Name: _____ **Class:** _____ **Date:** _____

AU3: Notes #2 – Slope-intercept Form Word Problems

Example 1 – Introduction to Positive Linear Relationships
Hans needs to rent a moving truck:
Company A charges a rate of $40 per day.
Company B charges a $60 fee plus $40 per day.

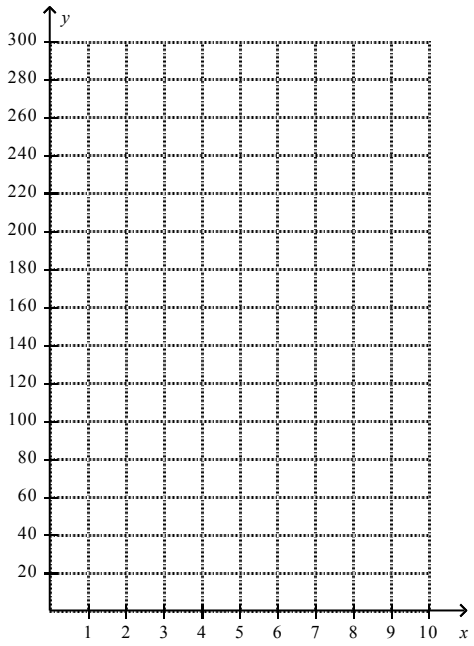
Write an algebraic equation for the total cost, C, based on the number of days, d.

Company A: $C =$ _____ **Company B:** _____

Complete the table and graph the functions.

days, d	total cost, C
0	
1	
2	
3	
5	

days, d	total cost, C



Finding the Slope of a Line

The steepness of the line is the ratio of rise to run, or vertical change to horizontal change, for this step. We call this ratio the **slope** of the line.

$$\text{slope} = \frac{\text{vertical change}}{\text{horizontal change}} \text{ or } \frac{\text{rise}}{\text{run}}$$

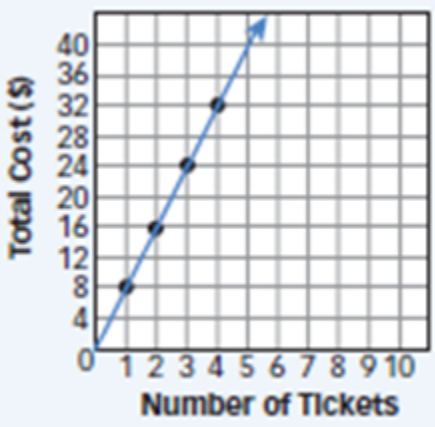
Finding the *y*-intercept of a line

y-intercept is the *y* –coordinate of the point where a line crosses the *y*-axis, it's also the initial value when $x = 0$.

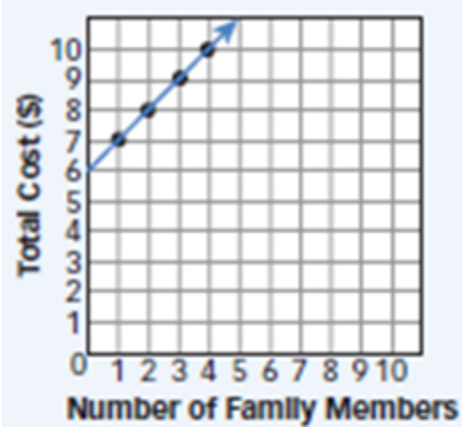
$\boldsymbol{y = mx + b}$ (m stands for slope and b stands for *y*-intercept)

Try-It! – Find the slope, *y*-intercept, and write the equation for the given graphs.

A)



B)



Example 2 – Introduction to Negative Linear Relationships

Write an algebraic equation for the altitude, d, based on the number of minutes, m.

Airplane A is at an altitude of 30,000 feet and descending at a rate of 1,000 feet per minute.

