LESSON MAKER PRO

Graph Clues

Read what a function tells you

HIGH SCHOOL · F-IF.4

F-IF.4 "For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship..."

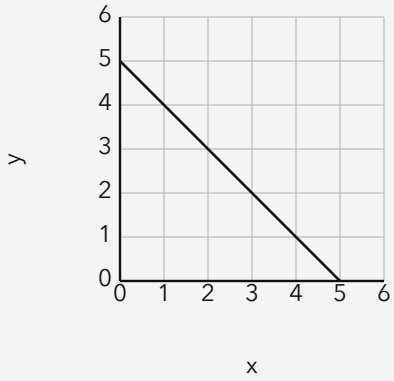
NAME _____ DATE _____

READ THE FEATURES

An intercept is where a graph meets an axis. At an x-intercept, the output is 0. At a y-intercept, the input is 0.

WORKED EXAMPLE

Find both intercepts of the graphed function.



1. The graph meets the x-axis at (5, 0).
2. It meets the y-axis at (0, 5).

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

PRACTICE 4 problems

1 For g(x) = 3x - 6, find the x-intercept.

ANSWER _____

2 For h(x) = -2x - 8, find the y-intercept and tell whether h increases or decreases.

ANSWER _____

3 For k(x) = -(x + 1)^2 + 9, give the relative maximum and the x-value where it occurs.

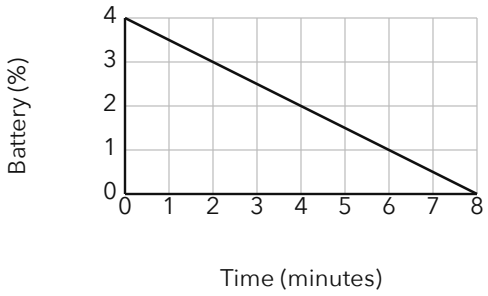
ANSWER _____

4 For m(x) = (x - 1)^2 - 9, find both x-intercepts.

ANSWER _____

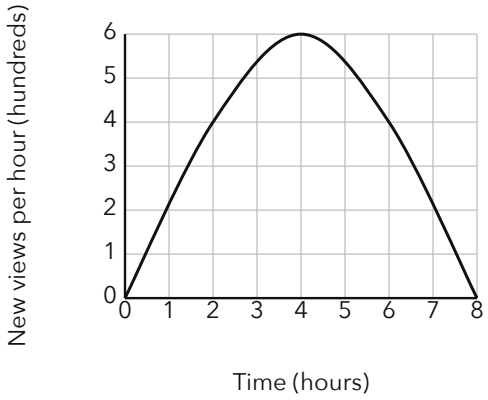
APPLY IT Show your work

1 The graph shows a phone's battery during a video call. When did it reach 0%, and what was its starting charge?



ANSWER _____

2 The graph shows new video views per hour. When was the rate highest, and what was that rate?



ANSWER _____

CHALLENGE One step up

For f(x) = (x + 3)(x - 3), give the intervals where f is positive and where it decreases. Explain using a key feature of its graph.

WORK SPACE AND ANSWER

Graph Clues

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For g(x) = 3x - 6, find the x-intercept.	**(2, 0)**
2	For h(x) = -2x - 8, find the y-intercept and tell whether h increases or decreases.	**y-intercept: (0, -8); decreases**
3	For $k(x) = -(x + 1)^2 + 9$, give the relative maximum and the x-value where it occurs.	**Maximum: 9 at x = -1**
4	For $m(x) = (x - 1)^2 - 9$, find both x-intercepts.	**(-2, 0) and (4, 0)**

PART 2 · APPLY IT

1. **After 8 minutes; starting charge: 4%** Read the time at the x-intercept and the starting charge at the y-intercept.
2. **After 4 hours; 600 new views per hour** The graph reaches its highest point at (4, 6). The vertical scale is in hundreds of views per hour.

CHALLENGE

Positive for x < -3 or x > 3; decreasing for x < 0. Since $f(x) = x^2 - 9$, its graph opens upward and has a minimum at (0, -9). It is above the x-axis outside its intercepts and decreases toward the minimum.

Accept equivalent interval notation. For the challenge, accept an explanation based on the upward-opening graph or the signs of the factors.