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FUNCTIONS

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FUNCTION

- A function consists of:
  - A set called the domain containing numbers called inputs, and a set called the range containing numbers called outputs
  - A paring of inputs with outputs such that each input is paired with exactly one output

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Independent Variables

- The input variable is called the independent variable
- The domain is also the independent variable
- The independent variable is usually considered to be x

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Dependent Variable

- The output variable is called the dependent variable because its value depends on the value of the input variable
- The range is the dependent variable
- Y is usually considered to be the dependent variable

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Graphing Ordered Pairs

- (x,y)
- (domain,range)
- (independent, dependent)
- (Input, output)
- (horizontal axis, vertical axis)

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Graphs are geometric representations of functions.

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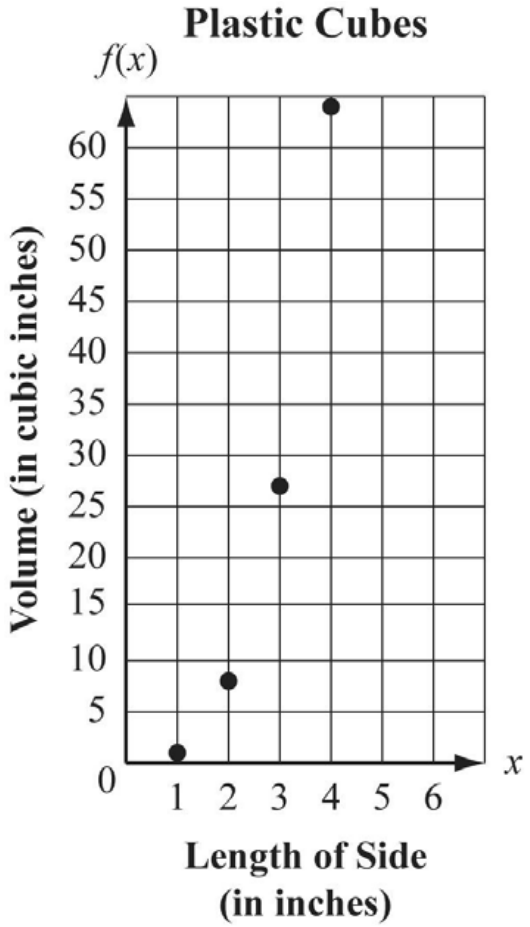
This graph represents the function $f(x) = x3$



- Note that the points start at 1, which is the smallest length of a side of a plastic cube. They
- are not connected because that would imply that the lengths of the cubes could include
- numbers in between the whole numbers that are given in the context of the problem. This
- is called a ***discrete*** function.

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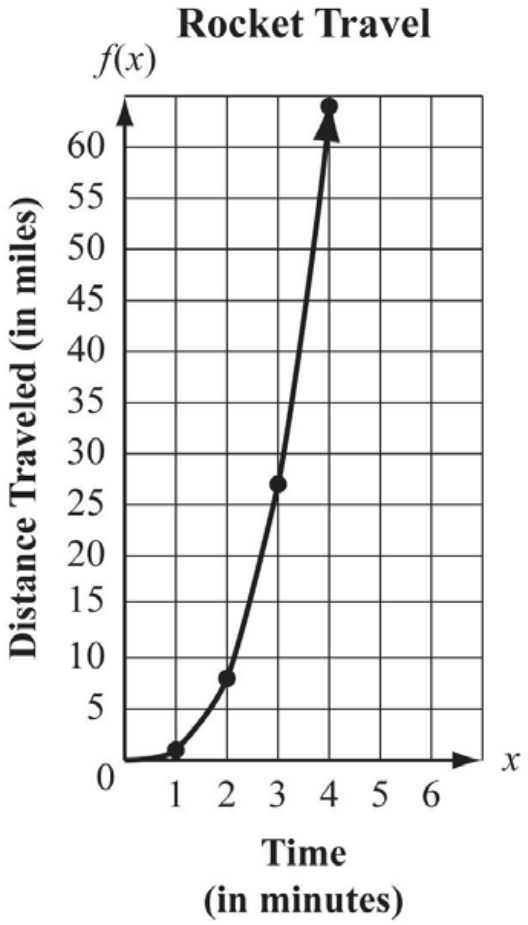
Continuous Function



- In one phase of a video game, a player is able to travel a distance, in miles, based on *x*, the
- number of seconds he is able to stay on a rocket. This graph represents the function
- *f* (*x*)= *x*3 , the relationship between the time, in minutes, on the rocket and the distance
- traveled.

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Continuous Function

- Note that the graph starts at 0 and the dots are connected. Time is continuous, so the graph
- should be a continuous (curved) line. This is called a ***continuous*** function.