LESSON MAKER PRO

Find the Feature

Connect a function's numbers to what happens.

HIGH SCHOOL · A1P.AF.H.28

A1P.AF.H.28 "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 _____

INPUTS AND OUTPUTS

A maximum is the greatest output, and its matching input tells when it happens. In a table, read across the row with the greatest output. On a graph, find the highest point and read both axes.

WORKED EXAMPLE

A model rocket's height is shown in the table. When does it reach its maximum height, and what is that height?

MODEL ROCKET

Time (seconds)	Height (feet)
10	20
11	29
12	32
13	29
14	20

1. Find the greatest height: 32 feet.
2. Read across its row to find the time: 12 seconds.

Answer: The rocket reaches 32 feet at 12 seconds.

PRACTICE 4 problems

1 A game pass costs $C(x) = 4x + 15$ dollars for x visits. What does $C(0)$ mean?

ANSWER _____

2 A ball's height is $h(x) = -(x - 3)^2 + 25$ feet after x seconds. When is it highest, and how high is it?

ANSWER _____

3 A video's view count is $V(x) = 40(3)^x$ after x days. Find $V(0)$ and explain what it means.

ANSWER _____

4 Your distance from a bus stop is $d(x) = |x - 16|$ blocks when you are at position x on a street. At what position is your distance zero?

ANSWER _____

APPLY IT Show your work

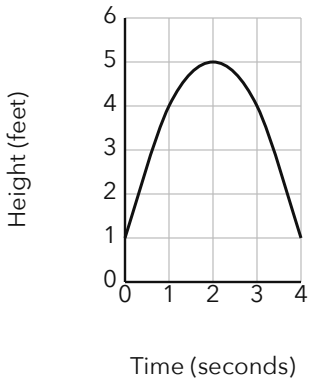
1 Your phone's battery level is recorded in the table. What is the first recorded time when the level matches the next reading? What is that level?

PHONE BATTERY

Time (minutes)	Battery (%)
0	80
2	70
4	60
6	60

ANSWER _____

2 The graph models a rider's height above the ground during a jump. When is the rider highest, and how high is the rider?



ANSWER _____

CHALLENGE One step up

One scooter rental costs $17 for the first hour and $3 for each later hour. Another costs $8 plus $6 per hour. For what whole-number ride length, at least 1 hour, do they cost the same? Show your equation.

WORK SPACE AND ANSWER

ANSWER KEY

Find the Feature

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A game pass costs C(x) = 4x + 15 dollars for x visits. What does C(0) mean?	**The pass costs $15 before any visits.**
2	A ball's height is h(x) = -(x - 3)^2 + 25 feet after x seconds. When is it highest, and how high is it?	**At 3 seconds, the ball is 25 feet high.**
3	A video's view count is V(x) = 40(3)^x after x days. Find V(0) and explain what it means.	**V(0) = 40. The video has 40 views when the count begins.**
4	Your distance from a bus stop is d(x) = |x - 16| blocks when you are at position x on a street. At what position is your distance zero?	**Position 16**

PART 2 · APPLY IT

1. **4 minutes; 60%** The readings at 4 and 6 minutes both show 60%. The first of those readings is at 4 minutes.
2. **At 2 seconds, the rider is 5 feet high.** The highest point on the graph is at time 2 seconds and height 5 feet.

CHALLENGE

17 + 3(x - 1) = 8 + 6x, so x = 2 hours.

Accept equivalent wording that includes the correct units. For the challenge, accept any equivalent equation that gives 2 hours.