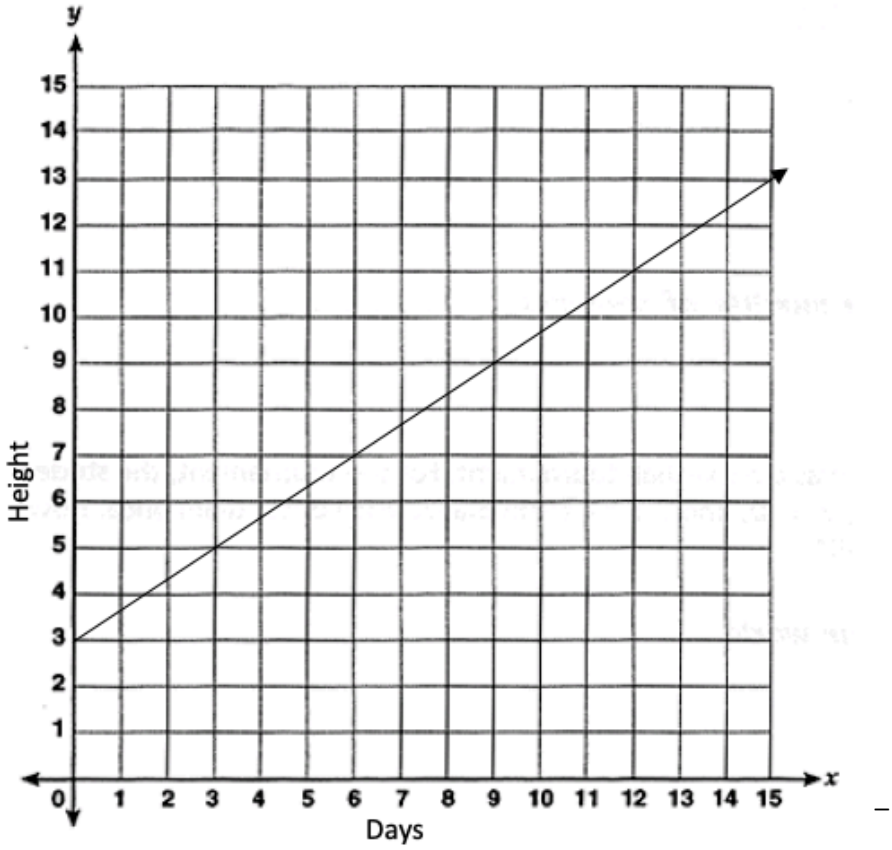
CH. 2, L1 – LINEAR ROC TABLES AND GRAPHS

Objective: Given a graph, table, or situation, I will determine and interpret the rate of change of a linear function.

Think About It: A scientist is measuring the height of a plant every day to study how fast it grows. The data is record in a table and in a graph shown below. Determine the rate of change for the growth of the plant.

Height	3	5	7	9	11	13
Day	0	3	6	9	12	15



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Big Idea: Linear functions have a constant rate of change represented as $\frac{\Delta y}{\Delta x}$.

CFS:

1. Important information is highlighted and question/prompt is circled
2. Points are identified in tables and graphs
3. ROC formula is written out and substituted for *OR* ROC formulas in function notation are annotated for inputs and outputs
4. Question/prompt is addressed in a complete sentence

Interaction with New Material:

Ex. 1) Derive the general formula for the rate of change of functions using the basic linear function $f(x) = x$ finding the rate of change from x=a to x=b.

Ex. 2) Michael is driving from New Haven to Washington D.C. The function f describes the distance he has traveled after x number of hours. What does the equation $\frac{f(5)-f(3)}{2} = 68$ represent given the context? If this relationship is linear, what will be the value of $\frac{f(6)-f(5)}{1}$?

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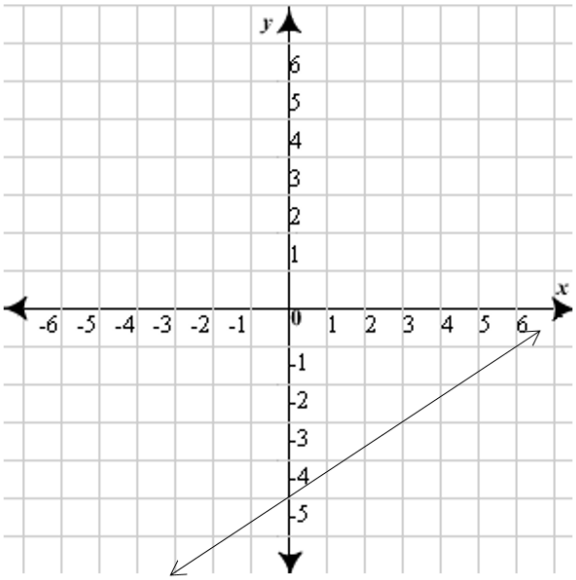
Partner Practice: *(Low Difficulty)*

1. Determine the rate of change of the graph below.



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2. Determine the rate of change of the table and describe the units of the rate of change if the table is showing the volume of a glass of water evaporating over time.

Volume (mL)	50	46	42	38	34
Time (hours)	0	2	4	6	8

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3. Find the rate of change of the function $f(x)$ given, $f(5) = 15$ and $f(7) = 25$.

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Partner Practice: *(Medium Difficulty)*

4. Marcus is trying to figure out his score on a recent math test. He writes a function f that describes his score as a function of the number of questions he gets right, x. Given this information, what does the equation below represent?

$$\frac{f(20) - f(17)}{20 - 17} = 5$$

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5. Explain how the equation above is related to the slope formula you learned about in 8th grade $\frac{\Delta y}{\Delta x}$.

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6. Prove that the rate of change of a linear function is constant given the table below of the linear function $g(x)$. Explain your proof.

g(x)	5	17	29	41	53
x	3	6	9	12	15

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