

7th Grade  
April 20, 2021

Today we will:

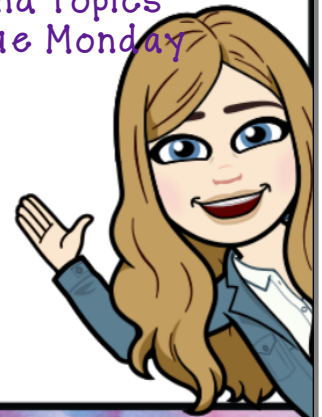
- Review video notes
- Do Reteach WS together
- Begin HW



HOMEWORK:

- HW Practice WS
- Optional: Redo graded assignment on Google form (turn in work on paper)--Due WED

ALEKS time and topics assignment due Monday



## Constant Rate of Change and Slope

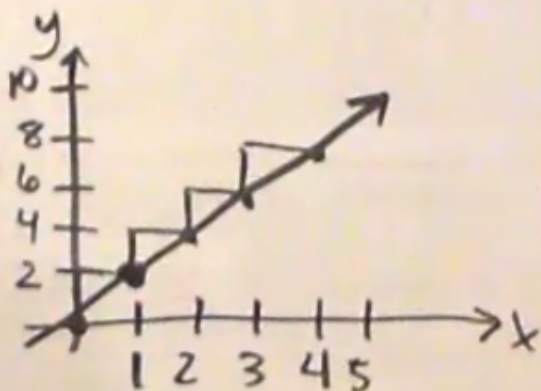
Rate of change describes how one amount changes compared to another amount.

A linear relationship has a constant rate of change. It is called slope.

Slope also shows the steepness of a line.

## Constant Rate of Change and Slope

$$\text{Slope} = m = \frac{\text{rise}}{\text{run}} = \frac{\text{change in } y}{\text{change in } x} = \frac{\Delta y}{\Delta x}$$



$$m = \frac{\text{rise}}{\text{run}} = \frac{2}{1}$$

$$(1, 2)$$

$$(2, 4)$$

$$\frac{\Delta y}{\Delta x} = \frac{4-2}{2-1} = \frac{2}{1}$$

## Constant Rate of Change and Slope

$$\text{Slope} = m = \frac{\text{rise}}{\text{run}} = \frac{\text{change in } y}{\text{change in } x} = \frac{\Delta y}{\Delta x}$$

x time	y distance
1.2	6
2.4	8
3.6	10
4.8	12

$$\begin{array}{cc} x & y \\ (1.2, 6) & \\ (2.4, 8) & \end{array}$$

$$\frac{\Delta y}{\Delta x} = \frac{8-6}{2.4-1.2} = \frac{2}{1.2}$$

$$1.2 \overline{) 2.00} \quad \text{or} \quad 1\frac{2}{3} = \frac{5}{3}$$

$$\begin{array}{r} 1.2 \overline{) 2.00} \\ \underline{12} \phantom{0} \\ 80 \\ \underline{72} \\ 8 \end{array}$$

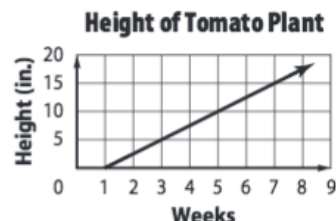
NAME \_\_\_\_\_ DATE \_\_\_\_\_ PERIOD \_\_\_\_\_

## Lesson 3 Reteach

### Constant Rate of Change and Slope

A **rate of change** is a rate that describes how one quantity changes in relation to another quantity. A **linear relationship** has a constant rate of change, which means that the rates of change between any two data points is the same.

**Example** Gina recorded the height of a tomato plant in her garden. Find the constant rate of change for the plant's growth in the graph shown. Then interpret its meaning.



