LESSON MAKER PRO

Where Graphs Meet

Find shared points and compare graphs.

HIGH SCHOOL · A2S.AF.E

A2S.AF.E "Graphs can be used to obtain exact or approximate solutions of equations, inequalities, and systems of equations and inequalities–including systems of linear equations in two variables and systems of linear and quadratic equations (given..."

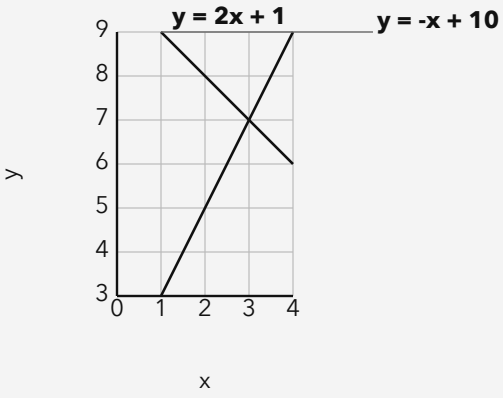
NAME _____ DATE _____

READ THE CROSSING

At a crossing, two graphs have the same x-value and y-value. You can read the crossing on a graph, or set the y-expressions equal to find x and then find y.

WORKED EXAMPLE

Where do the two lines cross?



1. At the crossing, 2x + 1 = -x + 10.
2. 3x = 9, so x = 3.
3. y = 2(3) + 1 = 7.

Answer: (3, 7)

PRACTICE 4 problems

1 Find where the graphs of y = x + 4 and y = 3x meet.

ANSWER _____

2 Find where the graphs of y = -x + 8 and y = x + 2 meet.

ANSWER _____

3 Find both points where the graphs of $y = x^2$ and y = 2x + 3 meet.

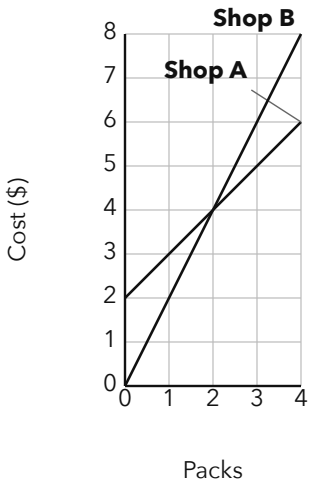
ANSWER _____

4 Find where the graphs of y = -2x + 10 and y = x + 7 meet.

ANSWER _____

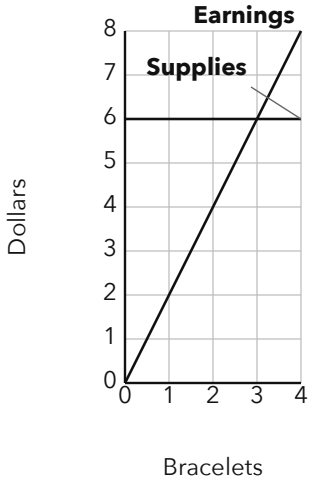
APPLY IT Show your work

1 Two shops sell sticker packs. Use the graph to find when their costs match. Give packs and dollars.



ANSWER _____

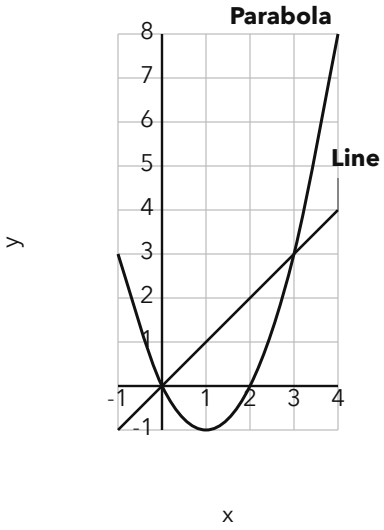
2 Your club sells bracelets. Use the graph to find when earnings cover the supply cost. Give bracelets and dollars.



ANSWER _____

CHALLENGE One step up

For which x-values is the parabola at or below the line? Explain how the crossings show your answer.



WORK SPACE AND ANSWER

ANSWER KEY

Where Graphs Meet

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find where the graphs of y = x + 4 and y = 3x meet.	**(2, 6)**
2	Find where the graphs of y = -x + 8 and y = x + 2 meet.	**(3, 5)**
3	Find both points where the graphs of $y = x^2$ and y = 2x + 3 meet.	**(-1, 1) and (3, 9)**
4	Find where the graphs of y = -2x + 10 and y = x + 7 meet.	**(1, 8)**

PART 2 · APPLY IT

1. **2 packs, $4** The cost lines cross at (2, 4).
2. **3 bracelets, $6** Earnings and supply cost meet at (3, 6).

CHALLENGE

0 <= x <= 3. The graphs cross at x = 0 and x = 3, and the parabola is below the line between those crossings.

Accept the intersection points in either order for problem 3. For the challenge, accept interval notation [0, 3] with an explanation that includes both crossing points.