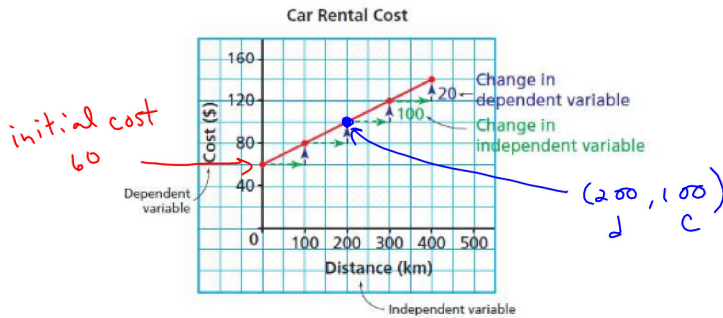


Lesson 6 – Rate of Change

The cost for a car rental is \$60, plus \$20 for every 100 km driven. The independent variable is the distance driven and the dependent variable is the cost.

In the following graph, the change in the independent variable (run is always 100) and change in the dependent variable (rise is always 20).



Rate of Change: $\frac{\text{change in dependent variable}}{\text{change in independent variable}} \left(\frac{y}{x} \right)$

$$\frac{\$20}{100 \text{ km}}$$

$$= \$0.20/\text{km}$$

Equation: $\text{Dependent variable} = \text{rate of change} \times \text{independent var} + \text{initial value}$

$$C = 0.20d + 60$$

Test $(200, 100)$

$$C = 0.2(200) + 60$$

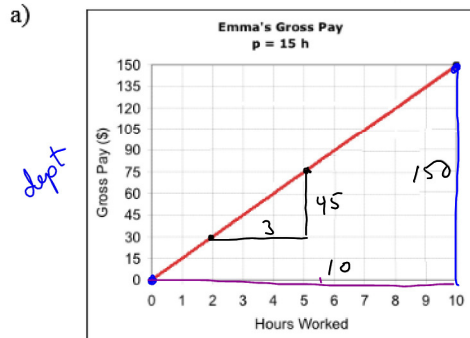
$$C = 100 \checkmark$$

Rate of Change notes.notebook

Example 1 – Determining Rate of Change of a Linear Relation from its Graph

- Choose 2 points on the line
- Calculate the change in the dependent variable (rise)
- Calculate the change in the independent variable (run)
- Use the formula to calculate slope

(rate of change)



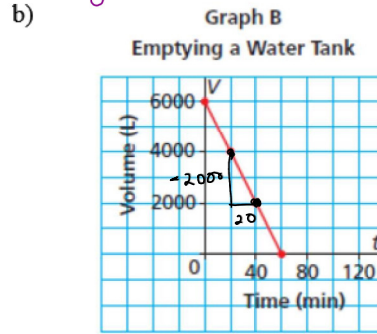
OR
 $\frac{\$45}{3h}$
 $\$15/h$

deprt
indept

$$\text{slope} = \frac{\text{change in dept}}{\text{change in indept}}$$

$$= \frac{\$150}{10h}$$

$$= \$15/h$$



$$\text{slope} = \frac{-2000L}{20min}$$

$$= -100L/min$$

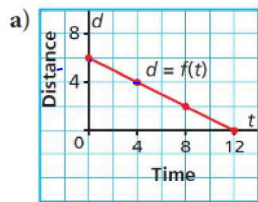
Example 2 – Matching a graph to a given Rate of Change and Vertical Intercept.

Which graph has a rate of change of $\frac{1}{2}$ and a vertical intercept of 6? Justify the answer.

(slope)

(y-intercept)

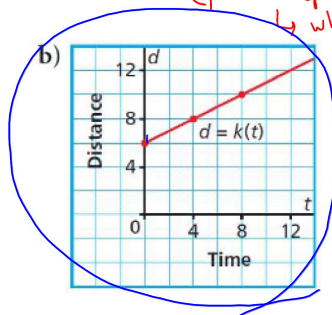
↳ where the graph crosses the y-axis



$$\text{slope} = \frac{-2}{4}$$

$$= -\frac{1}{2}$$

y-int 6



$$\text{slope} = \frac{2}{4}$$

$$= \frac{1}{2}$$

y-int 6

Pg. 215 #2, 3, 4

