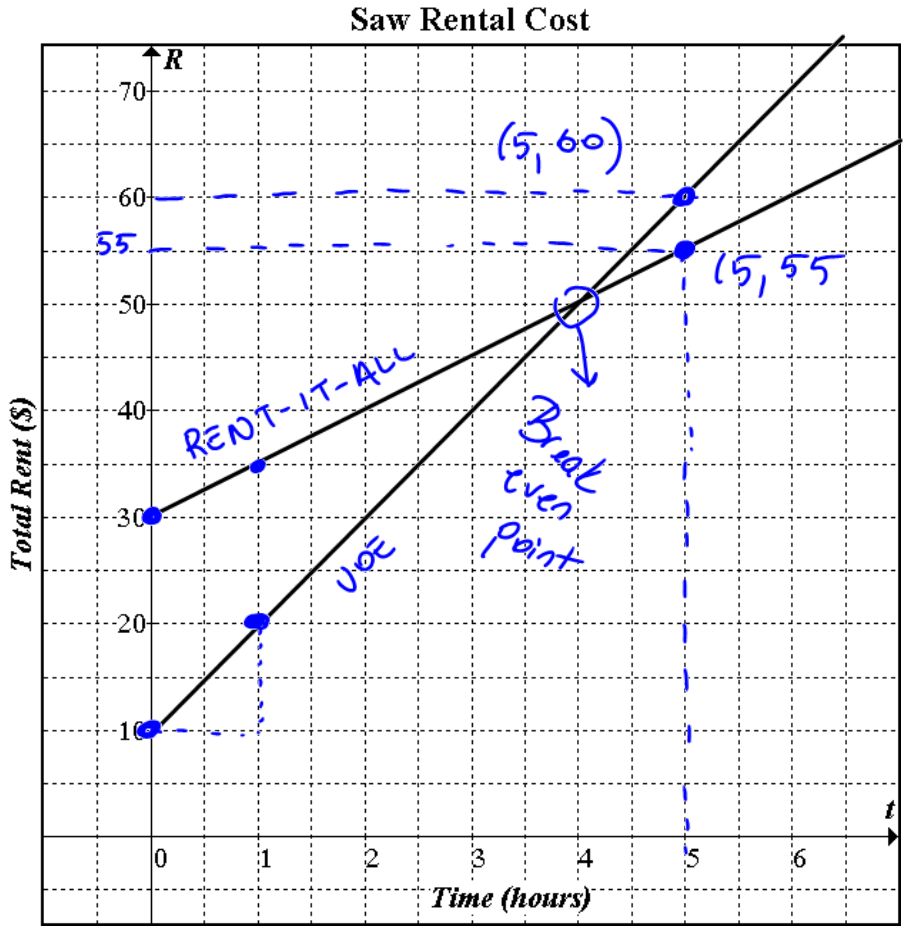
Mathematics 9

Break-Even Problems

Date:

Graph all given lines on the grids below using slope & y-intercept, or tables of values in your notes. Answer all questions in your notebooks.



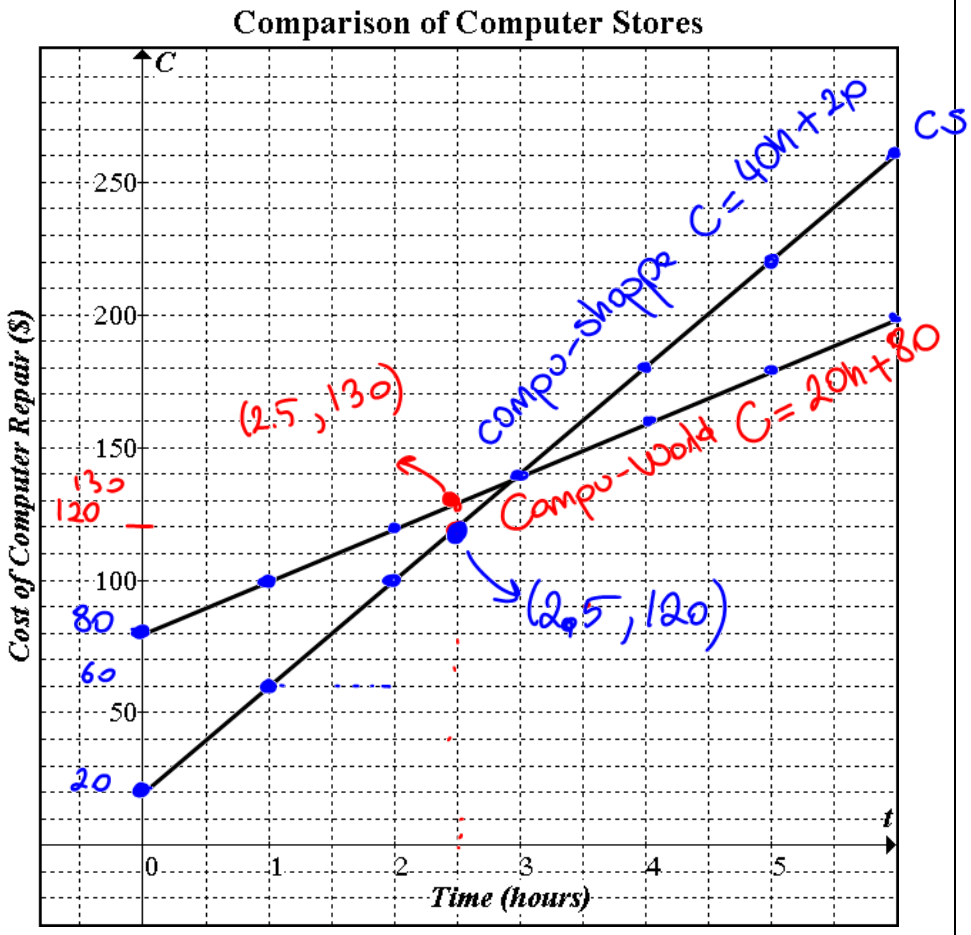
1. Joe's Rental charges rent for a table saw as given by: $R = 10t + 10$ $m = 10$

