LESSON MAKER PRO

Points Make Graphs

Test ordered pairs to find the solutions of an equation.

HIGH SCHOOL · HSA-REI.D.10

CCSS.Math.Content.HSA-REI.D.10 "Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line)."

NAME _____ DATE _____

EVERY POINT MUST WORK

The graph of an equation contains every ordered pair that makes the equation true. To test a point, substitute its x-value and y-value into the equation. If both sides are equal, plot that point on the graph.

WORKED EXAMPLE

Does (3, 20) solve y = 11x - 13?

1. Substitute x = 3 and y = 20.
2. 20 = 11(3) - 13
3. 20 = 33 - 13
4. 20 = 20, so the equation is true.

Answer: Yes, (3, 20) is a solution.

PRACTICE 6 problems

1 Does (4, 10) solve y = 2x + 2?

ANSWER _____

2 Which point is a solution of 4x + y = 14? A. (1, 8) B. (2, 6) C. (4, 1)

ANSWER _____

3 Complete the ordered pair that solves y = 4x - 1 when x = 5: (5, __)

ANSWER _____

4 Find x so that (x, 7) is a solution of y = 6x - 5.

ANSWER _____

5 Give two different solutions of x + y = 6.

ANSWER _____

6 Does (-1, 10) solve y = -2x + 8?

ANSWER _____

APPLY IT Show your work

1 A video creator has 6 clips drafted and finishes 4 more clips each week. The equation $y = 4x + 6$ gives the total number of clips, y, after x weeks. List the points on the graph when $x = 0$, $x = 1$, and $x = 4$.

WORK SPACE

ANSWER _____

2 A phone plan costs $8 each month plus $2 for each gigabyte of data. The total cost is $y = 2x + 8$, where x is the number of gigabytes. List the points when $x = 0$, $x = 4$, and $x = 10$. Then decide whether (7, 22) is on the graph.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Without graphing, decide whether $y = 5x + 2$ and $x + y = 14$ share a point. If they do, give the point and explain why it is on both graphs.

_____

_____

ANSWER KEY

Points Make Graphs

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Does (4, 10) solve y = 2x + 2?	**Yes. 10 = 2(4) + 2.**
2	Which point is a solution of 4x + y = 14? A. (1, 8) B. (2, 6) C. (4, 1)	**B. (2, 6)**
3	Complete the ordered pair that solves y = 4x - 1 when x = 5: (5, __)	**(5, 19)**
4	Find x so that (x, 7) is a solution of y = 6x - 5.	**x = 2**
5	Give two different solutions of x + y = 6.	**Sample answer: (0, 6) and (6, 0)**
6	Does (-1, 10) solve y = -2x + 8?	**Yes. 10 = -2(-1) + 8.**

PART 2 · APPLY IT

1. **(0, 6), (1, 10), and (4, 22)** Substitute each given week value for x in y = 4x + 6. Each resulting ordered pair is a solution, so it belongs on the graph.
2. **(0, 8), (4, 16), and (10, 28); yes, (7, 22) is on the graph.** Substitute 0, 4, and 10 for x to find the listed points. For (7, 22), 2(7) + 8 = 22, so the point satisfies the equation.

CHALLENGE

Yes. The graphs share (2, 12), because 12 = 5(2) + 2 and 2 + 12 = 14.

Accept any two distinct ordered pairs that satisfy x + y = 6 for problem 5. Equivalent substitution work and clear statements that both sides are equal are acceptable.