

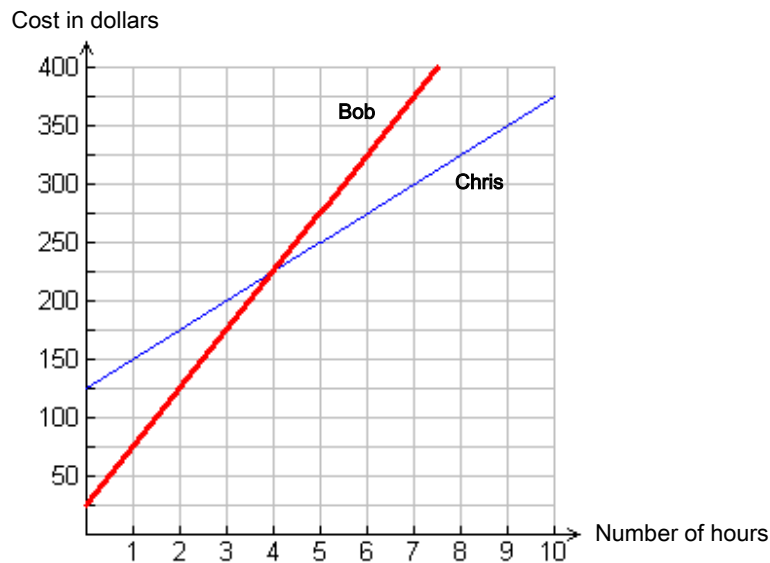
Name _____ Teacher _____ Date _____

**PLEASE WRITE DOWN ALL OF YOUR WORKING.
IF YOU USE YOUR GRAPHICS CALCULATOR, WRITE “GC”
BESIDES YOUR ANSWER**

Question 1. To hire a plumber, you have to pay

- a fixed amount PLUS
- a cost depending on how long it takes to have the work done.

Bob and Chris are two plumbers. This graph shows the cost of hiring each of them.

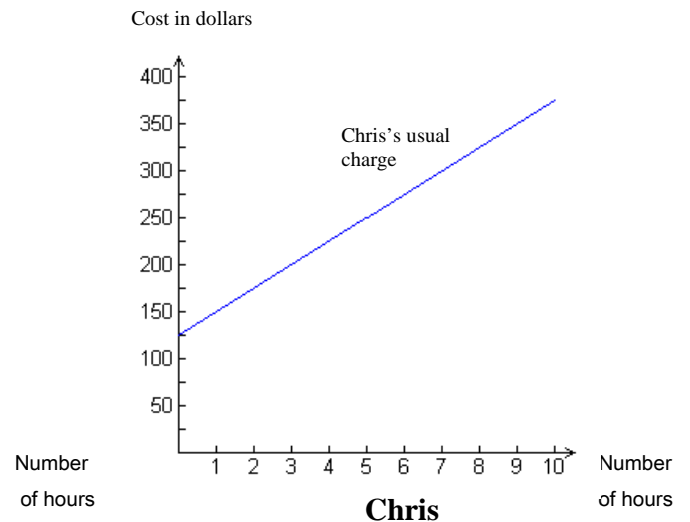
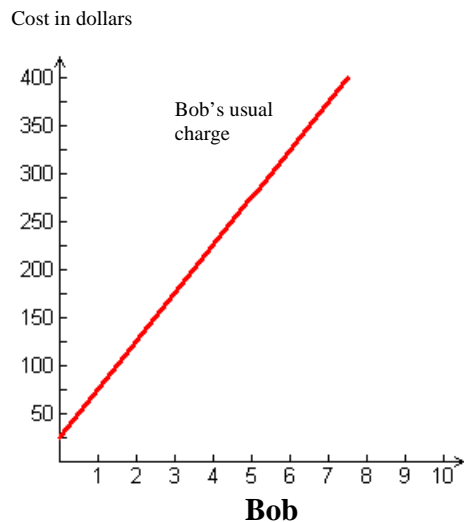


a) If you have \$325, how long can you hire Bob for? _____

b) Is it cheaper to hire Bob or Chris? Explain your answer.

c) Explain in words how to work out the cost of hiring Bob if you knew he would be working for 14 hours, WITHOUT EXTENDING THE GRAPH.

- d) Explain in words how to work out the cost of hiring Bob if you knew the number of hours he would be working, WITHOUT EXTENDING THE GRAPH.
- e) Use algebra to write a rule to work out the cost in dollars with the number of hours of hiring Bob.
- f) At Christmas, Bob gives all of his customers a \$10 discount but Chris gives all of his customers a discount of \$5 for every hour that he works. Add new graphs on the axes below to show the new hiring costs for Bob and Chris.



Question 2.

- a) If $2n + 32 = 92$, what is the value of n ?
- b) If $32 + 2n = 10 + 3n$, what is the value of n ?
- c) We know that x and y are numbers and we know that $y = 11 + (7x + 4)$ and that $7x + 4 = 5$. What number does y stand for?

Question 3. At a fun park there are two ways of paying.



CHEAP RIDES TICKET: You pay \$32 to get in and then pay \$2 per ride

CHEAP ENTRY TICKET: You pay \$10 for to get in and then pay \$3 per ride

- a) Jonathan bought the cheap rides ticket. He paid \$32 to get in and then paid \$2 per ride. Altogether he spent \$92. How many rides did he have?
- b) Did Jonathan choose the best option? Explain your answer.
- c) Use algebra to write a rule connecting the cost of going to the park and the number of rides that you have for:
- i. The cheap rides ticket _____
 - ii. The cheap entry ticket _____
- d) Samantha and Alison went to the park together. Samantha bought the cheap rides and Alison bought the cheap entry. They had the same number of rides and at the end of the visit, they found that they had spent the same amount of money. How many rides did they have? Please show all of your working.
- e) The manager of the park has been told to increase takings. At the finance meetings he presents the following new entry plans:

$$P(x) = 20 + 5x$$

$$Q(x) = 3x + 30$$

What do you think the x in these rules stands for? _____

Fill in the spaces for the new entry plans on the signs below.

CHEAP RIDES TICKET

Entry \$.... ..

and \$ per ride

CHEAP ENTRY TICKET

Entry \$

and \$ per ride

Question 4. Look at the numbers in this table and answer the questions

x	y
0	10
1	13
2	16
3	19
4	22
50	160

- a) When x is 5, what is y ? _____
- b) Describe in words how you find y if you are told what x is.
- c) Write a rule, connecting x and y , using algebra.

Question 5. Caroline graphed a series of functions, but she forgot to write down all the rules and she forgot to put the numbers on the axes. Please write the likely rules for the graphs labeled P, R and S.

$p(x) =$	P
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$q(x) = -3x + 6$	Q
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$r(x) =$	R
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$s(x) =$	S
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