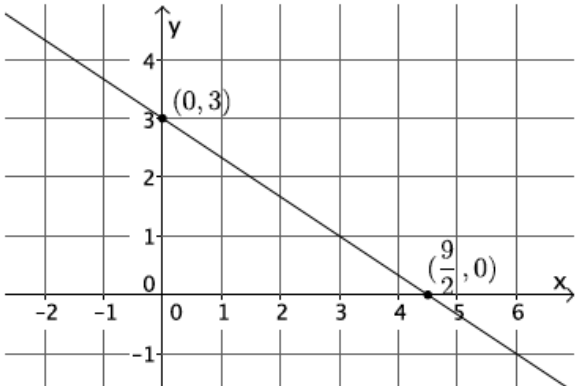
$$\begin{aligned} 2(0) + 3y &= 9 \\ 3y &= 9 \\ y &= 3 \end{aligned}$$

The y-intercept point is at $(0, 3)$.

Replace y with zero, and solve for x to determine the x-intercept point.

$$\begin{aligned} 2x + 3(0) &= 9 \\ 2x &= 9 \\ x &= \frac{9}{2} \end{aligned}$$

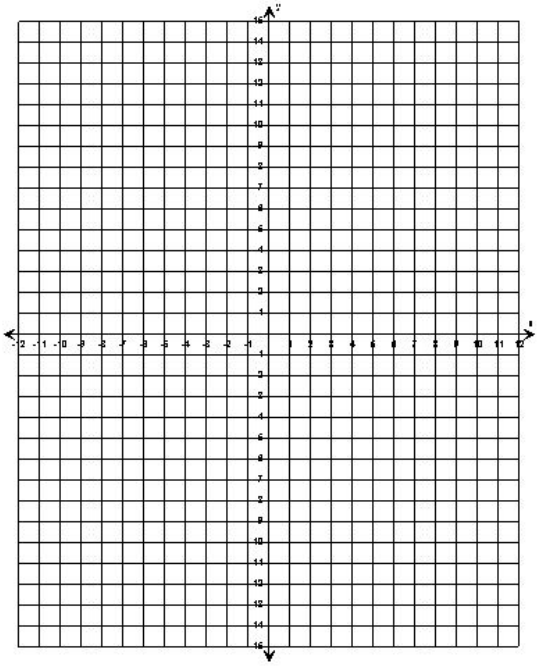
The x-intercept point is at $(\frac{9}{2}, 0)$.



1. Find the *x*- and *y*-intercepts for the equation $-3x + 8y = 24$. Then graph.

2. Find the *x*- and *y*-intercepts for the equation $x - 6y = 15$. Then graph.

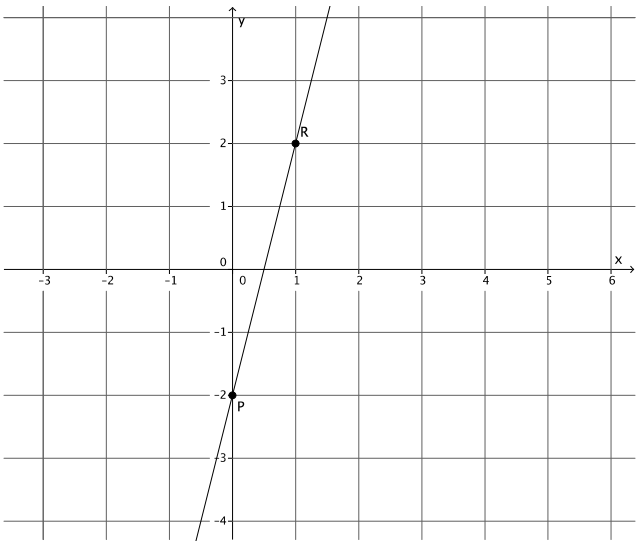
3. Find the *x*- and *y*-intercepts for the equation $4x + 3y = 21$. Then graph.



Lesson Notes

Write the equation of a line by determining the y-intercept point, $(0, b)$, and the slope, m, and replacing the numbers b and m into the equation $y = mx + b$.

Example:



The y-intercept point of this graph is $(0, -2)$.

