

In the Solve It, you identified variables whose value *depends* on the value of another variable. In a relationship between variables, the <u>dependent variable</u> changes in response to another variable, the <u>independent</u> <u>variable</u>. Values of the independent variable are called <u>inputs</u>. Variables of the dependent variable are called <u>outputs</u>.

The value of one variable may be uniquely determined by the value of another variable. Such relationships may be represented using tables, words, equations, sets of ordered pairs, and graphs.

PROBLEM 1: REPRESENTING A GEOMETRIC RELATIONSHIP

a) In the diagram below, what is the relationship between the number of rectangles and the perimeter of the figure they form? Represent this relationship using a table, words, an equation, and a graph.



b) In the diagram below, what is the relationship between the number of triangles and the perimeter of the figure they form? Represent this relationship using a table, words, an equation, and a graph.



c) Suppose you know the perimeter of n triangles. What would you do to find the perimeter of n + 1 triangles?

You can describe the relationship in Problem 1 by saying that the perimeter is a function of the number of rectangles. A *function* is a relationship that pairs each input value with exactly one output value. You have seen that one way to represent a function is with a graph. A *linear function* is a function whose graph is a nonvertical line or part of a nonvertical line.



PROBLEM 2: REPRESENTING A LINEAR FUNCTION

a) The table shows the relationship between the number of photos x you take and amount of memory y in megabytes (MB) left on your camera's memory chip. Is the relationship a linear function? Describe the relationship using words, an equation, and a graph.

Camera Memory		
Number of Photos, <i>x</i>	Memory (MB), <i>y</i>	
0	512	
1	509	
2	506	
3	503	



Determine whether the relationship in the table is a linear function. Then represent the relationship using words, an equation, and a graph.



d) You can make 5 gal of liquid fertilizer by mixing 8 tsp of powdered fertilizer with water. Represent the relationship between the teaspoons of powder used and the gallon of fertilizer made using a table, an equation, and a graph.



LESSON REVIEW

1. Graph each set of ordered pairs. Use words to describe the pattern shown in the graph.

a) (0,0), (1,1), (2,2), (3,3), (4,4)

b) (0,8), (1,6), (2,4), (3,2), (4,0)

c) (3,0), (3,1), (3,2), (3,3), (3,4)



2. Use the diagram below. Complete the table showing the relationship between the number of squares and the perimeter of the figure they form.

The amount of toothpaste in a tube dec	reases each time you brush your teeth.	Identify the independent
and dependent variables in this relationshi	p.	

Independent variable:_____

dependent variable: _____

4. Tell whether each set of ordered pairs in #1 represents a function. Justify your answers.

5. Does the graph below represent a linear function? Explain.

