

# Lesson 20: Every Line Is a Graph of a Linear Equation

## Classwork

### Opening Exercise

Figure 1

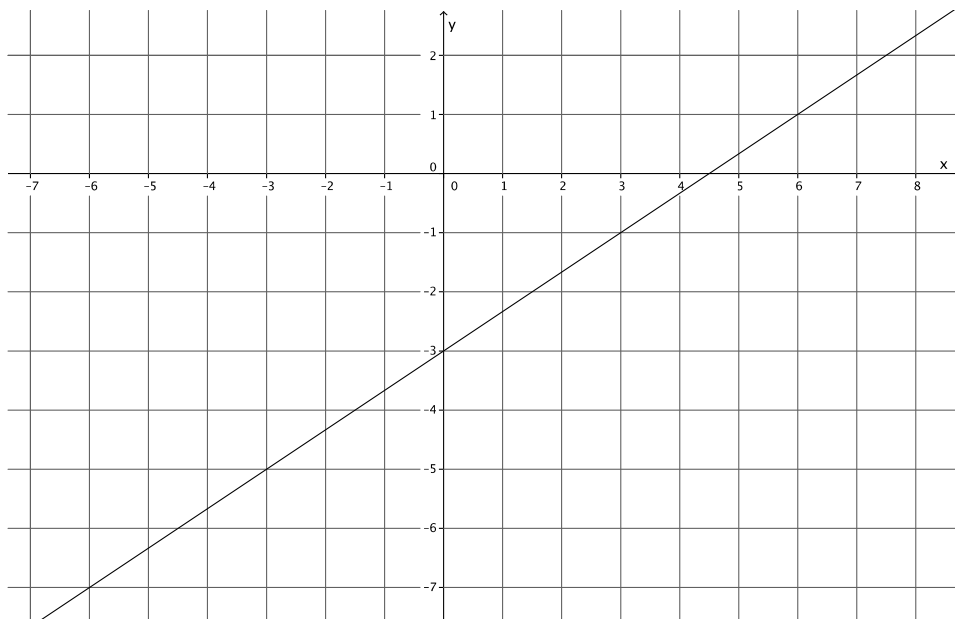
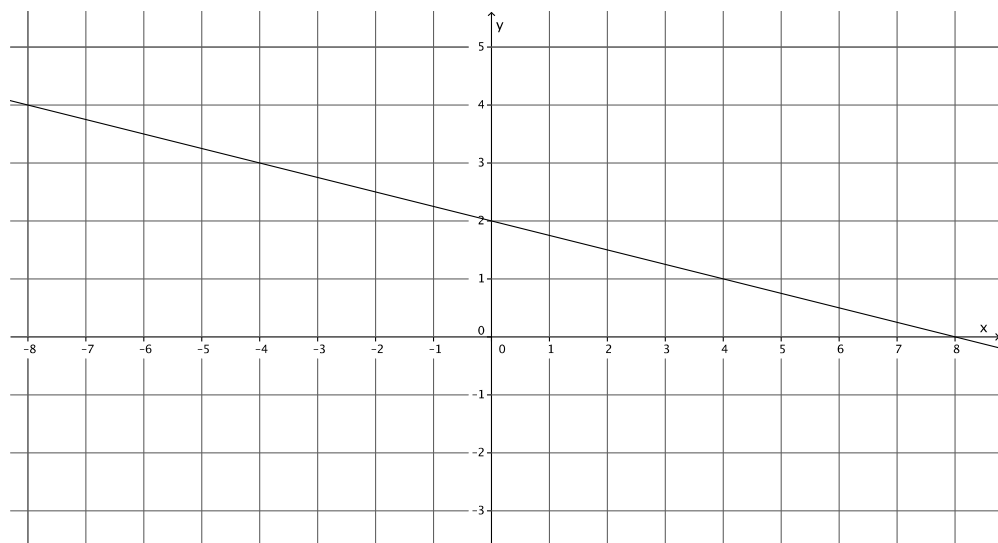


