LESSON MAKER PRO

Graph Clues

Connect an equation to its intercepts and key values.

HIGH SCHOOL · A2S.AF.H

A2S.AF.H "Functions can be represented graphically, and key features of the graphs, including zeros, intercepts, and, when relevant, rate of change and maximum/minimum values..."

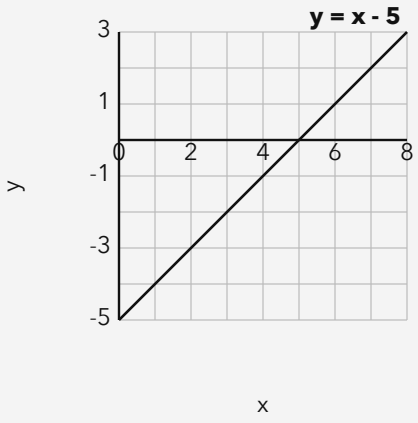
NAME _____ DATE _____

FIND THE CROSSING

An x-intercept has y = 0, so set the expression equal to 0 to find its x-value. A y-intercept has x = 0, so substitute 0 for x. The slope of a line gives its rate of change.

WORKED EXAMPLE

Use the graph of y = x - 5 to find both intercepts.



1. Set y = 0: 0 = x - 5, so x = 5.
2. Set x = 0: y = 0 - 5 = -5.
3. Check the crossings on the graph.

Answer: x-intercept: (5, 0); y-intercept: (0, -5)

PRACTICE 4 problems

1 Find the x-intercept of y = 3x - 12.

ANSWER _____

2 Find the y-intercept of y = -2x + 7.

ANSWER _____

3 Find the rate of change of y = (3/4)x + 1.

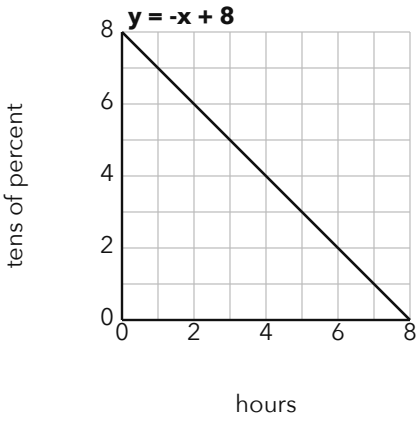
ANSWER _____

4 Find both x-intercepts of $y = x^2 - 9x + 14$.

ANSWER _____

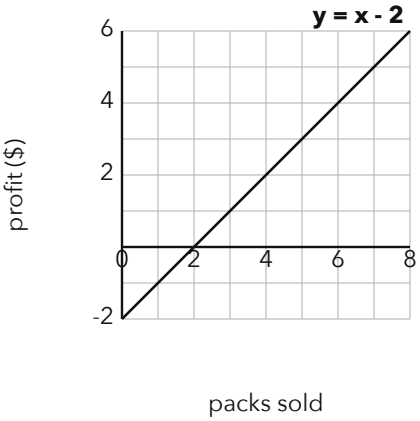
APPLY IT Show your work

1 Your phone battery level is shown in tens of percent after x hours. When does it reach 0%? Give the zero and its meaning.



ANSWER _____

2 The graph shows your profit in dollars after selling x sticker packs. What is the y-intercept, and what does it mean?



ANSWER _____

CHALLENGE One step up

For $y = -x^2 + 4x + 12$, find both x-intercepts and the maximum y-value. Explain how you found the maximum.

WORK SPACE AND ANSWER

Graph Clues

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the x-intercept of y = 3x - 12.	**(4, 0)**
2	Find the y-intercept of y = -2x + 7.	**(0, 7)**
3	Find the rate of change of y = (3/4)x + 1.	**3/4**
4	Find both x-intercepts of $y = x^2 - 9x + 14$.	**(2, 0) and (7, 0)**

PART 2 · APPLY IT

1. **The zero is x = 8. The battery reaches 0% after 8 hours.** Set y = 0 in y = -x + 8 and solve for x.
2. **The y-intercept is (0, -2). Before selling any packs, you are $2 in the red.** At x = 0, y = -2. A negative profit means a $2 loss.

CHALLENGE

The x-intercepts are (-2, 0) and (6, 0). The maximum y-value is 16 at x = 2 because $y = -(x - 2)^2 + 16$.

Accept x-intercepts given as x-values when the point is clear. For the challenge, accept another correct method for finding the maximum.