

Real-World Applications

For the following exercises, use the information to find a linear algebraic equation model to use to answer the question being asked.

1) Mark and Don are planning to sell each of their marble collections at a garage sale. If Don has 1 more than 3 times the number of marbles Mark has, how many does each boy have to sell if the total number of marbles is 113?

1A) Define the variables being used

1B) State the related equation

1C) Mark has _____ marbles to sell Don has _____ marbles to sell

2) Beth and Ann are joking that their combined ages equal Sam's age. If Beth is twice Ann's age and Sam is 69 yr old, what are Beth and Ann's ages?

2A) Define the variables being used

2B) State the related equation

2C) Beth is _____ years old Ann is _____ years old

3) Ruden originally filled out 8 more applications than Hanh. Then each boy filled out 3 additional applications, bringing the total to 28. How many applications did each boy originally fill out?

3A) Define the variables being used

3B) State the related equation

3C) Ruden filled out a total of _____ applications Hanh filled out a total of _____ applications

For the following exercises, use this scenario: Two different telephone carriers offer the following plans that a person is considering. Company A has a monthly fee of \$20 and charges of \$.05/min for calls. Company B has a monthly fee of \$5 and charges \$.10/min for calls.

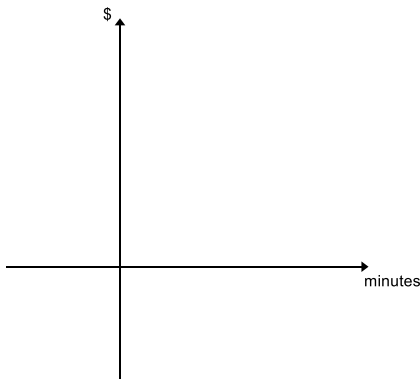
4) Find the model of the total cost of Company A's plan, using m for the minutes.

5) Find the model of the total cost of Company B's plan, using m for the minutes.

6) Find out how many minutes of calling would make the two plans equal.

7) If the person makes a monthly average of 200 min of calls, which plan should for the person choose?

8) Sketch a graph that relates these two plans on a single graph



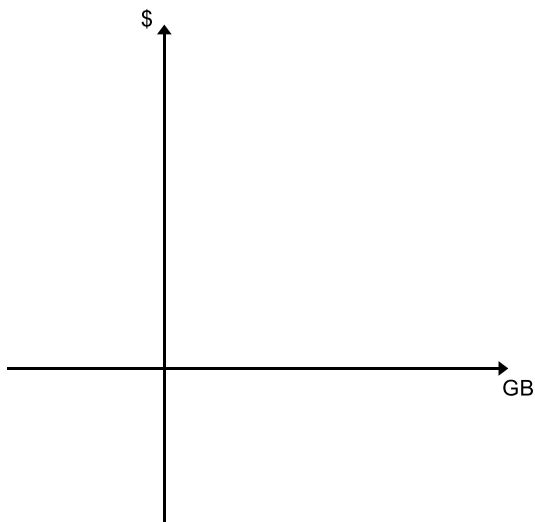
For the following exercises, use this scenario: A wireless carrier offers the following plans that a person is considering. The Family Plan: \$90 monthly fee, unlimited talk and text on up to 8 lines, and data charges of \$40 for each device for up to 2 GB of data per device. The Mobile Share Plan: \$120 monthly fee for up to 10 devices, unlimited talk and text for all the lines, and data charges of \$35 for each device up to a shared total of 10 GB of data. Use P for the number of devices that need data plans as part of their cost.

1) Find the model of the total cost of the Family Plan.

2) Find the model of the total cost of the Mobile Share Plan.

3) Assuming they stay under their data limit, find the number of devices that would make the two plans equal in cost.

4) Sketch a graph with BOTH models on the graph (label important points)



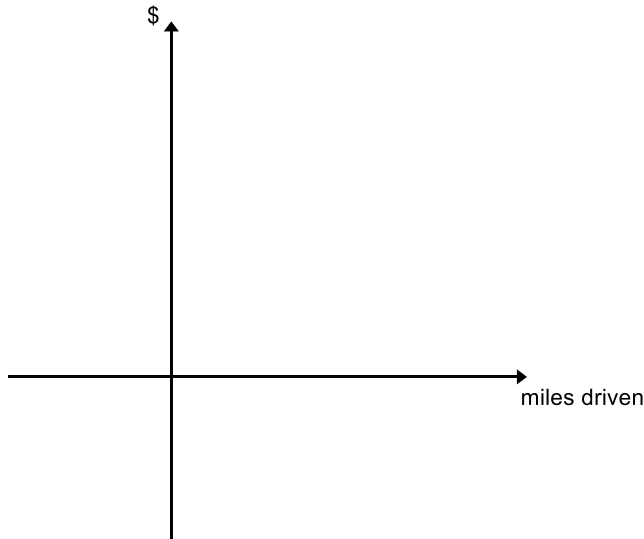
5) If a family has 3 smart phones, which plan should they choose? DEFEND YOUR CHOICE WITH MATHEMATICS

For the following exercises, use this scenario: A truck rental agency offers two kinds of plans. Plan A charges \$75/wk plus \$.10/mi driven. Plan B charges \$100/wk plus \$.05/mi driven.

6) Write the model equation for the cost of renting a truck with plan A.

7) Write the model equation for the cost of renting a truck with plan B.

8) Sketch a graph with BOTH models on the graph (label important points)



9) Find the number of miles that would generate the same cost for both plans.

10) If Tim knows he has to travel 300 mi, which plan should he choose? (Redraw graph to show the points related to Tim's need to drive 300 miles. Hint $(300, A(300))$ and $(300, B(300))$)

