LESSON MAKER PRO

Where Lines Meet

Find intersections and check both equations.

GRADE 8 · 8.AT.B.5.a

8.AT.B.5.a "Interpret the solution to a system of two linear equations as the point where their graphs intersect and verify that the coordinates of the intersection satisfy both equations."

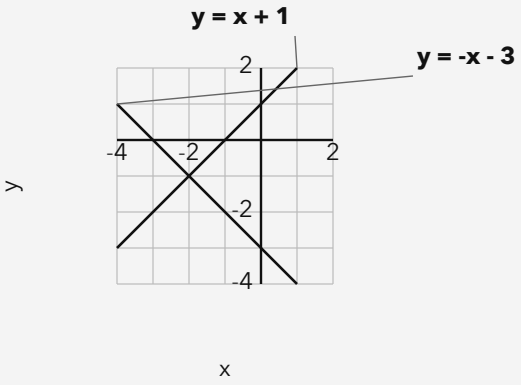
NAME _____ DATE _____

THE BIG IDEA

The intersection of two lines is a point on both lines. To check a point, put its x- and y-values into each equation. Both equations must be true.

WORKED EXAMPLE

Find where the lines meet. Check the point in both equations.



1. Read the intersection: (-2, -1).
2. Check y = x + 1: -1 = -2 + 1.
3. Check y = -x - 3: -1 = -(-2) - 3.

Answer: The intersection is (-2, -1). Both equations are true.

PRACTICE 4 problems

1 Do y = x + 4 and y = -x + 10 intersect at (3, 7)? Check both.

ANSWER _____

2 Do y = 2x + 1 and y = x + 4 intersect at (4, 9)? Check both.

ANSWER _____

3 Find where y = x + 3 and y = -x + 13 intersect. Check both.

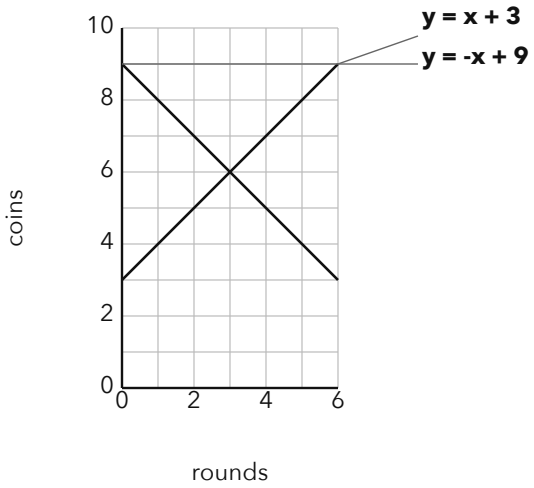
ANSWER _____

4 Find where y = 3x and y = x + 10 intersect. Check both.

ANSWER _____

APPLY IT Show your work

1 The graph shows coins in two game accounts after x rounds. When do the accounts have the same number of coins? Check both equations.



ANSWER _____

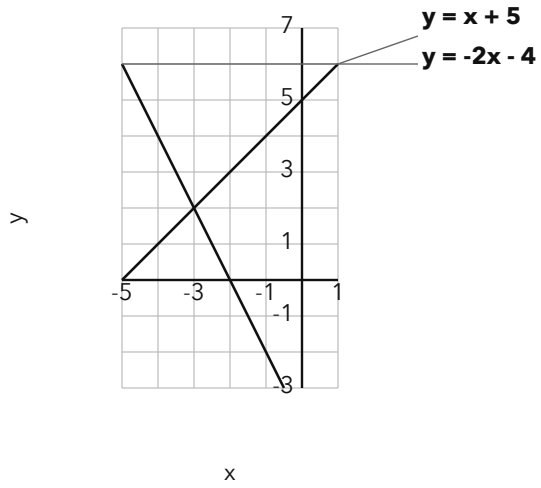
2 Two movie rental plans cost y dollars for x rentals. Plan A costs y = 3x + 4. Plan B costs y = x + 12. When do they cost the same? Give the cost and check both equations.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Find the lines' intersection to the left of the y-axis. Check it in both equations.



WORK SPACE AND ANSWER

ANSWER KEY

Where Lines Meet

GRADE 8 · 8.AT.B.5.a

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Do y = x + 4 and y = -x + 10 intersect at (3, 7)? Check both.	**Yes. 7 = 3 + 4, and 7 = -3 + 10.**
2	Do y = 2x + 1 and y = x + 4 intersect at (4, 9)? Check both.	**No. 9 = 2(4) + 1, but 9 is not equal to 4 + 4.**
3	Find where y = x + 3 and y = -x + 13 intersect. Check both.	**(5, 8). Check: 8 = 5 + 3, and 8 = -5 + 13.**
4	Find where y = 3x and y = x + 10 intersect. Check both.	**(5, 15). Check: 15 = 3(5), and 15 = 5 + 10.**

PART 2 · APPLY IT

1. **After 3 rounds, both accounts have 6 coins.** The lines meet at (3, 6). Check: 6 = 3 + 3, and 6 = -3 + 9.
2. **At 4 rentals, both plans cost $16.** Solve 3x + 4 = x + 12 to get x = 4. Check: 16 = 3(4) + 4, and 16 = 4 + 12.

CHALLENGE

(-3, 2). Check: 2 = -3 + 5, and 2 = -2(-3) - 4.

Accept equivalent substitution checks. A point is an intersection only when it satisfies both equations.