Multiple Choice # 1 - 8



3. Gerry has a table of values representing a linear relation. Two of the numbers are hidden behind a ketchup spill. $ \frac{x  y}{-2  -6}  M = \frac{18 - (-6)}{1 - (-2)} $ $ \frac{x  y}{-2  -6}  6+8  1-(-2) $ $ = \frac{24}{3} $ The values that are hidden are $ a  -2 \text{ and } 14. $ $ b  0 \text{ and } 12. $ $ c  2 \text{ and } 10. $ $ d  3 \text{ and } 9. $	<ul> <li>4. Inez created the following table of values based on a relationship between x and y and calculated the first differences. The values of y have been concealed.</li> <li> <ul> <li>x</li> <li>y</li> <li>First</li> <li>differences</li> <li>1</li> <li>12</li> <li>-3</li> <li>(13</li> <li>-3</li> </ul> </li> <li>Which statement describes the relationship between x and y?</li> <li>a y decreases linearly as x increases</li> <li>b y increases non-linearly as x increases</li> <li>c y decreases linearly as x increases</li> <li>d y increases linearly as x increases</li> </ul>
5. The equation for the fees of a taxi company can be represented with the equation C = 5 + 0.25k, where C is the cost for the cab ride, and k is the number of kilometers travelled. Which of the following is <u>true?</u> <b>a</b> The taxi cab charges an initial fee of \$2.50 and then 5 cents per km driven. <b>b</b> The taxi costs \$14.90 for 38km. <b>c</b> This is a direct variation. $Pa/4ial$ <b>d</b> The slope of the relation is $\frac{1}{4}$ . $\sqrt{\frac{1}{4}}$	6. The total cost, C, in dollars, of running an advertisement in a newspaper is made up of an initial cost of \$12, plus a charge of \$5 per day, where n represents the number of days. Which equation represents this relationship? C = 5d + 12 a $C = 12n + 5$ b $C = 12 + 5n$ c $C = (12 + 5)n$ d $C = 12 + 5 \div n$

### Mathematics 9 Day 14: Unit Review



# **OPEN RESPONSE #1**

1. The cost of purchasing a loaf of bread has increased over time. The following scatter plots represent the cost of a single loaf of bread over time for two different bread companies.



- a) Draw a line of best fit for **both** scatter plots.
- b) Using your line of best fit, how much do you estimate Wonder Bread cost in 1970? <u>2.05</u> Did you use interpolation, or extrapolation? <u>interpolation</u>
- c) Describe the correlation of Wonder Breads' graph.
  i) Posifive
  a) Drong
  b) Ling r
- d) Which line of best fit is steeper?

Dempster's

Describe what this steeper slope tells you about how the cost of a loaf of Wonder Bread is changing compared to the cost of a loaf of Dempsters Bread.

The steeper slope is telling us that within the same time period, Dempster's price increased faster.

e) An advertisement claims that Wonder Bread will never be a better price than Dempsters.

Do your scatter plots support this claim? Give reasons for your answer.

False advertisement becaux Pempsteis price is rising faster than Wonder Bread, when we draw the line of best fit we can estimate that after 2010 those lines with intersect and Dempsters will be more expensive after the break even paint. Page 4 of 8

# **Open Response Question #2**

number of hours

r

0

1

2

3

4

5

so that I can easily

- 2. To retain a lawyer ('hire' them to represent you) you have to pay a fixed fee of \$800. After retaining the lawyer the cost per hour is \$120.
- a) Write an equation that represents the relationship between the total cost, C, charged and the number of hours, n, of legal services used.



b) Create a table of values and graph this relation on the grid below. Include a line of best fit.



c) Is this an example of direct or partial variation? How do you know?

Partial b/c its y-int is not at O. The cost increases partially based on number of hours and initial fee.

d) What is the slope of this relation? What does it represent in this situation?

Slope is 120. It is the fee per hour

e) How many hours of legal service you would receive for \$1460? Be sure to explain, or show how you got your answer.

C = 120n + 80> N = 5.5 .: You'd receive 5 hours and 30 min. 1460 = 120n + 800 660 = 120n

f) If you do not <u>retain</u> a lawyer, you would just pay by the hour and the cost per hour is \$180. The cost can be expressed using the equation C=180h. How would the <u>graph</u> change if you did not retain a lawyer?

The graph would be steeper and start from the origin  $C = \frac{180}{5} (+0)$ y-int

# **Open Response Question #3**

Draw a distance time graph for the following scenario:

Jayne lives at 0m and her school is 600m from her house.

- One morning she leaves for school and walks at a steady pace at 50m/min for 4 minutes.  $= 50 \times 4 = 200 \text{ m}$
- She stops to talk to her friend Paul for 3 minutes.
- She takes off at a jog (75m/min) and keeps up this pace for 3 minutes.  $75 \times 3 = 225$  m in 3min
- She realizes that she left her backpack when she was talking to Paul.
- She **jogs** back to where she had left Paul at the same rate she was jogging earlier.
  - She grabs her backpack and heads back to school. She walks at a rate of 40m/min as she is tired from all that running.

How long does this trip take her? <u>23 min</u>,



End of  $13^{th}$  min, she is 400m away from school. It will take he  $\frac{400}{40} = 10$  min to reach school.

## THINKING QUESTION

- 30m

#### Information:

A local gym charges according to the following equation: F=25m+75, where F is the fee, and m is the number of months of membership. Another gym is opening up and wants to be competitive. The owner approaches you for suggestions on fee structure.

### Your Task:

Suggest two different plans for the new owner, be specific about the costs in each plan and provide the equation given the guidelines below. For each plan you will have to justify your answers with mathematical support (6 marks) to show that your solutions work to achieve these goals (can include tables, graphs, algebraic modelling etc.)

Templates are provided on the back of this page if you want to use them. It is not mandatory or necessary to use any or all of the tools, choose what you would like to use.

First-a plan which will always be cheaper and You can have a lower y-int (50) and the same slope. The lines will be parallel and the competitor will always be cheaper. C = 25m + 50

Second – a plan that seems cheaper but as time passes is actually more expensive (tricking people to spend more money).

Do not charge initial fee and have a preator slope than 25.

