



Finding x and y intercepts

Key focus

The **y-intercept** is where a line crosses the y -axis (when $x = 0$). The **x-intercept** is where a line crosses the x -axis (when $y = 0$). These are key points that help us understand and sketch lines.

Finding the y-intercept

1. In the equation $y = mx + c$, the y-intercept is simply the constant term c .
2. Or substitute $x = 0$ and solve for y .

Finding the x-intercept

1. Substitute $y = 0$ into the equation.
2. Solve the resulting equation for x .

Quick reference

- To find y-intercept: set $x = 0$
- To find x-intercept: set $y = 0$
- For $y = mx + c$: y-intercept is c
- Intercepts are coordinates, not just numbers
- Y-intercept is written $(0, c)$
- X-intercept is written $(a, 0)$

Example 1: from form $y = mx + c$

For $y = 2x + 5$:

Y-intercept: $c = 5$, so the point is $(0, 5)$.

X-intercept: set $y = 0$: $0 = 2x + 5 \Rightarrow 2x = -5 \Rightarrow x = -2.5$, so the point is $(-2.5, 0)$.

Example 2: from general form

For $y = 3x - 6$:

Y-intercept: $c = -6$, point is $(0, -6)$.

X-intercept: $0 = 3x - 6 \Rightarrow 3x = 6 \Rightarrow x = 2$, point is $(2, 0)$.

Example 3: finding both

For $y = -x + 4$:

Y-intercept: set $x = 0$: $y = 0 + 4 = 4$, point $(0, 4)$.

X-intercept: set $y = 0$: $0 = -x + 4 \Rightarrow x = 4$, point $(4, 0)$.

Example 4: using intercepts to sketch

With intercepts $(0, 3)$ and $(6, 0)$, plot these two points and draw a line through them to sketch the graph without calculating other points.

Try these

1. Find both intercepts for $y = 2x - 8$.
2. For $y = -3x + 9$, find the x-intercept.
3. Sketch the line with y-intercept $(0, 5)$ and x-intercept $(10, 0)$.
4. For $y = \frac{1}{2}x + 4$, find both intercepts.

Watch for

The y-intercept is a **coordinate** $(0, c)$, not just the number c . Similarly, the x-intercept is $(a, 0)$, not just a .

Watch for

Do not mix up the intercepts. When finding x-intercept, set $y = 0$ (not $x = 0$). When finding y-intercept, set $x = 0$ (not $y = 0$).