Student Notes – Slope Real World Situations

9/29

Identify the independent and dependent variables, then find the slope of each line and tell what it represents.
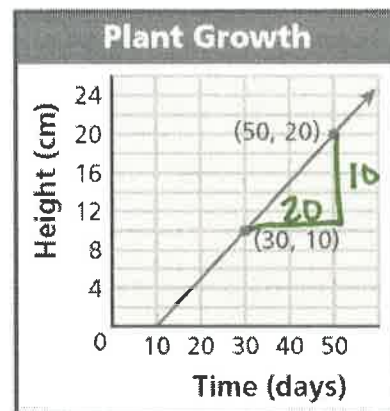
1.

Profit from Popcorn Sales

2.
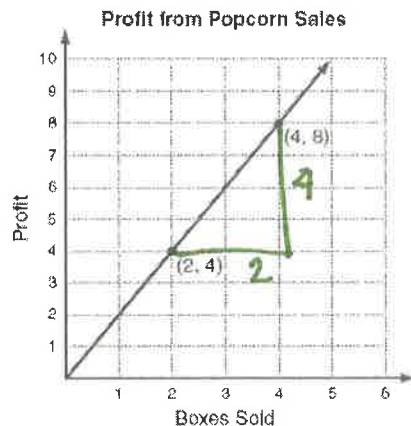
Plant Growth

Independent variable: __BOXeS Sold__

Dependent variable: __profit__

Slope: $\frac{Rise}{Run} = \frac{4}{2} = \frac{2}{1}$ 'profit boxes

Meaning: __$2 profit per 1 box of popcorn sold__
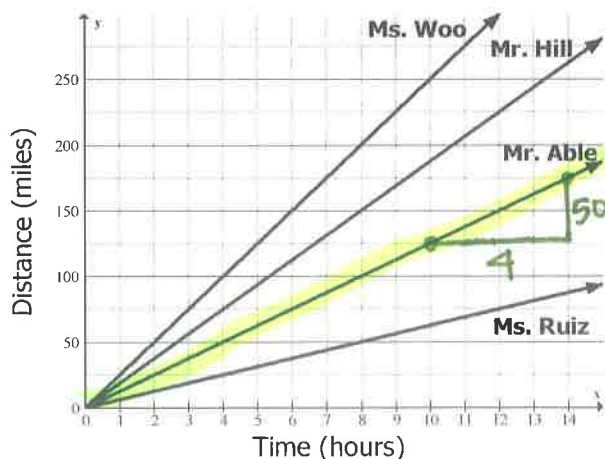
Independent variable: __time__

Dependent variable: __height__

Slope: $\frac{10}{20} = \frac{1\,cm}{2\,days}$

Meaning: __plant grows 1 cm every 2 days__

Use the situation below to answer questions 3-5.
Some employees of Ace Corporation left their office building and drove separately on the same road to a convention. The graph shows the distance traveled by each employee after 5 hours of nonstop driving at 4 different speeds.

3. What are the independent and dependent variables in this situation?
   Independent: __time__   Dependent: __distance__

4. What is the slope of the equation that models this situation for Mr. Able? __$\frac{50\,miles}{4\,hours} = \frac{25}{2} = 12.5$__

5. What is the meaning of this slope? __he is driving 12.5 mph__

Use the situation below to answer questions 6-8.

Fishermen in the Finger Lakes Region have been recording the dead fish they encounter while fishing in the region. The Department of Environmental Conservation monitors the pollution index for the Finger Lakes Region. The model for the number of fish deaths, y, for a given pollution index, x, is $y = 9.067x + 111.958$.

6. What are the independent and dependent variables in this situation?

    Independent: _pollution index_   Dependent: _fish deaths_

7. What is the slope of the equation that models this situation? _9.067_

8. What is the meaning of this slope? _9.067 fish die per 1 pollution index_

9. A small business purchased a van to handle its delivery orders. The graph below shows the value of this van over a period of time. Which of the following best describes the slope of this situation?

    ~~A~~ The van was ~~purchased~~ for $1,600. *NO!* *$16,000*
    B The van decreases in value by $1,600 per year.
    ~~C~~ The van increases in value by $1,600 per year. *NO*
    ~~D~~ The van has no value after 5 years. *$8000*

    $M = \dfrac{8000}{5} = 1400$

    8000   *5*

    Value of the Van (dollars) vs Elapsed Time Since Purchase (years)

10. The line segment on the graph shows the altitude of a landing airplane from the time its wheels are lowered to the time it touches the ground. Which of the following best describes the slope of the line segment?

    A   The plane descends about 1 foot per 8 seconds.
    B   The plane descends about 1 foot per 2 seconds.
    C   The plane descends about 2 feet per second.
    D The plane descends about 8 feet per second.

    $M = \dfrac{250}{30}$

    Altitude (feet) vs Time (seconds)