Names (pair) _____ Date _____

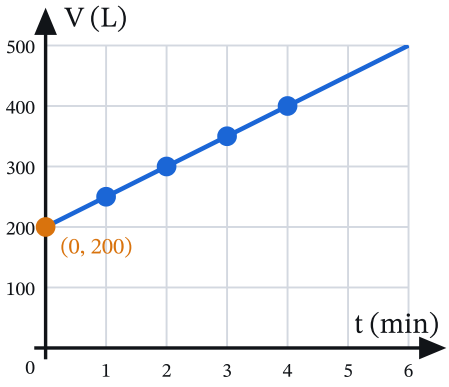
The y-Intercept

Example

A pool already holds 200 L of water, and 50 L flows in every minute.

t	0	1	2	3	4
V	200	250	300	350	400

$V(t) = 50t + 200$. At $t = 0$, $V = 200$: that is the **starting value**, and the graph crosses the V-axis at $(0, 200)$.



Remember

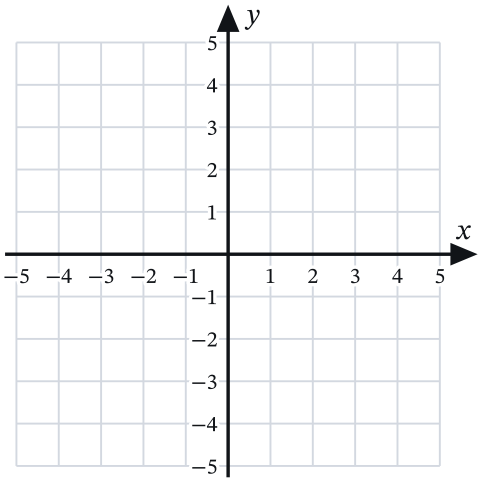
A linear function: $y = mx + b$. The number b is the value at $x = 0$: the graph crosses the y-axis at $(0, b)$. It is the **y-intercept**, in real situations the **starting value**. The **x-intercept** (zero) is the x where $y = 0$: there the graph crosses the x-axis.

1 IN PAIRS Write the equation, the y-intercept and what it means in the situation.

Situation	Equation	b	What does it mean?
Phone: 5 € a month and 0.10 € per minute (x min)			
Candle: 24 cm, 2 cm less every hour (x h)			
Taxi: 3 € to start and 1.20 € per km (x km)			

Names (pair) _____ Date _____

2 ON YOUR OWN Draw $y = 2x$, $y = 2x + 3$ and $y = 2x - 1$ on the same axes. What stays the same, and what changes?



3 ON YOUR OWN y-intercept or x-intercept? Complete the table.

Function	y-intercept $(0, b)$	x-intercept $(x, 0)$
$y = 2x - 4$	$(0, \square)$	$(\square, 0)$
$y = -x + 3$	$(0, \square)$	$(\square, 0)$
$y = \frac{1}{2}x + 2$	$(0, \square)$	$(\square, 0)$

4 IN PAIRS **Find the mistake.** Ana: "The graph of $y = 3x - 6$ crosses the y-axis at $(2, 0)$."

_____

The Line Explorer app · otooly.com/line-explorer

Drag the blue point on the y-axis and watch b. Keep the line, then change only b: how does the line move?

The Motion Graphs app · otooly.com/motion-graphs

In **Explore** mode, set Ana's starting position to 6 m. Where does the graph cross the d-axis?

★ ON YOUR OWN **Exit card.** For $y = -2x + 5$: y-intercept $(0, \square)$, x-intercept $x = \square$