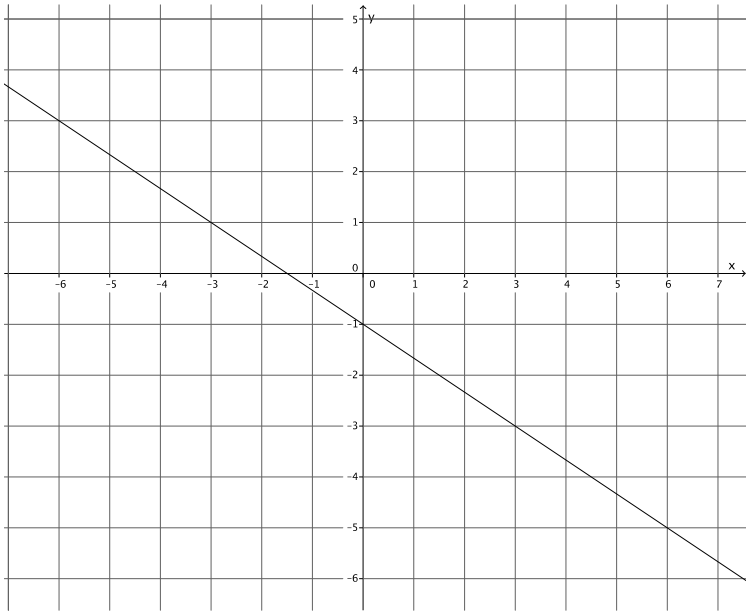
The slope of this graph is $m = \frac{4}{1} = 4$.

The equation that represents the graph of this line is $y = 4x - 2$.

Use the properties of equality to change the equation from slope-intercept form, $y = mx + b$, to standard form, $ax + by = c$, where a, b, and c are integers, and a is not negative.

Exercises

4. Write the equation that represents the line shown.



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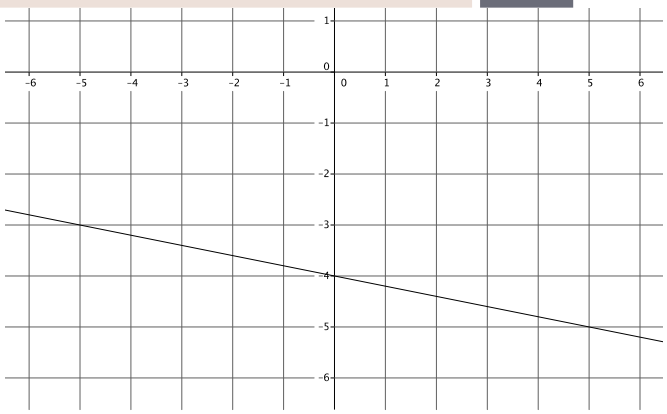

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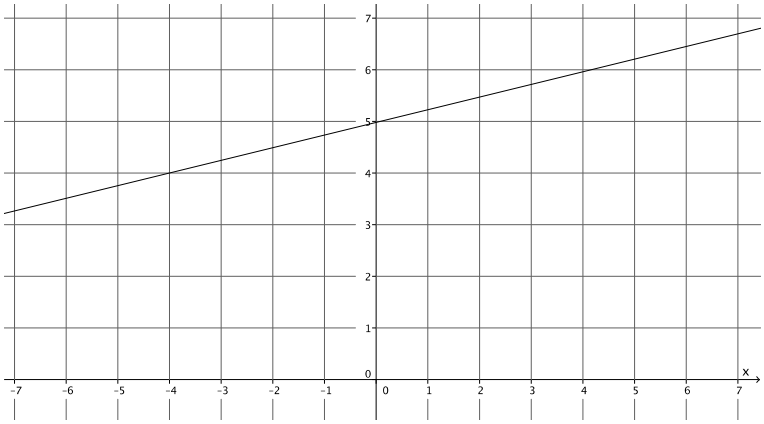
6. Write the equation that represents the line shown.



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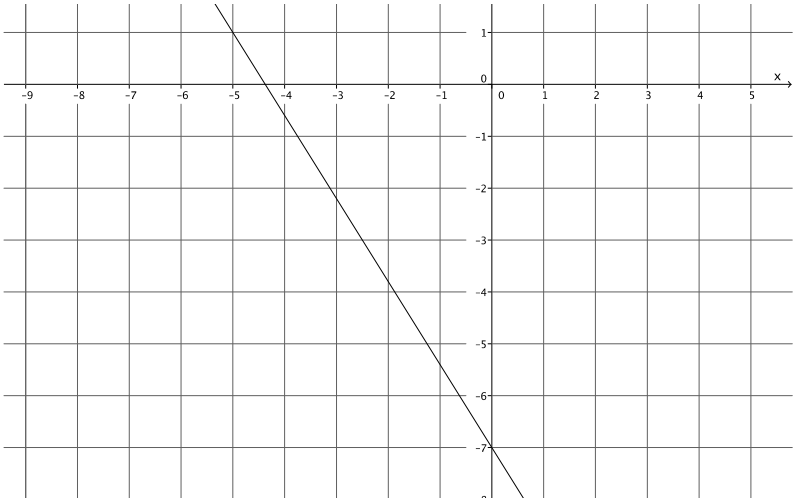

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