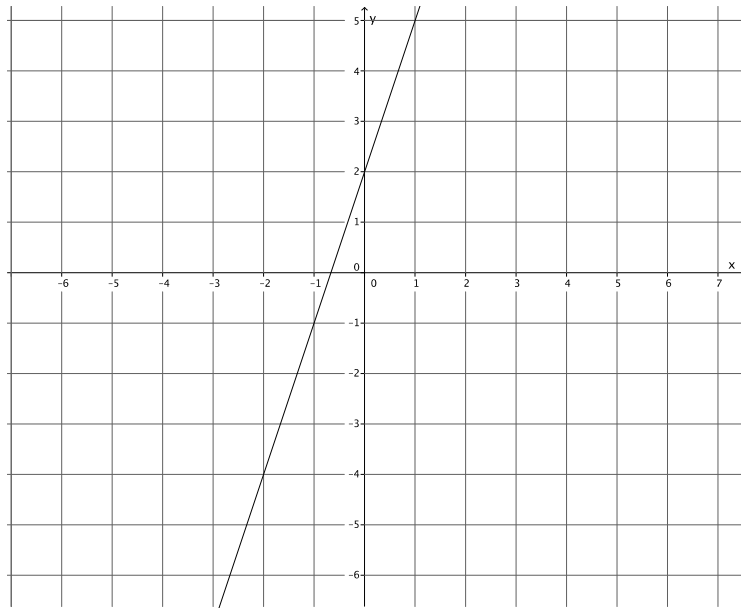
Figure 2



**Exercises**

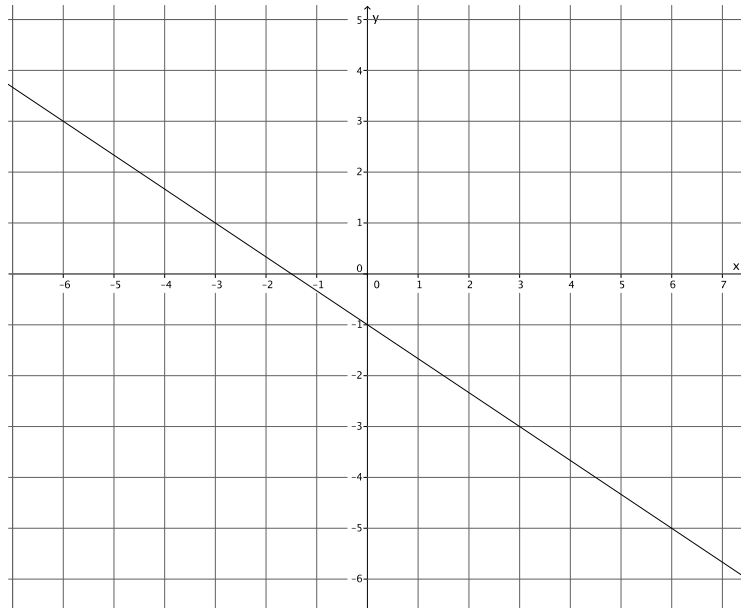
1. Write the equation that represents the line shown.

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.