   Rent-it-all charges rent for a table saw as given by: $R = 5t + 30$ $m = 5$

   a) Graph both lines on the above grid. ***Label each line with the rental store's name.***

   b) If renting a saw for 5 hours, which store is the best choice for the rental and how much is saved by renting there? R-I-A by $5

   c) At what time and rental cost are the two stores equal? ***This is called the "break-even point" on the graph.*** 4 hours.



2. Greg's computer is down again. The three neighbourhood repair shops have changed their prices. Compu-Shoppe now charges a base price of $20 plus $40 per hour. Compu-World charges $80 plus $20 per hour. Compu-Fixit charges $60 per hour.

   a) Graph all lines and label each line with words ***and*** with its equation.

   b) What is the best and worst choice for a 2.5 hour repair? How much money is saved by choosing the best? CS is the best choice by $10

   c) Describe ***in detail*** how Compu-World's prices compare to the other stores.

Compu-World's initial price seems to be more expensive and more costly for a job that would take up to 3 hours. However, it's a better option

for a job that would take more than 3 hours.

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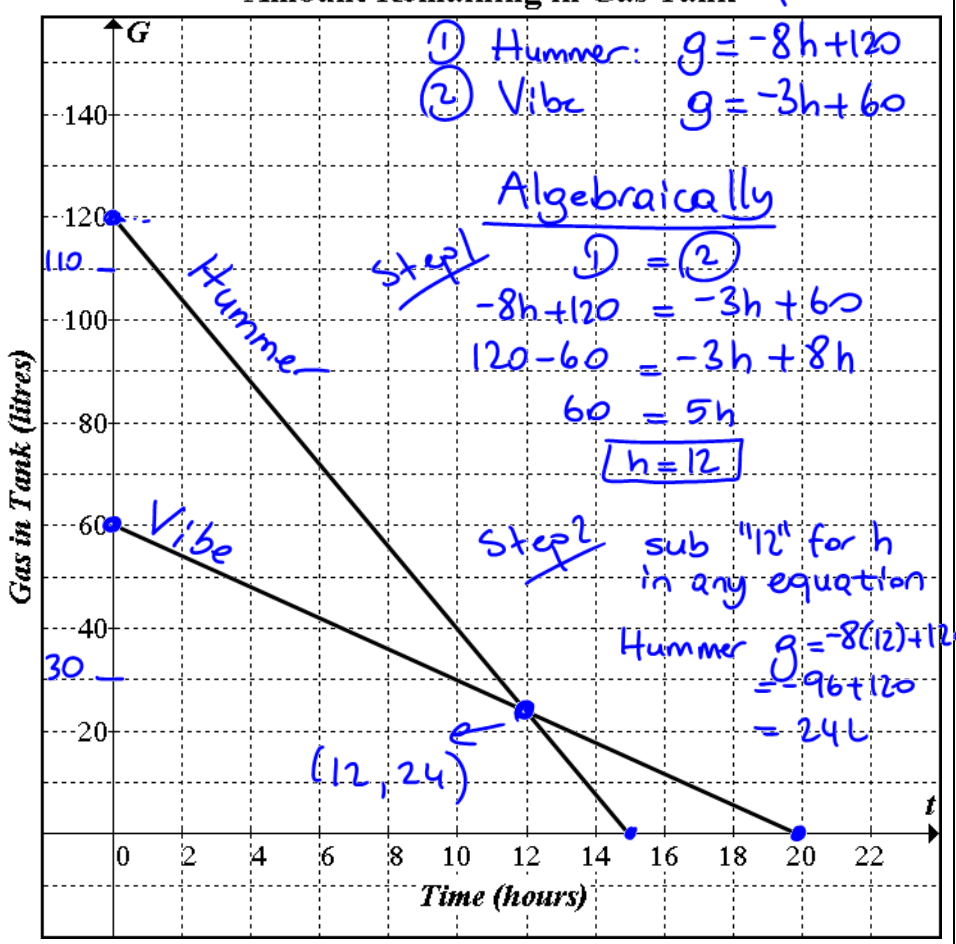
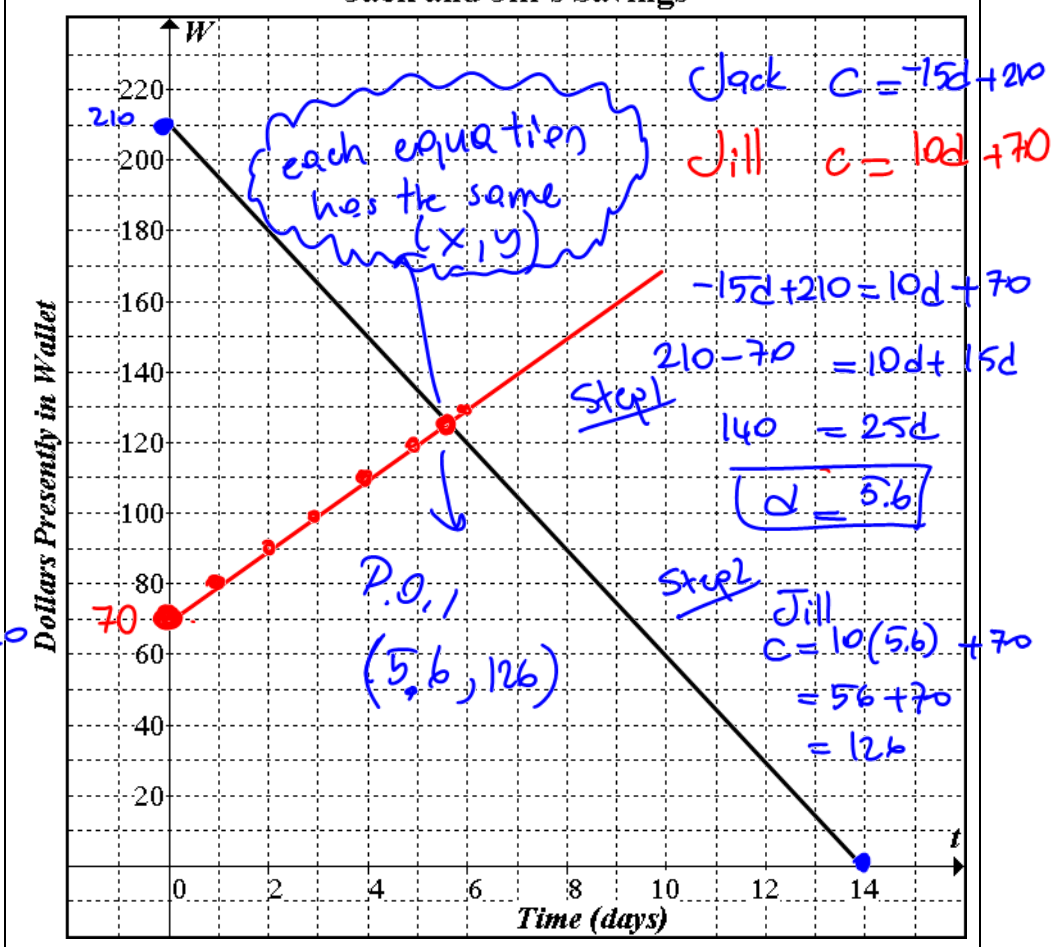


3. Two vehicles are driving across Canada. A Hummer starts with a full 120 litre gas tank and uses 8 litres per hour. A Pontiac Vibe starts with a full 60 litre tank and uses 3 litres per hour.
   a) Graph all lines and label each line with words ***and*** with its equation.
   b) Estimate the coordinates of the ***break-even point*** when both vehicles have equal amounts of gas left in their tanks.
   c) Use the equations from (a) to check your answer to (b).
   d) When does each of the vehicles run out of gas?



4. Jack begins with $210 in his wallet and he spends $15 per day. Jill begins with $70, but she saves $10 per day and adds it to the money in her wallet.
   a) Graph all lines and label each line with words ***and*** with its equation.
   b) Estimate the coordinates of the break-even point when Jack and Jill have equal amounts of money. *Hint: it is **not** on a grid point—you must estimate!*
   c) Use the equations from (a) to check your answer to (b).
   d) How much money will Jill have at the time that Jack has none left?