**Step 1** Choose any two points on the line, such as (3, 5) and (7, 15).

**Step 2** Find the rate of change between the points.

$$\text{rate of change} = \frac{\text{change in height}}{\text{change in time}} = \frac{15 \text{ in.} - 5 \text{ in.}}{7 \text{ wk} - 3 \text{ wk}} = \frac{10 \text{ in.}}{4 \text{ wk}} = 2.5 \text{ in./wk}$$

The rate of change 2.5 in./wk means the plant is growing at a rate of 2.5 inches per week.

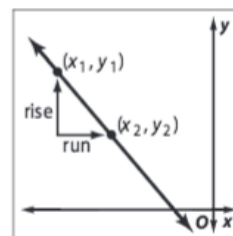
Note that the **slope** is the same for any two points on a straight line. It represents a constant rate of change.

**Words** The slope  $m$  of a line passing through points  $(x_1, y_1)$  and  $(x_2, y_2)$  is the ratio of the difference in the  $y$ -coordinates to the corresponding difference in  $x$ -coordinates.

**Symbols**  $m = \frac{y_2 - y_1}{x_2 - x_1}$ , where  $x_2 \neq x_1$

$$m = \frac{\text{rise}}{\text{run}}$$

**Model**



### Exercises

- Find the constant rate of change for the linear function at the right and interpret its meaning.

$$m = \frac{\text{rise}}{\text{run}}$$



Find the slope of the line that passes through each pair of points.

2.  $A(2, 2), B(-5, 4)$

3.  $L(5, 5), M(4, 2)$

4.  $R(7, -4), S(7, 3)$

5.  $Q(3, 9), R(-5, 3)$

6.  $G(5, 7), H(2, 7)$

7.  $S(-8, -2), T(1, 4)$





# Optional- Redo Graded Assignment--Due WED



You have the option to redo the graded assignment on the Google Form --Here is the link:

<https://forms.gle/T2ccQuQVsxDouFDM8>







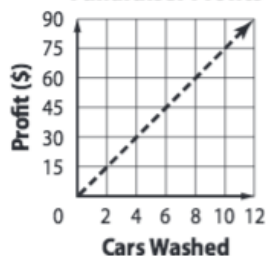
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## Lesson 3 Homework Practice

### Constant Rate of Change and Slope

Find the constant rate of change for each linear function and interpret its meaning.

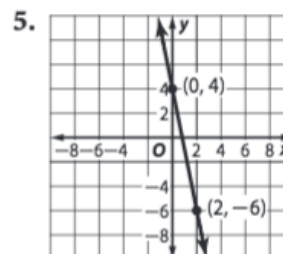
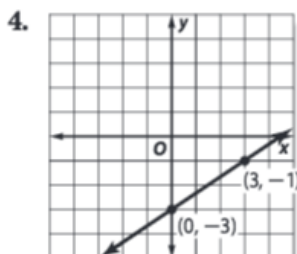
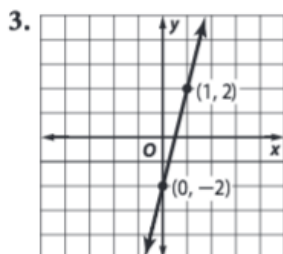
1. **Fundraiser Profits**



2.

Time (seconds)	Distance (yards)
$x$	$y$
1.2	6
2.4	8
3.6	10
4.8	12

Find the slope of each line.



Find the slope of the line that passes through each pair of points.

6.  $A(-10, 6), B(-5, 8)$

7.  $C(7, -3), D(11, -4)$

8.  $E(5, 2), F(12, -3)$

9.  $P(12, 2), Q(18, -2)$

10.  $R(-2, -3), S(-2, -5)$

11.  $T(-13, 8), U(21, 8)$

12. One particularly large ant hill found in 1997 measured 40 inches wide at the base and 18 inches high. What was the slope of the ant hill?

13. Today, the Great Pyramid at Giza near Cairo, Egypt, stands 137 meters tall, coming to a point. Its base is a square with each side measuring 230 meters wide. What is the slope of the pyramid?