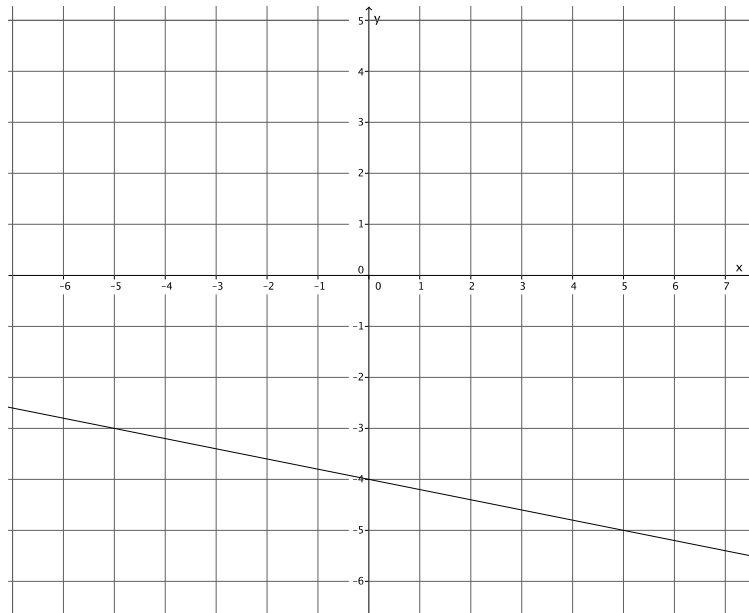
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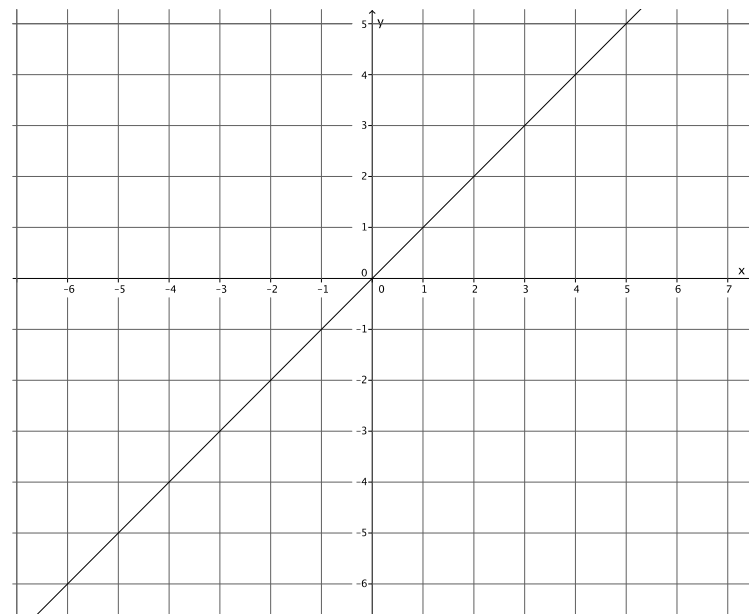
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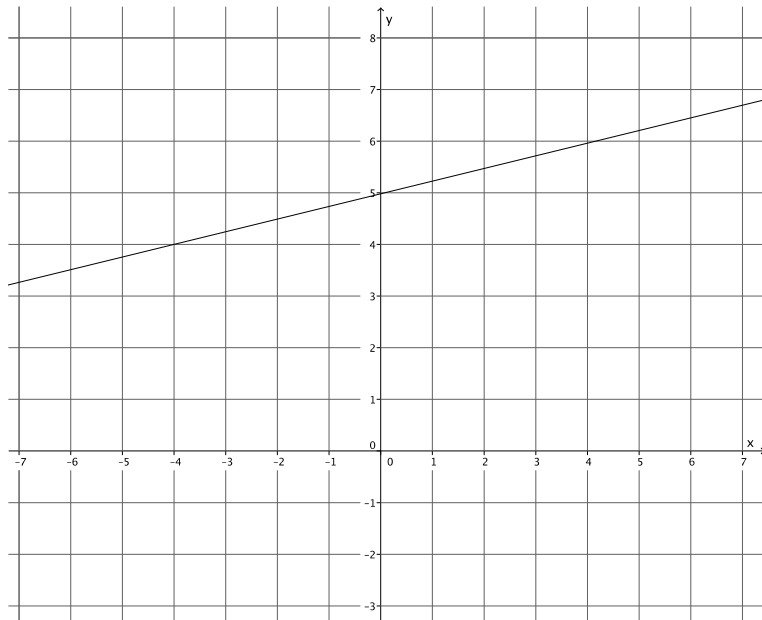


4. Write the equation that represents the line shown.

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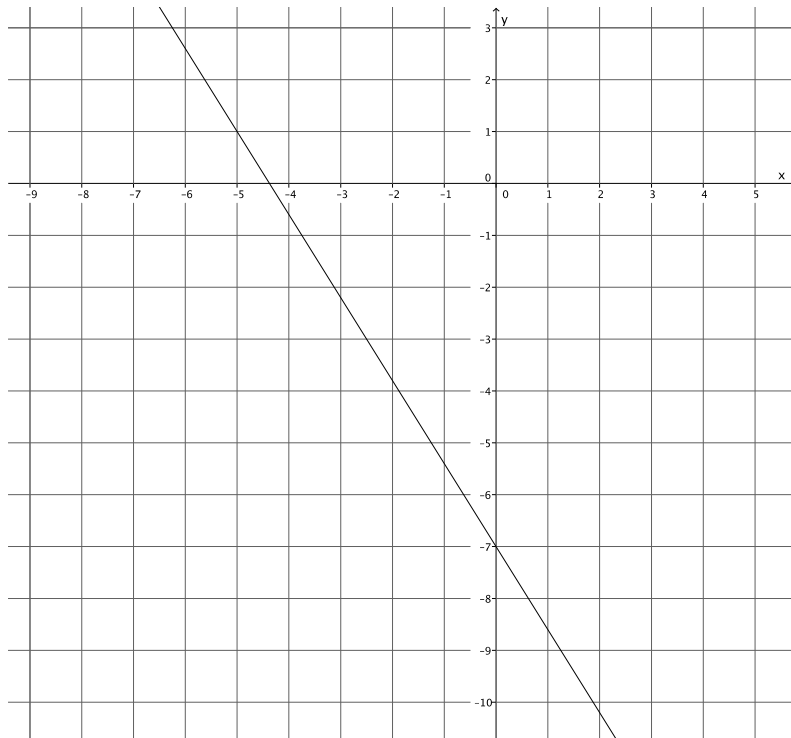


5. Write the equation that represents the line shown.



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.

