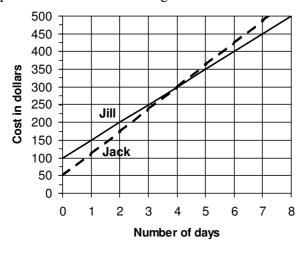Name _____ Teacher _____ Date _____

PLEASE WRITE DOWN ALL OF YOUR WORKING.

1.   To hire a truck you have to pay:

- a fixed amount

PLUS

- an amount that depends on how long you keep the truck.

This graph shows the cost of hiring a truck from Jill and the cost of hiring a truck from Jack.
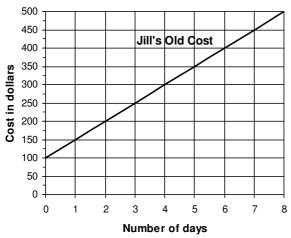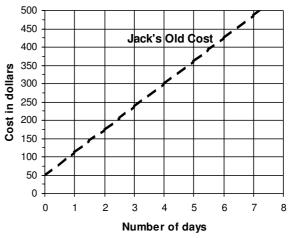

a.   (i)   Sam paid $400 to hire a truck from Jill. For how many days did Sam hire the truck?

(ii)   How much more would Sam have paid to hire the truck for one extra day?

b.   What is the fixed amount that customers are charged when they rent a truck from Jill?

c.   Explain in words how to work out the cost of hiring a truck from Jill for 14 days WITHOUT USING THE GRAPH.

d.   Use algebra to write a rule connecting the cost in dollars with the number of days of hire of a truck from Jill.

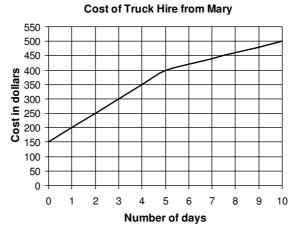e.   Is it cheaper to hire a truck from Jill or from Jack?   Explain.

f.	In order to attract more business:

- Jill now charges only $25 for each day of hire but keeps her fixed amount the same.
- Jack reduces his fixed amount by $25 but doesn't change what he charges per day.

Add new graphs below to show the new costs for hiring a truck from Jill and Jack.

g.	Mary also has trucks for hire. In her hire plan the charge per day changes after 5 days. The graph below shows the cost of hiring a truck from Mary.
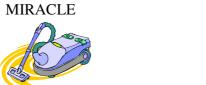
Cost of Truck Hire from Mary

(i)	What is the charge per day to hire a truck for up to 5 days?

(ii)	What is the charge per day to hire a truck for more than 5 days?

(iii)	Use algebra to write rules for the cost in dollars to hire a truck when:

Hire the truck for up to 5 days	Hire the truck for more than 5 days

2.   A department store sells two vacuum cleaners. The MIRACLE vacuum cleaner price is $136 but to use it you must also buy disposable dust bags that are $3 each. The WIZARD vacuum cleaner price is only $110 and its dust bags are $4 each.

MIRACLE   WIZARD
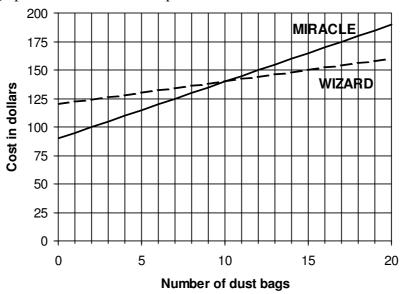

a.   How much would it cost for a MIRACLE vacuum cleaner and 4 dust bags?

b.   A customer buys the MIRACLE vacuum cleaner and some dust bags for $196. How many dust bags did the customer get?

Show and explain what you did to work out the number of dust bags.

c.   Use algebra to write a rule that shows how to work out the cost in dollars of a WIZARD vacuum cleaner and some dust bags when you know the number of dust bags that are bought.

d.   Mary bought a MIRACLE vacuum cleaner and some dust bags.
William bought a WIZARD vacuum cleaner and some dust bags.
Both paid the same amount of money and got the same number of dust bags.

   (i)   How many dust bags did they each get?

   (ii)   How much money did they each spend?

e.   If a friend wanted to buy either a MIRACLE or a WIZARD vacuum cleaner from this store, which one would you suggest they buy? Explain your answer.

f. Another department store has different prices for the vacuum cleaners and their dust bags. This graph shows the relationships between the cost and the number of dust bags.

Cost in dollars vs **Number of dust bags**

(i)   How much would it cost for a MIRACLE vacuum cleaner and 7 dust bags from this store?

(ii) A customer pays $150 for the WIZARD vacuum cleaner and some dust bags from this store. How many dust bags did the costumer get?

(iii) Is a dust bag for the MIRACLE or the WIZARD cheaper at this store?

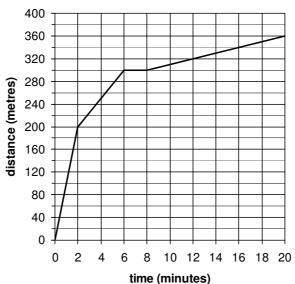   Explain how you found the answer?

(iv) For the same cost a customer could buy a MIRACLE or a WIZARD vacuum cleaner together with the same number of dust bags.

      How many dust bags would the customer get?

      About how much money would the customer spend?

(v)   Harry uses one dust bag each month when vacuuming his house. Based on the cost per year to use his vacuum cleaner which vacuum cleaner would be the best buy for Harry? Explain your answer.

3. a. Chris walks from home to school. His distance (in metres) from home after a period of time (in minutes) since leaving home is shown by the graph below.

Select the description from the list below that best describes how fast Chris walked in each time interval and write this description in the table.

stopped   very slowly   slowly   medium   fast   very fast

Interval	Description
0 up to **2 minutes**	
2 up to **6 minutes**	
6 up to **8 minutes**	
8 up to **20 minutes**	

b. Jo also walks from home to school but unlike Chris she walks at a steady pace. Her walk to school is represented in this table.

(i)   How fast was Jo walking?

Time (minutes)	Distance (metres)
0	0
1	50
2	100
3	150
8	400

(ii)   Write an algebraic expression that could be used to work out how far (d metres) Jo walked in m minutes.