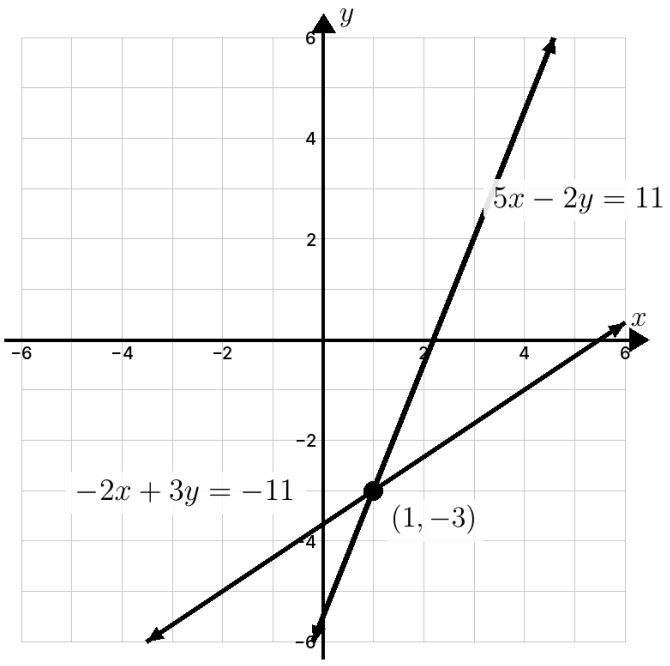
Two Lines on One Graph

GL10-V1 · storyboard · GL10 Two lines on one graph. Read each picture with its sentences.

Picture 1



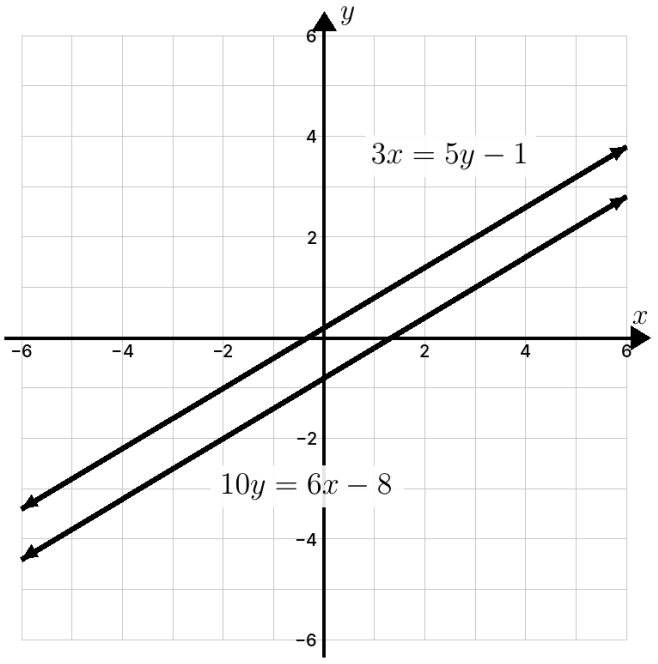
Check in both:

$5 + 6 = 11$ ✓

$-2 - 9 = -11$ ✓

1. Graph 5 x minus 2 y equals 11, and negative 2 x plus 3 y equals negative 11.
2. They cross at 1, negative 3.
3. A graph is only a guide, so check it in both equations: both come out true.

Picture 2



Same slope $\frac{3}{5}$

Different intercepts

Parallel: no solution

4. These two both have slope 3 fifths, but different intercepts.
5. They are parallel, and never meet: no solution.

Picture 3

Trap same slope

✗ the same line

✓ check the intercepts

6. Watch for the trap: thinking the same slope always means the same line.
7. Check the intercepts.

Picture 4

$x - 2y = 7$ and $3x = 21 + 6y$.

$3x - 6y = 21$ 3 times the first

one line: infinitely many solutions

8. x minus 2 y equals 7, and 3 x equals 21 plus 6 y.
9. Rearrange the second: 3 x minus 6 y equals 21.
10. That is 3 times the first equation.
11. So the two graphs are one line, and there are infinitely many solutions.