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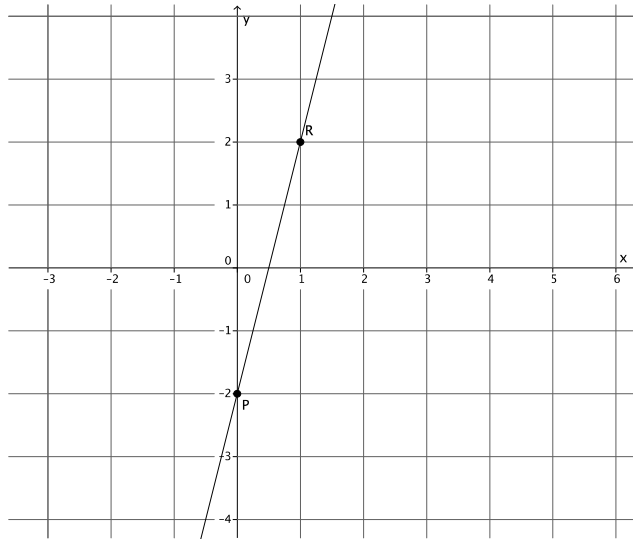


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**Lesson Summary**

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  $m = \frac{4}{1} = 4$ .

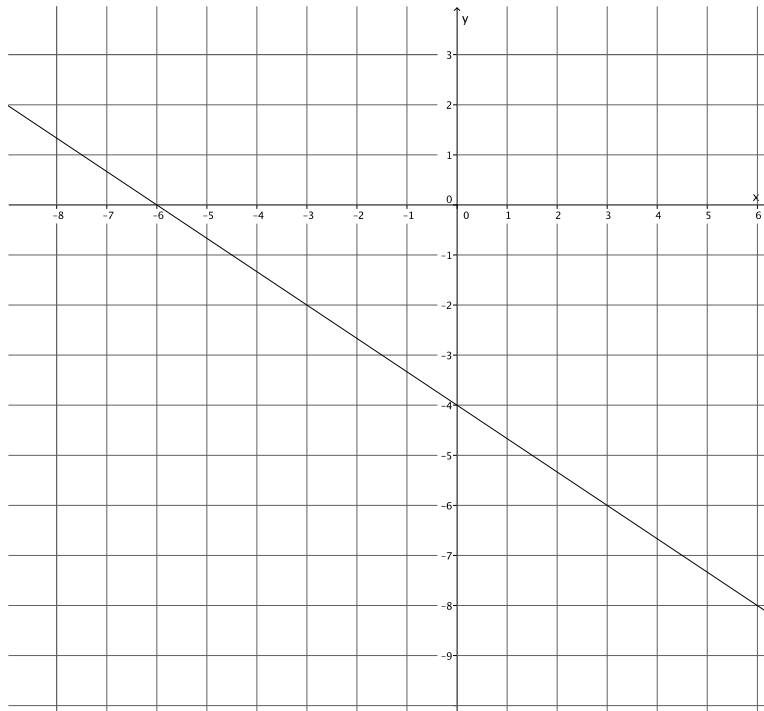
The equation that represents the graph of this line is  $y = 4x - 2$ .

