

P.S. #8.3 - Comparing Functions Day 1

Name: _____ Class: _____

Tell whether each function represents the verbal description.

- 1.) Marianna has 50 stamps in her collection. When she joins a philatelic club, she receives 12 stamps every month from the club; y represents the total number of stamps she has and x represents the number of months. Explain.

a.) $y = 50 + 12x$

b.) $y = 12 + 50x$



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c.)

Number of Months (x)	3	7	11
Total Number of Stamps (y)	86	134	182

- 2.) Two identical water tanks A and B contain some water. Water is added to each tank by way of dedicated water faucets. The functions that relate each tank's volume of water, V gallons, to the number of minutes, t , that each faucet is running, are as follows:

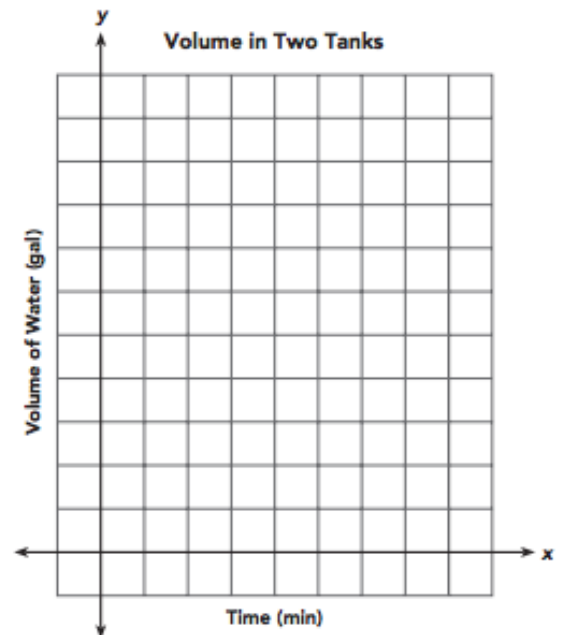
Tank A: $V = 80 + 25t$

Tank B: $V = 100 + 15t$

- a.) Use a verbal description to compare the two functions.

- b.) Graph the two functions on the same coordinate plane. Use a different color for each tank.

- c.) Which tank is most likely to be filled to capacity first? Explain.



- 3.) You have two options for paying a lawn service. Both options involve paying a flat fee and then paying an additional hourly charge for labor. For each function, the total amount you would pay, y dollars, is a function of the number of hours worked, t .

Option A

Number of Hours Worked (t hours)	2	3	4
Total Fee (y dollars)	45	55	65

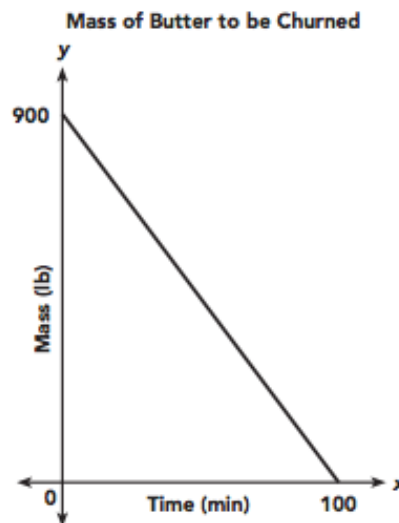
Option B A basic rate of \$20 plus \$12 per hour

- a.) Write an algebraic equation to represent each function.
- b.) Use a verbal description to compare the two functions.
- 4.) A factory needs to churn at least 5,000 pounds of butter daily. The manager of the factory is trying to decide which machine to run to achieve this output. The functions shown describe the amount of time, t minutes, it takes to churn y pounds of butter for two different machines, A and B.

Machine A

The function is $y = 3,000 - 60t$.
The initial value 3,000 represents the mass of each batch of butter to be churned.

Machine B



- a.) Write an algebraic equation to represent the function for Machine B.
- b.) Which machine would you recommend that the manager use for the churning operation? Explain.

5.) The function $m = 140h$, where m is the miles traveled in h hours represents the speed of the first Japanese high speed train. The speed of a high-speed train operating today in China is shown in the table.

Hours	Miles
1	217
2	434
3	651

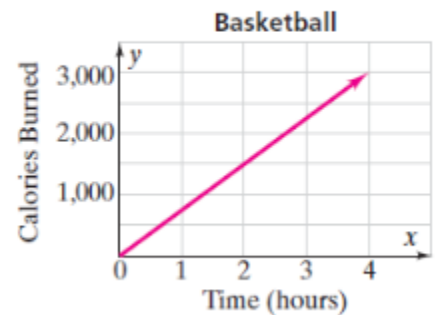
a.) Determine the speed of each train. Show your work.

Speed of first Japanese high speed train: _____

Speed of current Chinese high speed train: _____

b.) Which train is traveling faster?

6.) The equation $y = 11x$ represents the calories Jake burns when cross-country skiing, where x is time in minutes and y is the number of calories. The graph shows the calories he burns while playing basketball. Which activity burns calories at a faster rate? *Explain.*



7.) A bowling alley offers different party packages:

Package A is represented by the function $c = 7p + 5$ where c is the total cost and p is the number of people. Package B is represented in the table.

a.) Find the equation that represents Package B.

b.) Which function has a higher initial fee? *Explain.*

c.) Which function has a higher cost per person? *Explain.*

d.) If 12 people attend the birthday party, which package will cost less and by how much?