LESSON MAKER PRO

Where Lines Meet

Solve systems and make sense of their solutions

HIGH SCHOOL · A1.A.1

A1.A.1 "Represent and solve mathematical and real-world problems using linear equations, absolute value equations, and systems of equations; interpret solutions in the original context..."

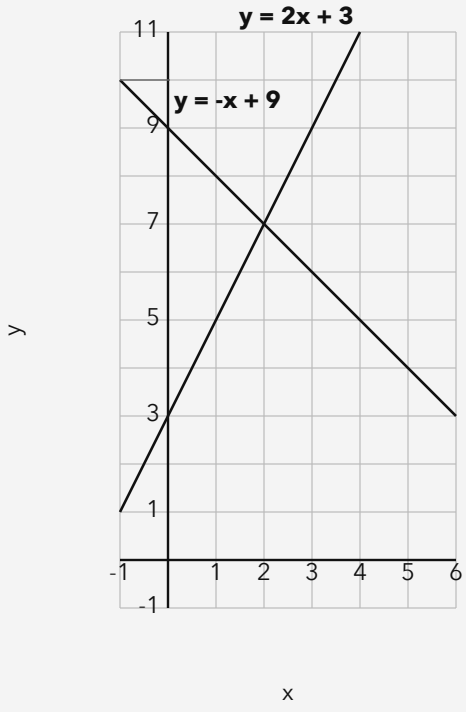
NAME _____ DATE _____

ONE PAIR, TWO EQUATIONS

A system's solution is an ordered pair that makes both equations true. On a graph, find the point where the lines cross. Without a graph, substitute one expression into the other equation or add equations to eliminate a variable.

WORKED EXAMPLE

Use the graph to find where the two lines meet. Then check the point with the equations shown.

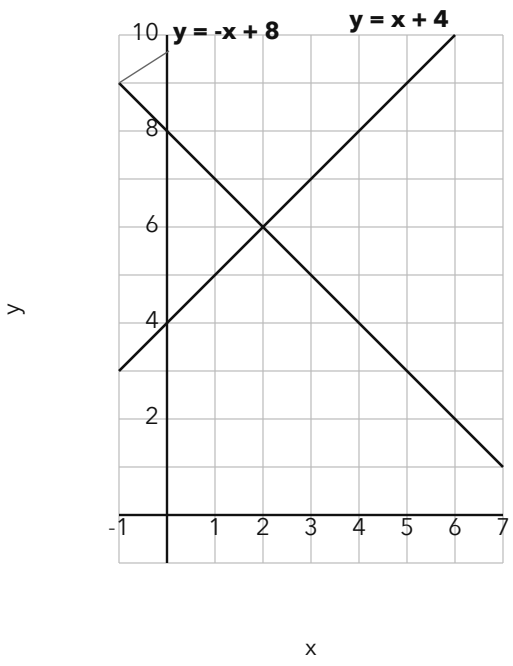


1. Read the crossing point: x = 2 and y = 7.
2. Check the first line: 2(2) + 3 = 7.
3. Check the second line: -2 + 9 = 7.

Answer: (2, 7)

PRACTICE 6 problems

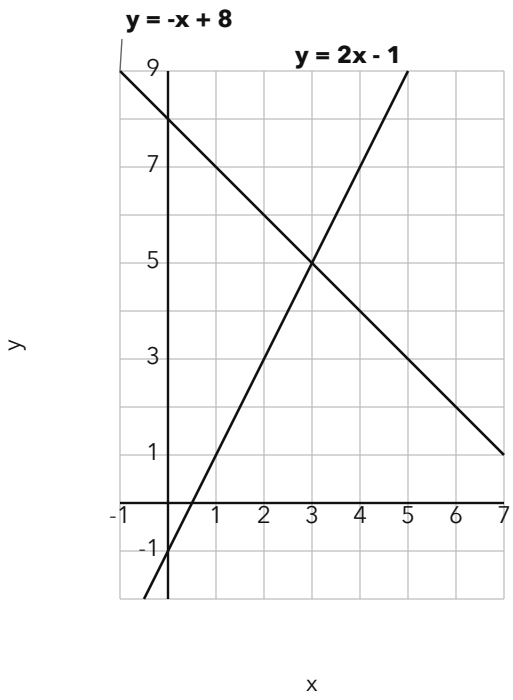
1 Find the point where the lines cross. Write your answer as (x, y).



ANSWER _____

_____

2 Find the point where the lines cross. Write your answer as (x, y).



ANSWER _____

_____

3 Solve the system: y = 3x - 4 and y = x + 2. Write (x, y).

ANSWER _____

_____

4 Solve the system: x + y = 11 and x - y = 3. Write (x, y).

ANSWER _____

_____

5 Solve the system: y = (1/2)x + 1 and y = -(1/2)x + 5. Write (x, y).

ANSWER _____

_____

6 Find x if x/2 + y = 7 and x/2 - y = 1.

ANSWER _____

APPLY IT Show your work

1 At a student film festival, 2 student tickets and 3 adult tickets cost $36. Four student tickets and 1 adult ticket cost $32. What is the price of each ticket?

WORK SPACE

ANSWER _____

2 At a gaming lounge, 18 customers bought either a 3-hour pass or a 5-hour pass. Altogether, they bought 70 hours of play time. How many of each pass were sold?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A school store sells stickers and pins. Two stickers and 3 pins cost $14. Four stickers and 6 pins cost $28. Explain why these facts do not determine one price for each item. Give two possible price pairs using positive whole-dollar prices.

WORK SPACE AND ANSWER

ANSWER KEY # Where Lines Meet

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the point where the lines cross. Write your answer as (x, y).	**(2, 6)**
2	Find the point where the lines cross. Write your answer as (x, y).	**(3, 5)**
3	Solve the system: y = 3x - 4 and y = x + 2. Write (x, y).	**(3, 5)**
4	Solve the system: x + y = 11 and x - y = 3. Write (x, y).	**(7, 4)**
5	Solve the system: y = (1/2)x + 1 and y = -(1/2)x + 5. Write (x, y).	**(4, 3)**
6	Find x if x/2 + y = 7 and x/2 - y = 1.	**x = 8**

PART 2 · APPLY IT

1. **Student ticket: $6; adult ticket: $8.** Let s and a be the ticket prices. Solve 2s + 3a = 36 and 4s + a = 32 to get s = 6 and a = 8.
2. **10 three-hour passes and 8 five-hour passes.** Let t and f be the numbers of 3-hour and 5-hour passes. Solve t + f = 18 and 3t + 5f = 70 to get t = 10 and f = 8.

CHALLENGE

The second purchase doubles both the items and the cost in the first purchase, so it gives no new price information. Two possible pairs are $4 per sticker and $2 per pin, or $1 per sticker and $4 per pin.

Accept equivalent methods, including graphing, substitution, and elimination. For the challenge, accept any two distinct positive whole-dollar price pairs that satisfy 2s + 3p = 14.