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**Problem Set**

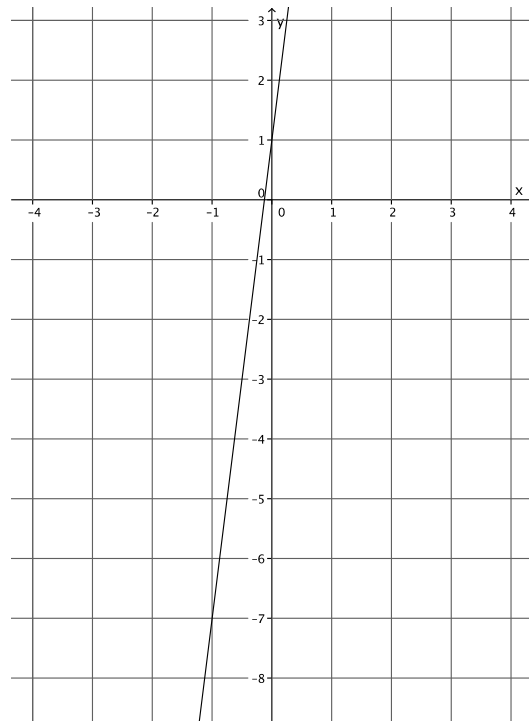
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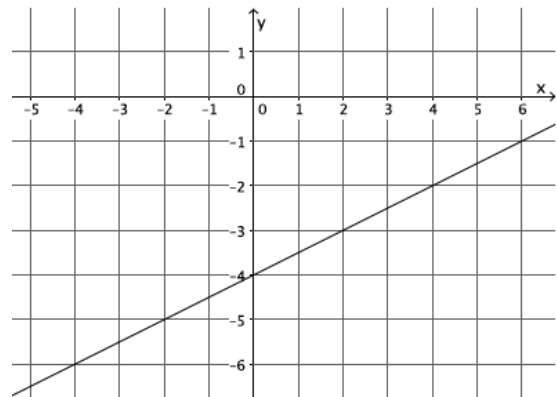
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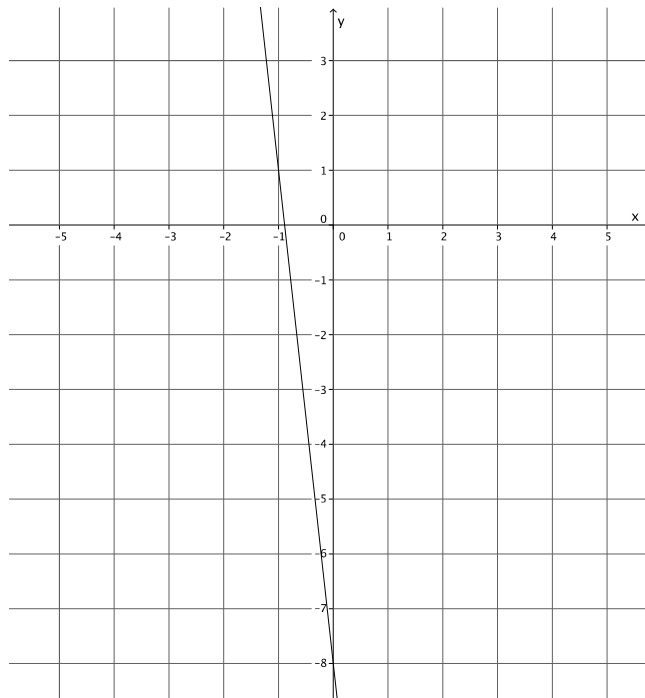
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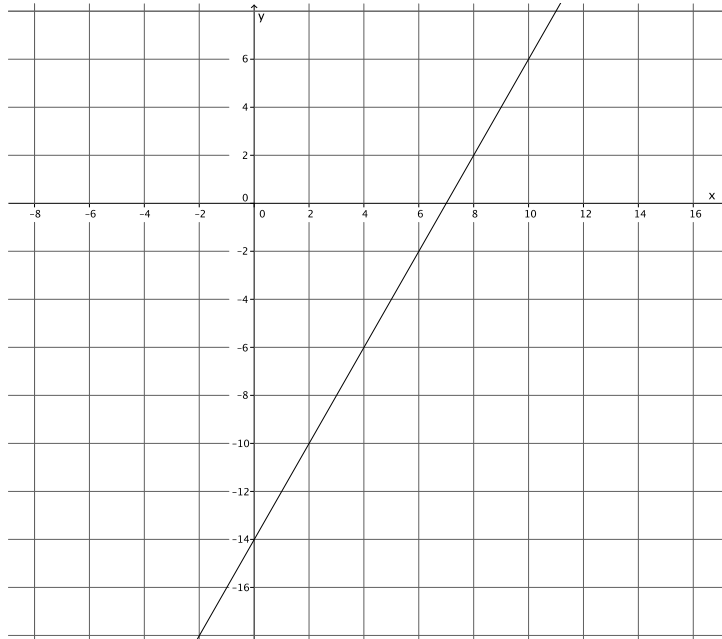
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