

Lesson #4: Slope as a Rate of Change Part 1

Date: _____

Learning Goal: We are learning to connect rate of change to the slope of a line.

To explore what “rate of change” is, we first need to refamiliarize ourselves with “rate”. A **rate** is a comparison of two quantities expressed as different units:

Examples:

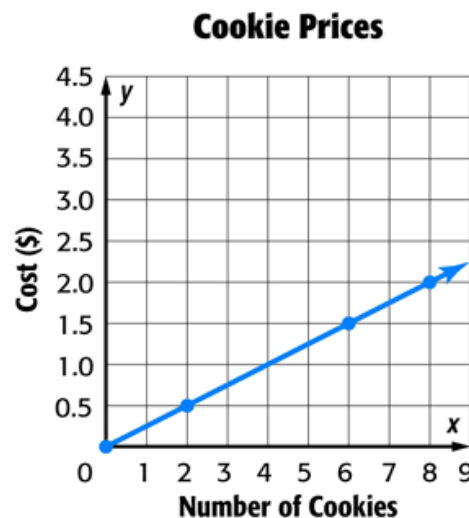
A line on a graph is always changing (unless it is flat or $m = 0$). Rate of change, then, is the rate at which a line on a graph is changing. Thankfully, we know how to calculate this change by calculating the slope! Thus,

$$\text{Rate of change} = \text{slope} = m = \frac{\text{Rise}}{\text{Run}} = \frac{y_2 - y_1}{x_2 - x_1} = \text{Rate of change}$$

Example 1: Given the graph to the right:

a) Calculate the rate of change. Include the units (always include units).

b) What does the rate of change represent?



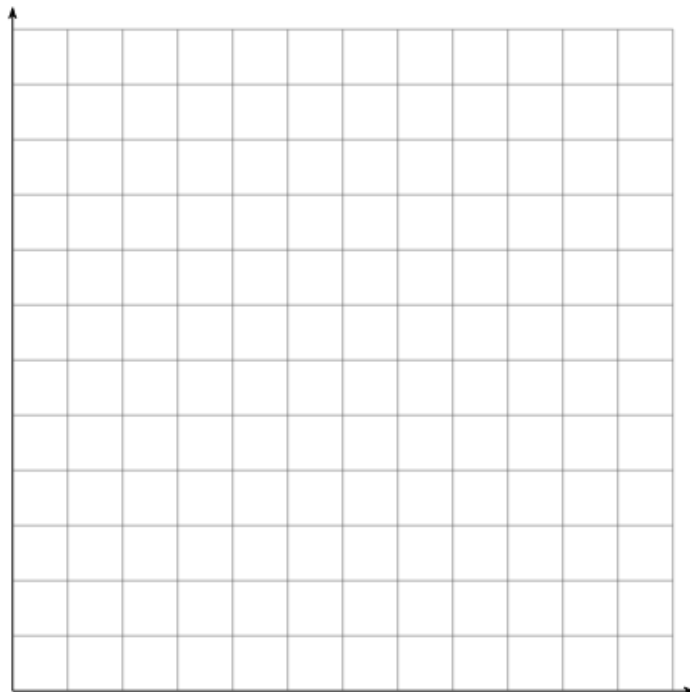
c) How much would 7 cookies cost? If I spent one dollar, how many cookies would I get?

d) The information for question c) was in the graph. The rate of change allows us to go beyond the graph. How much would 20 cookies cost?

Example 2: Timmy drives a cab. He charges \$5 for every trip plus \$1.50 for every kilometer driven.

a) Create a table to represent 0 to 10 kilometers, then graph the table. Label the axes and give the graph a title.

Distance (km)	Cost (\$)
0	5



b) What is the rate of change, and what does it represent?

c) What is the cost of a 7.5km cab ride with Timmy?

Success Criteria

- I can recognize that slope and rate of change are the same thing
- I can find rate of change on a graph, by finding its slope
- I can find the rate of change in a table of values, by finding the common difference