

LESSON 8 | MEET THE IDEA

Graphing lines and the week-four progress check

Thursday, November 5, 2026 . 6:00-7:00 PM Central

By the end, I can...

Graph $y = mx + b$ and connect slope, intercepts and zeros to the graph and its context.

The **y-intercept** is where $x = 0$. In $y = mx + b$ it is the point $(0, b)$. Starting there, use the slope to find another point.

Example 1 | Graph $y = 2x - 4$

$b = -4$: plot $(0, -4)$

$m = 2 = 2/1$

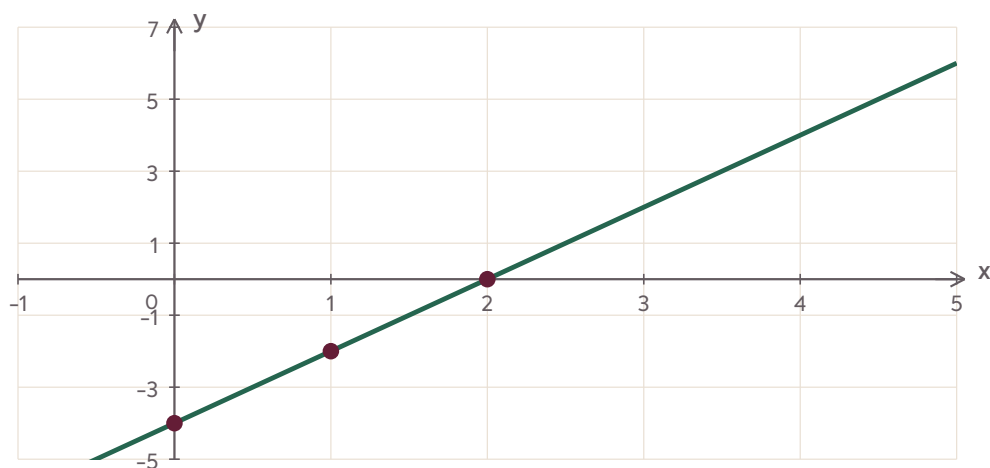
Draw the straight line

The constant gives the starting point on the y-axis.

Move right 1 and up 2 to $(1, -2)$, then to $(2, 0)$.

Check one more point by substituting into the equation.

$y = 2x - 4$



LESSON 8 | READ THE GRAPH

Intercepts tell different stories

Feature	What you set to zero	For $y = 2x - 4$
y-intercept	Set $x = 0$.	$y = -4$; point $(0, -4)$.
x-intercept	Set $y = 0$.	$0 = 2x - 4$ gives $x = 2$; point $(2, 0)$.
Zero of the function	Find the input with output 0.	The zero is the number 2.

Point or number?

The **x-intercept** is **(2, 0)**. The **zero** is **2**. They describe the same crossing, but one is a point and the other is an input value.

Example 2 | Use intercepts to graph $2x + 3y = 6$

$x = 0: 3y = 6, \text{ so } y = 2$	Plot the y-intercept $(0, 2)$.
$y = 0: 2x = 6, \text{ so } x = 3$	Plot the x-intercept $(3, 0)$.
$y = -(2/3)x + 2$	This equivalent rule confirms slope $-2/3$.

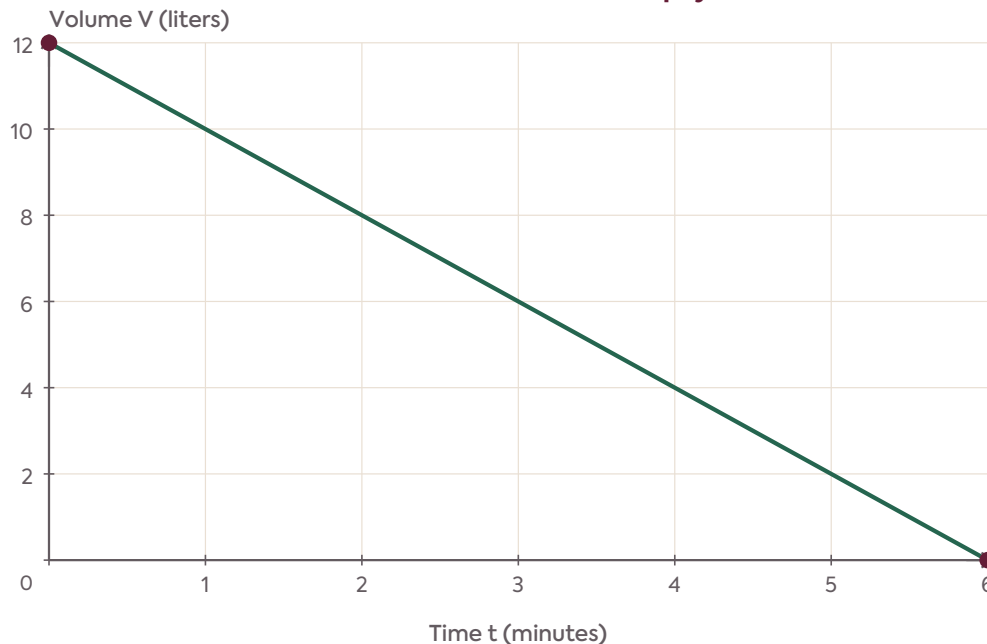
Draw a line through the two intercepts. If the intercepts are the **same** point, as for $y = 2x$, choose another input instead: two copies of the origin are not two different points.

