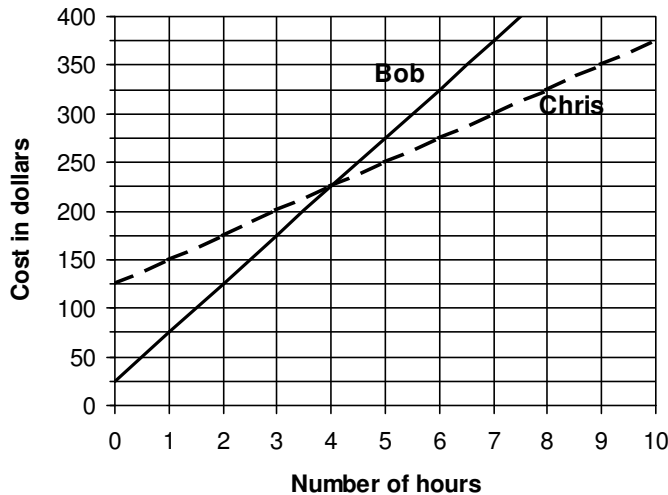


Name \_\_\_\_\_ Teacher \_\_\_\_\_ Date \_\_\_\_\_

**PLEASE WRITE DOWN ALL OF YOUR WORKING.**  
**If you use your graphics calculator, write GC beside your answer.**

1. To hire a plumber you have to pay:
- a fixed amount
- PLUS
- an amount that depends 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.

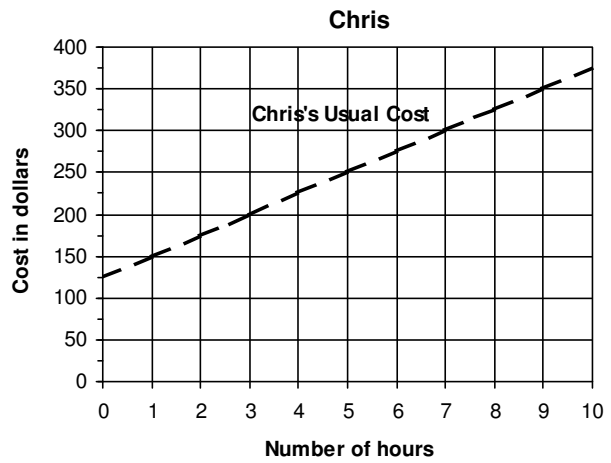
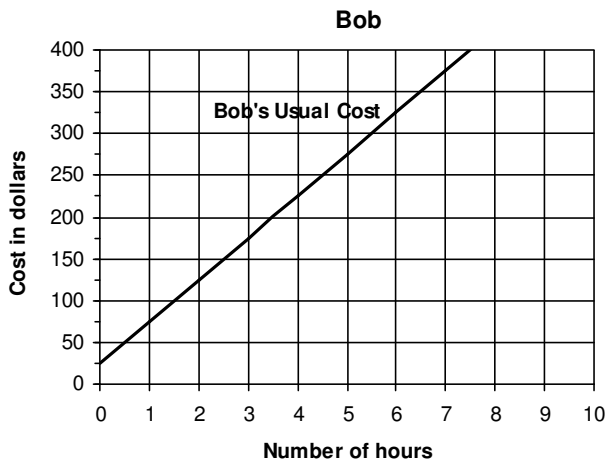


- a. If you paid \$325 to hire Bob,
  - i. for how many hours would Bob have worked?
  - ii. how much more would you have to pay to hire Bob for one extra hour?
- b. What is the fixed amount that customers are charged when they hire Bob?
- c. Explain in words how to work out the cost of hiring Bob for 14 hours, WITHOUT USING 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 USING THE GRAPH.
- e. Use algebra to write a rule to work out the cost in dollars to hire Bob from the number of hours he would be working.

f. At Christmas:

- Bob gives all his customers a discount of \$25
- Chris gives all his customers a discount of \$10 for every hour he works.

i. Add new graphs below to show the new hiring cost for Bob and for Chris.

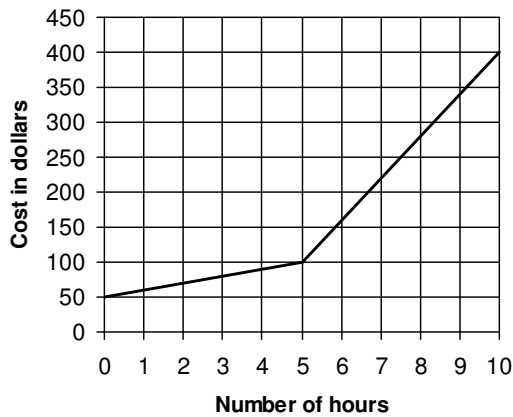


ii. Use algebra to write new rules to work out the cost in dollars of hiring Bob and Chris from the number of hours they would be working.

