## 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. <br> A $\begin{aligned} m & =\frac{18-(-6)}{1-(-2)} \\ & =\frac{24}{3} \\ & =8 \end{aligned}$ <br> The values that are hidden are <br> a $\quad-2$ and 14 . <br> b 0 and 12 . <br> c 2 and 10 . <br> d 3 and 9 . | 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. <br> Which statement describes the relationship between $x$ and $y$ ? <br> a $y$ decreases linearly as $x$ increases <br> b y increases non-linearly as x increases <br> c y decreases non-linearly as x increases <br> d y increases linearly as x increases |
| :---: | :---: | :---: | :---: |
| 5. | The equation for the fees of a taxi company can be represented with the equation $\mathrm{C}=5+0.25 \mathrm{k}$, where C is the cost for the cab ride, and k is the number of kilometers travelled. Which of the following is true? <br> a The taxi cab charges an initial fee of $\$ 2.50$ and then 5 cents per km driven. <br> b The taxi costs $\$ 14.90$ for 38 km . <br> c This is a direct variation. Partiol <br> d The slope of the relation is $\frac{1}{4}$. V $0.25=1 / 4$ | 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 o $\$ 5$ per day, vhere $n$ represents the number of days. <br> Which equation represents this relationship? |


| 7. | Sergio sells 7 models of CD players. The table shows the unit cost of each model and the number of CD players of that model sold in the past month. <br> Which statement about the relationship between the unit cost and the number of CD players sold is true? <br> a There is no relationship between the unit cost and the number sold. <br> b As the unit cost increases, the number sold decreases. <br> c As the unit cost increases, the number sold is constant. <br> d As the unit cost increases, the number sold increases. | 8. | The graph shows the cost of having a membership at two local country clubs, over time, in months. <br> Which of the following is true about the costs of these clubs? |
| :---: | :---: | :---: | :---: |
| 9. | In the morning, Sylvie left home to go to school. The graph below shows her distance from home versus time. <br> Distance from Home vs. Time <br> Which sequence of events below is best represented by the graph? <br> A She runs for several minutes. Then she tires and walks instead. <br> B She walks for several minutes. Then she turns around and goes home. <br> C She walks for several minutes. Then she stops to chat with a neighbour. <br> / D She walks for several minutes. Then she sees Ken ahead and runs to meet him. | 10. | Natasha works for a computer company. The table shows her annual salary in the last five years. <br> If the trend continues, what will Natasha's annual salary be in the 8th year? |

## 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.

ANSWERS WILL VARY


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? 2.05 Did you use interpolation, or extrapolation? interpolation
c) Describe the correlation of Wonder Breads' graph.

1) Positive
2) Strong
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 $w$ that within the same time period, Dempster's price incroosed 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 becoux Dempsteis 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 Dempster s will be more expensive after the break even point.

Open Response Question \#2
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 $\underbrace{\$ 120}_{m}$.
a) Write an equation that represents the relationship between the total cost, C, charged and the number of hours, n, of legal services used.

$$
C=120 n+800
$$

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 0 . The court 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.

$$
660=120 n
$$

f) If you do not retain a lawyer, you would just pay by the hour and the cost per hour is $\$ 180$. The cost can be expressed using the equation $\mathrm{C}=180 \mathrm{~h}$. How would the graph change if you did not retain a lawyer?
The graph would be steeper and start from the orion

$$
C=\frac{180 n}{t_{\text {slope }}+0}
$$

Open Response Question \#3
Draw a distance time graph for the following scenario:
Jayne lives at 0 m and her school is 600 m from her house.
v One morning she leaves for school and walks at a steady pace at $50 \mathrm{~m} / \mathrm{min}$ for 4 minutes. $=50 \times 4=200 \mathrm{~m}$

- She stops to talk to her friend Paul for 3 minutes.
$\checkmark$. She takes off at a jog ( $75 \mathrm{~m} / \mathrm{min}$ ) and keeps up this pace for 3 minutes. $75 \times 3=225 \mathrm{~m}$ in 3 m n
v- 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 $40 \mathrm{~m} / \mathrm{min}$ as she is tired from all that running.

How long does this trip take her? $23 \min ^{2}$.


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

THINKING QUESTION
Information:
A local gym charges according to the following equation: $F=25 m+75$, 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 sarre slope. The lines will be parallel and the competitor will always be cheaper.

$$
C=25 m+50
$$

Second - a plan that seems cheaper but as time passes is actually more expensive (tricking people to spend more money).
Do chard initial fee then 25.

$$
C=30 \mathrm{~m}
$$



$$
C=30 \mathrm{~m}
$$

| $m$ | $c$ |
| :---: | :---: |
| 0 | 0 |
| 5 | 150 |
| 10 | 300 |
| 15 | 450 |
| 20 | 600 |
| 25 | 750 |