LESSON 8 | A GRAPH WITH UNITS

Read a line in a real situation

A tank starts with 12 liters and drains at 2 liters per minute. Let t be minutes and V be liters remaining. The model is $V = 12 - 2t$, for $0 \leq t \leq 6$.

The tank drains until it is empty



(0, 12): the starting volume is 12 liters.

Slope -2: volume drops by 2 liters each minute.

(6, 0): the tank is empty after 6 minutes. Continuing the line would predict negative water, so the situation stops here.

Today also includes the week-four progress check

Your teacher supplies a separate foundation assessment with fresh questions covering the same baseline skills. Today's new graphing work is reported separately. This PDF contains study notes and practice, not that assessment.

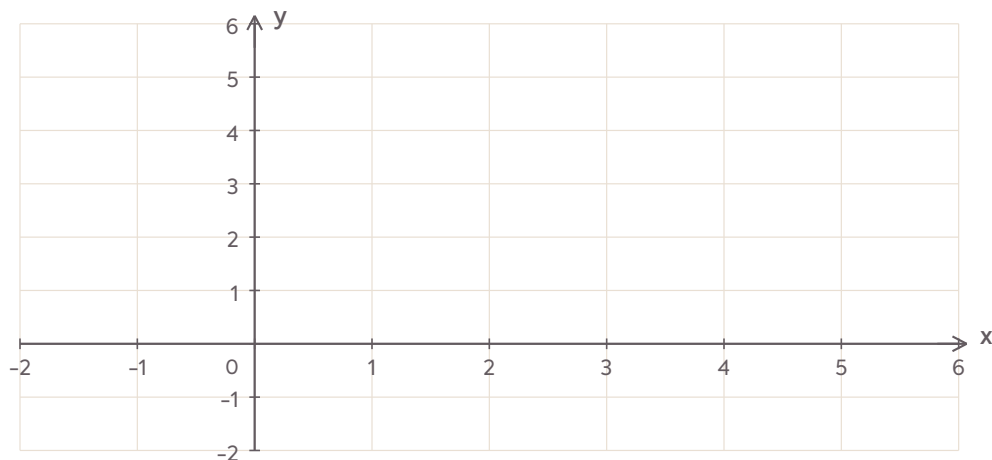
LESSON 8 | SHORT GRAPHING CHECKS

Your turn

Use the grid for Question 1. Try the questions before opening the answers.

1. Graph $y = -x + 3$. Mark both intercepts and name the zero.

Your graph



2. For $y = (1/2)x + 2$, give the y-intercept and two other points. What is the x-intercept?

3. A battery model is $B = 90 - 15t$, for $0 \leq t \leq 6$. B is charge percentage and t is hours. Interpret both intercepts.

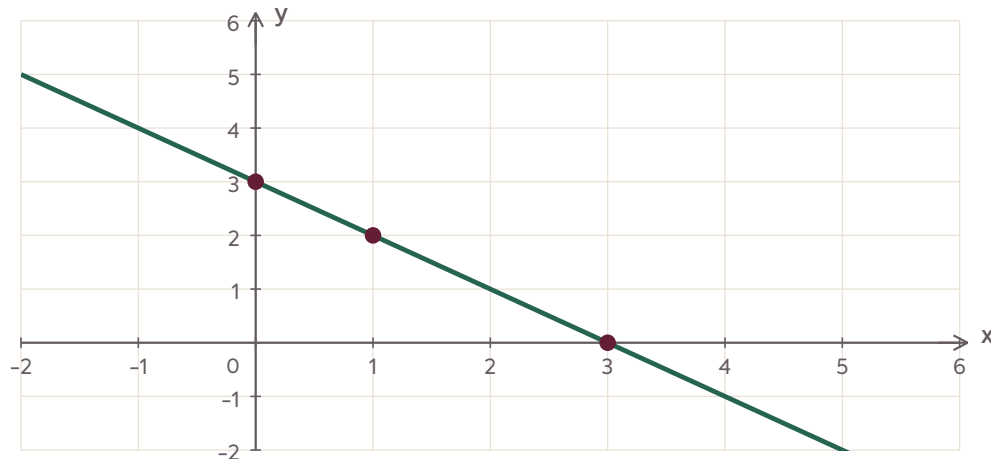
4. A student starts the graph of $y = 2x + 3$ at $(3, 0)$. Explain the mistake and give the correct starting point.

LESSON 8 | WORKED ANSWERS

Check your graph and its meaning

1. The intercepts are **(0, 3)** and **(3, 0)**. The zero is **3**. A third check point is **(1, 2)**.

Answer 1: $y = -x + 3$



2. The y-intercept is **(0, 2)**. Possible points: **(2, 3)** and **(4, 4)**. Set $y = 0$: $0 = (1/2)x + 2$, so $x = -4$. The x-intercept is **(-4, 0)**.

3. **(0, 90)** means 90% charge at the start. **(6, 0)** means the model reaches 0% after 6 hours. It is not intended to predict negative charge.

4. The constant 3 gives the **y**-intercept: **(0, 3)**. In **(3, 0)**, the input rather than the output is 3.

I can...

- ☐ Graph a line from its rule.
- ☐ Distinguish an intercept point from a zero.

Next class: write a line equation from given information. Curriculum focus: A.3C.