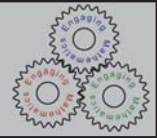




# Rate of Change, Activity 1

A(3)(B)



## Activity Objective

I can determine the rate of change from a table or graph in a real world context.

I can compare rates of change.

## Materials

- **Filling Rates**

## Answer Key

*Possible answers:*

In 7 hours the height of the water in Amanda's pool increased 42 inches, therefore the height of the water in her pool is increasing at a rate of 6 inches per hour. The line that represents the height of the water in Cynthia's pool would have a slope of 8 because each hour the height of the water increases 8 inches. During the first 6 hours the height of the water in Brian's pool increased 4 feet. The rate of change for Brian's pool is 2/3 foot per hour. That means that every 3 hours the height of the water in the pool rises 2 feet. The height of the water in both Brian's and Cynthia's pools is increasing at the same rate. The height of the water in Amanda's pool is increasing at a rate that is slower than both the other pools.

## Debriefing Questions

- What role did the units play in comparing rates of change?
- How does the slope of the line modeling each situation relate to the rate of change?
- Is there more than one pair of values that could be used to complete the second sentence? Why?

## Listen For . . .

- *Understanding that the rate of change is equivalent for a given linear situation regardless of which points are used to calculate the rate.*
- *Understanding that the units of measure will affect the numerical value of the rate of change.*
- *Connections between rate of change and slope.*

## Communicating about Mathematics

Students may respond by talking to a partner and recording a written response in the space provided.

Possible sentence frame:  
There are multiple choices because I could use \_\_\_\_\_ or \_\_\_\_\_ to represent the rate of change for Amanda's pool.

## Listen/Look For . . .

*Understanding that the rate of change is expressed as a comparison of the change in y to the change in x and any two points in the table could be used to determine that rate.*

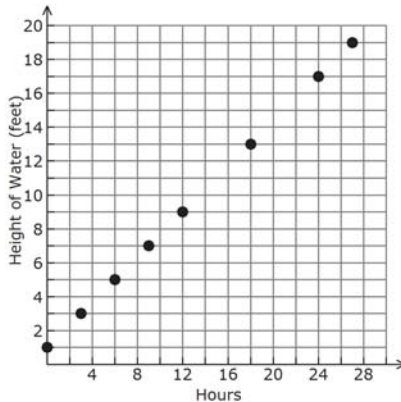
### Filling Rates

Three different pools were being filled, each at a constant rate. Three students were asked to collect data on the height of the water at the deepest point in each pool over a 30 hour period. The results are shown below.

**Amanda**

Hours	Height (inches)
5	40
12	82
15	100
20	130
22	142

**Brian**



**Cynthia**

The water in my pool had an initial depth of 8 inches. In the first hour the depth of the water in my pool increased to 16 inches. The water in the pool continued to increase at the same rate.

Use the information the students gathered to complete the paragraph below.

In \_\_\_\_\_ hours the height of the water in Amanda’s pool increased \_\_\_\_\_ inches, therefore the height of the water in her pool is increasing at a rate of \_\_\_\_\_ inches per hour. The line that represents the height of the water in Cynthia’s pool would have a slope of \_\_\_\_\_ because each hour the height of the water increases \_\_\_\_\_ inches. During the first \_\_\_\_\_ hours the height of the water in Brian’s pool increased \_\_\_\_\_ feet. The rate of change for Brian’s pool is \_\_\_\_\_ foot per hour. That means that every \_\_\_\_\_ hours the height of the water in the pool rises \_\_\_\_\_ feet. The height of the water in both \_\_\_\_\_’s and \_\_\_\_\_’s pools is increasing at the same rate. The height of the water in \_\_\_\_\_’s pool is increasing at a rate that is \_\_\_\_\_ than both the other pools.

**Communicating about Mathematics**

Why are there multiple correct choices that could be provided to complete the first sentence?




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