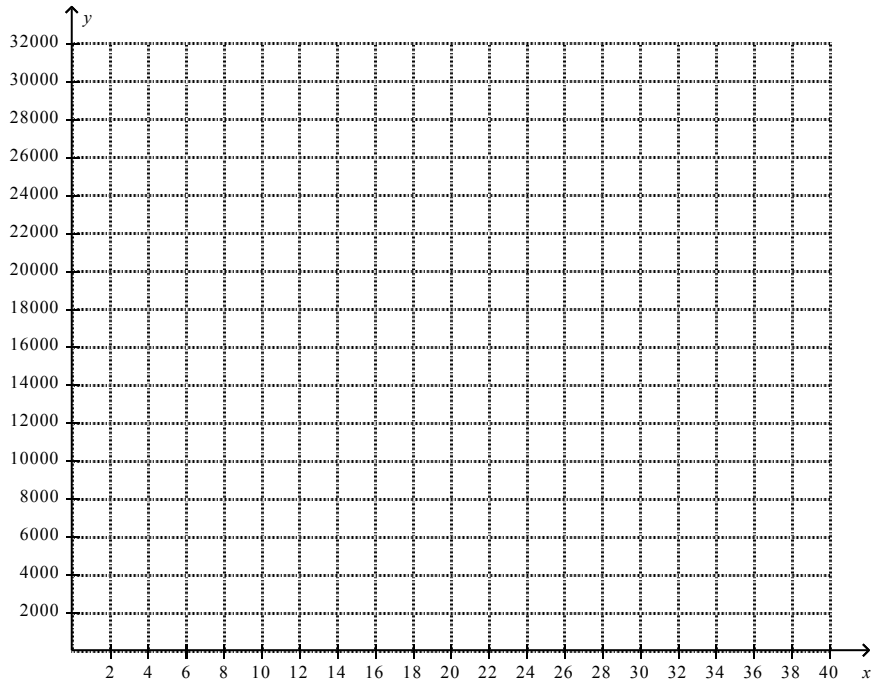
Airplane B is at an altitude of _____.

Airplane A: $d =$ _____ **Airplane B:** _____

Complete the table and graph the functions.

minutes, m	altitude, d

minutes, m	altitude, d
0	20,000
2	19,000
4	18,000
6	17,000
8	16,000



Example 3

Use the function in the table at the right.

a. Identify the dependent and independent variables.

Water Used for Laundry	
1 load	34 gallons
2 loads	68 gallons
3 loads	102 gallons
4 loads	136 gallons

b. Write a rule (equation) to describe the function.

c. How many gallons of water would you use for 7 loads of laundry?

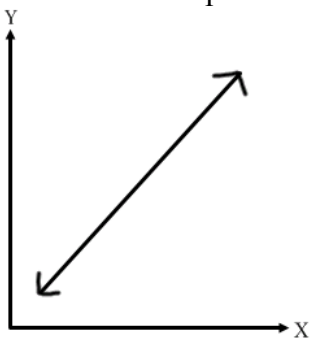
d. In one month, you used 442 gallons of water for laundry. How many loads did you wash?

Summary: Slope describes the steepness of a line.

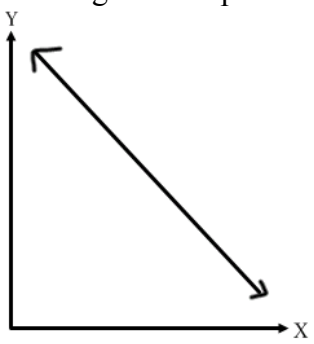
Slope of a line = $\dfrac{\text{change in y - coordinates}}{\text{change in x - coordinates}}$ or $\dfrac{rise}{run}$

Possible graphs:

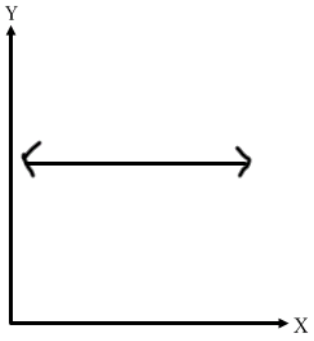
1. Positive Slope



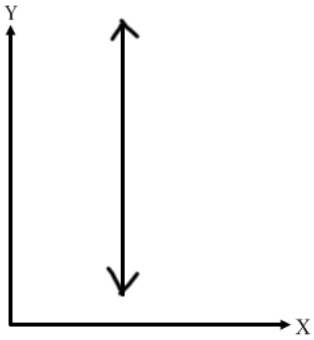
2. Negative Slope



3. Zero Slope



4. Undefined Slope



Parts of a Linear Equation	Graph	Table	Equation
slope	**rise** / **run**	**change in *y*** / **change in *x***	***y* = m*x* + b where m is slope** **(always number before the *x*)**
y-intercept	**point where line crosses the *y*-axis**	***y* –value when *x* = 0**	***y* = m*x* + b** **where b is the *y*-intercept**