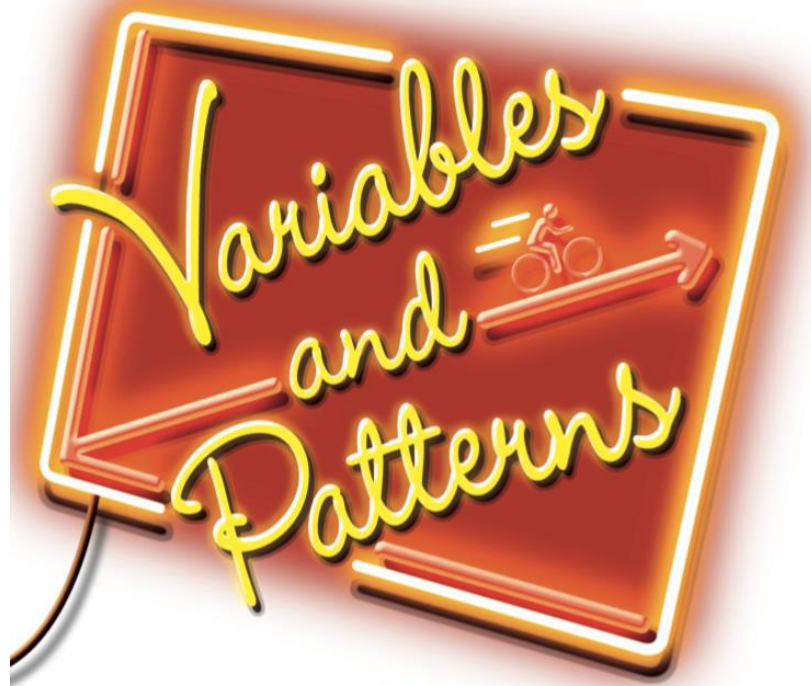


CASE #2

CONNECTED  MATHEMATICS® 3



Focus on Algebra

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PEARSON

Sidney, Celia, Liz, Malcolm, and Theo heard about the RAGBRAI. The five college students decide to operate bicycle tours as a summer business. They choose a route along the ocean from Atlantic City, New Jersey, to Colonial Williamsburg, Virginia. The students name their new business Ocean Bike Tours.



1.1 Getting Ready to Ride

Data Tables and Graphs

► The Ocean Bike Tours business partners think their customers could ride between 60 and 90 miles in a day. Using that guideline, a map, and campground information, they plan a three-day tour route. The business partners also plan for rest stops and visits to interesting places. To finalize plans, they need to answer one more question:

- How are the cyclists' speed and distance likely to change throughout a day?

An answer to that question could only come from a test ride. Because this is difficult to do in school, you can get some ideas by doing a jumping jack experiment. This experiment will test your own physical fitness.

In this experiment, there are two quantities involved, the number of jumping jacks and time. The number of jumping jacks changes over time.

Suppose you did jumping jacks as fast as possible for a 2-minute test period.

- How many jumping jacks do you think you could complete in 2 minutes?
- How do you think your jumping jack rate would change over the 2-minute test?

Problem 1.1



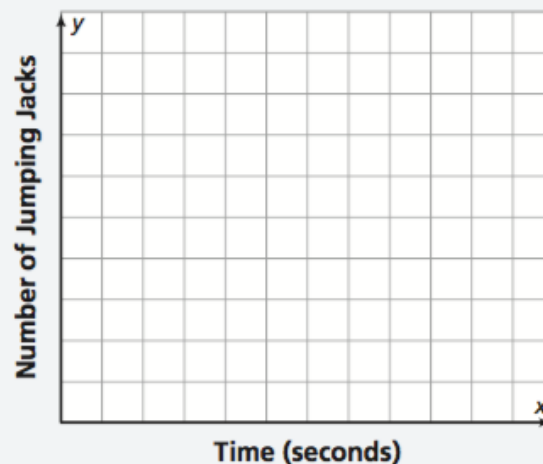
- A** Do the jumping jack fitness test with help from a timer, a counter, and a recorder. Enter the total number of jumping jacks after every 10 seconds in a data table:

Jumping Jack Experiment

Time (seconds)	0	10	20	30	40	50	60	70	...
Total Number of Jumping Jacks									

- B** Record your data on a copy of the coordinate grid shown below.

Jumping Jacks Over Time



continued on the next page >

Problem 1.1 *continued*

- C** How did the jumping jack rate (number per second) change over time?
- How is the change over time shown in the data table?
 - How is the change over time shown in the graph?
- D** Use your jumping jack data. What can you say about the cyclists' speed during the Ocean Bike Tours ride?
- E** One group said, "Our jumper did 8 jumping jacks for every 10 seconds."
- Copy and complete the table to show results if a student jumped at a steady pace matching that ratio over 60 seconds.

Jumping Jack Experiment

Time (seconds)	0	10	15	20	■	30	■	40	■	50	■	60
Total Number of Jumping Jacks	■	8	12	■	20	■	28	■	36	■	44	■

- Plot the points corresponding to the $(time, jumping\ jack\ total)$ pairs in the table on a coordinate grid. Describe the pattern you see.
- Another group's jumper did 4 jumping jacks for every 6 seconds. Copy and complete the table to show results if a student jumped at a steady pace matching that ratio over 30 seconds.

Jumping Jack Experiment

Time (seconds)	0	6	9	12	■	■	30
Total Number of Jumping Jacks	■	4	■	■	10	12	■

- Plot the points corresponding to the $(time, jumping\ jack\ total)$ pairs in the table on a coordinate grid. Describe the pattern you see. Compare the table and graph patterns in parts (1) and (2).

A C E Homework starts on page 20.

Labsheet 1.1A

Jumping Jack Fitness Test

A. Do the jumping jack fitness test with help from a timer, a counter, and a recorder. Enter the total number of jumping jacks after every 10 seconds in the data table shown below:

Jumping Jack Experiment

Time (seconds)	0	10	20	30	40	50	60	70	80	90	100	110	120
Total Number of Jumping Jacks													

B. Record your data on the coordinate grid shown below.

Jumping Jacks Over Time

