

Finding point of intersection of two lines

Notes & Steps



Key idea

The **point of intersection** is the single point where two lines cross. Its coordinates work for **both** lines.

How to read the point from a graph

1. Find the crossing point of the two lines.
2. Read the **x-coordinate** first from the horizontal axis.
3. Read the **y-coordinate** second from the vertical axis.
4. Write the answer as (x, y) .

Example 1

If the lines cross at $x = 2$ and $y = 3$, the point of intersection is $(2, 3)$.

Example 2

If the crossing is halfway between $x = 1$ and $x = 2$, and halfway between $y = 2$ and $y = 3$, the point is $(1.5, 2.5)$.

Common mistake

Do not read one coordinate from one place and the other coordinate from a different place. Both numbers must come from the same crossing point.

Quick reminders

- ▶ move **across** to read x
- ▶ move **up or down** to read y
- ▶ if the crossing is between grid lines, check for halves or simple decimals
- ▶ both coordinates must match the same crossing point

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Example 3: check with equations

If two lines have equations $y = x + 1$ and $y = -x + 5$, then the lines meet when the y -values are equal. Solving gives $x = 2$, then $y = 3$, so the point is $(2, 3)$.

Example 4: horizontal line

If one line is $y = 2$, the intersection must have $y = 2$. Then find where the other line reaches that height.

Try these

1. Two lines cross at $x = -1$ and $y = 4$. Write the point.
2. Two lines cross at $x = 3$ and $y = 0$. Write the point.
3. Two lines cross halfway between $x = 2$ and $x = 3$, and halfway between $y = 1$ and $y = 2$. Write the point.
4. One line is $y = 1$. The other line crosses it at $x = 4$. Write the point.

Common mistake

Do not swap the order of the coordinates. $(2, 3)$ and $(3, 2)$ are different points.