LESSON MAKER PRO

Where Graphs Meet

Find where two rules give the same value.

GRADE 8 · 8A.AF.G.20

8A.AF.G.20 "Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x). a. Find the approximate solutions of an equation graphically..."

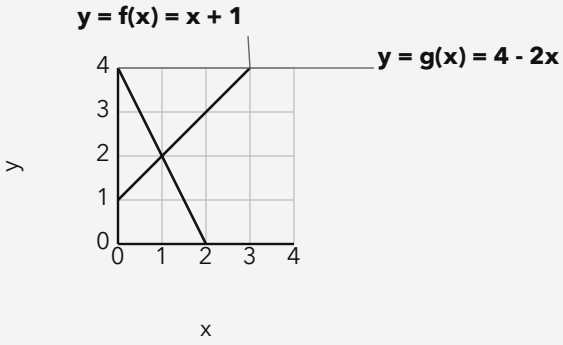
NAME _____ DATE _____

THE BIG IDEA

At an intersection, two graphs share the same x-coordinate and y-coordinate. That x-coordinate solves f(x) = g(x) because both rules give the same output.

WORKED EXAMPLE

Where do the graphs meet? Give the solution of f(x) = g(x).



1. Read the intersection: (1, 2).
2. At x = 1, both graphs have y = 2.

Answer: x = 1

PRACTICE 4 problems

1 Solve f(x) = g(x) if f(x) = 3x + 5 and g(x) = 11 - 5x.

ANSWER _____

2 Find the x-value where f(x) = 6x - 7 and g(x) = 2x + 2 are equal.

ANSWER _____

3 Estimate the positive solution of $x^2 = 5$ to the nearest tenth.

ANSWER _____

4 For f(x) = 4x + 8 and g(x) = 2x + 14, find the shared x-value and y-value.

ANSWER _____

APPLY IT Show your work

1 The table shows the costs of two game plans. After how many months do they cost the same, and what is the cost?

GAME PLAN COSTS

Months	Plan A ($)	Plan B ($)
0	12	24
2	20	20
4	28	16

ANSWER _____

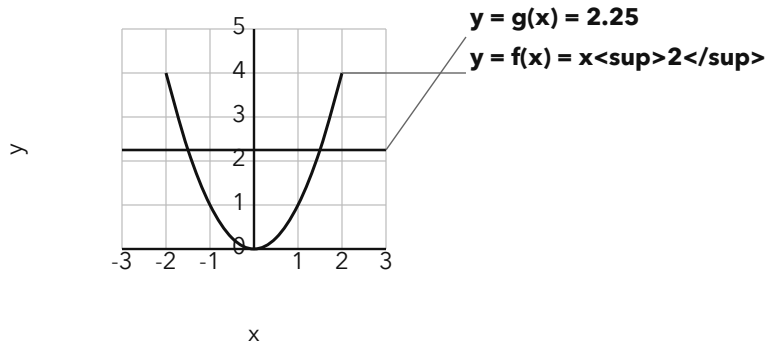
2 A club earns $7 per shirt but spends $25 up front. Another club earns $4 per shirt and starts with $5. After how many shirts will their money totals match?

WORK SPACE

ANSWER _____

CHALLENGE One step up

The graphs show $f(x) = x^2$ and $g(x) = 2.25$. Give both solutions of $f(x) = g(x)$. Why are there two?



WORK SPACE AND ANSWER

ANSWER KEY

Where Graphs Meet

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve f(x) = g(x) if f(x) = 3x + 5 and g(x) = 11 - 5x.	**x = 3/4**
2	Find the x-value where f(x) = 6x - 7 and g(x) = 2x + 2 are equal.	**x = 2.25**
3	Estimate the positive solution of $x^2 = 5$ to the nearest tenth.	**x ≈ 2.2**
4	For f(x) = 4x + 8 and g(x) = 2x + 14, find the shared x-value and y-value.	**x = 3, y = 20**

PART 2 · APPLY IT

1. **After 2 months, both plans cost $20.** At 2 months, both cost columns show $20.
2. **10 shirts** Set 7x - 25 = 4x + 5. Then 3x = 30, so x = 10.

CHALLENGE

x = -1.5 and x = 1.5. The graphs intersect twice, and both x-values give y = 2.25.

Accept equivalent fractions or decimals for exact answers. For the estimate in Practice 3, accept 2.2 only when rounding to the nearest tenth.