Bob's New Rule:

Chris's New Rule:

g. Bob decides to change his hire cost plan again. This time he changes his hourly charge after 5 hours. The graph below shows Bob's New Hire Plan.



i. What is Bob's hourly charge for up to 5 hours?

ii. What is Bob's hourly charge for more than 5 hours?

iii. Use algebra to write a rule for the cost to hire Bob when he works up to 5 hours.

iv. Use algebra to write a rule for the cost to hire Bob when he works more than 5 hours.

2. 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 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 fun 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 fun park together. Samantha bought the Cheap Rides Ticket and Alison bought the Cheap Entry Ticket. They had the same number of rides and at the end of their 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 fun park manager has been told to increase takings. At the finance meeting he presents the following new ticket plans:

$$P(x) = 20 + 5x \qquad Q(x) = 3x + 30$$

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

Fill in the spaces on the signs below for the manager's new ticket plans.

CHEAP RIDES TICKET

Entry \$ \_\_\_\_\_

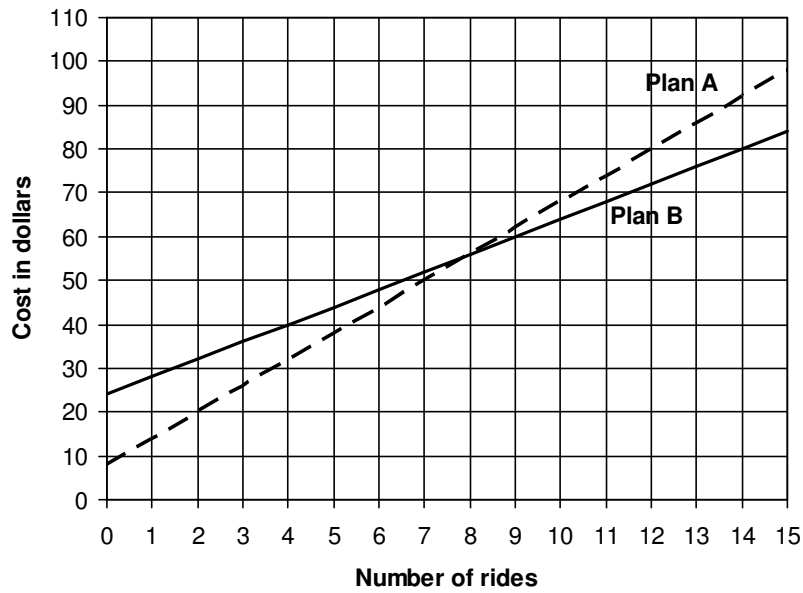
And \$ \_\_\_\_\_ per ride

CHEAP ENTRY TICKET

Entry \$ \_\_\_\_\_

And \$ \_\_\_\_\_ per ride

- f. Another fun park has different payment plans. This graph shows the relationships between the total cost and the number of rides for each plan.



- i. How much would it cost to enter this fun park and have 4 rides under Plan B?
- ii. A girl pays a total of \$80 to enter the park and have some rides under Plan A. How many rides did the girl have?
- iii. Which payment plan has the cheapest rides?

Explain how you found the answer.

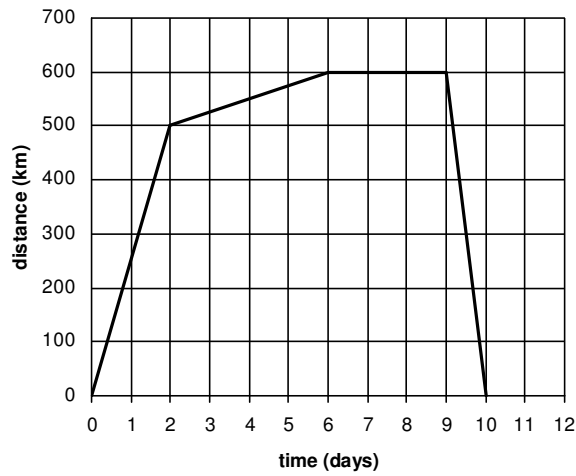
- iv. For the same total cost you could pay using Plan A or using Plan B and still have the same number of rides.

How many rides would you get?

About how much money would you spend?

- v. Sue only has time to go on 9 rides. Which is the best payment plan for her to use? Explain your answer.

3. a. The Smith family went on a long car trip during the school holidays. The graph below represents their journey. The vertical axis shows the distance (in kilometres) away from home and the horizontal axis shows the time (in days) since the start of their trip.



- i. During which days did the Smith family travel fastest? How did you know?
- ii. The Smith family stayed with friends for a few days. Which days were these?
- iii. How long did it take them to get home from their destination?
- iv. On average, how fast (measured in kilometres per day) did the Smith family travel to get to their destination?

b. The table below represents part of another trip by the Smith family.

- i. How fast were they travelling?
- ii. Write an algebraic expression that could be used to work out how far ( $k$  km) the Smith family travelled in  $d$  days

Time (days)	Distance (km)
0	0
1	150
2	300
3	450
8	1200