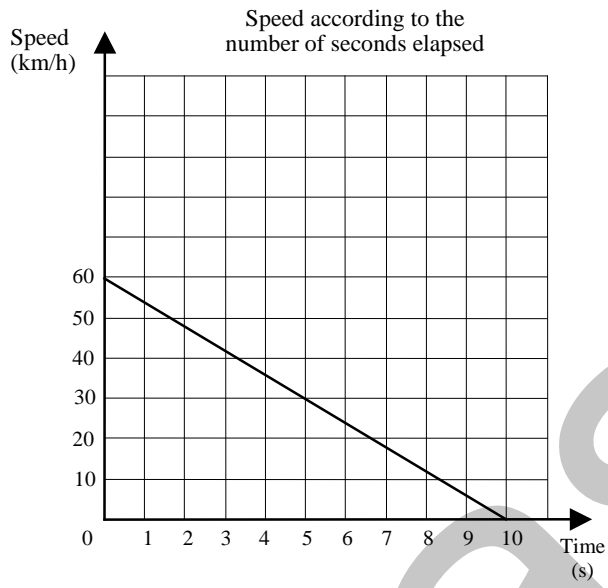


**1- Contents**

Question	Item	Objective	Type	Skill
1	0004	ALG.01.04	Short-constructed answer	Applications
2	0053	ALG.02.06	Short-constructed answer	Concepts
3	0054	ALG.01.03	Multiple-choice answer	Applications
4	0118	ALG.01.04	Multiple-choice answer	Concepts
5	0129	ALG.02.05	Short-constructed answer	Applications
6	0145	ALG.01.04	Multiple-choice answer	Applications
7	0154	ALG.02.05	Short-constructed answer	Applications
8	0206	ALG.01.04	Short-constructed answer	Applications
9	0229	ALG.02.05	Short-constructed answer	Applications
10	0254	ALG.01.04	Short-constructed answer	Applications
11	2016	ALG.02.05	Extended answer	Applications
12	2039	ALG.02.05	Extended answer	Applications
13	2038	ALG.01.04	Extended answer	Applications
14	2062	ALG.02.05	Short-constructed answer	Applications
15	2052	ALG.01.05	Multiple-choice answer	Concepts

**2- Correction key**

1



2

Option 3 because it depends the most on the number of sales made.

Accept any equivalent justification.

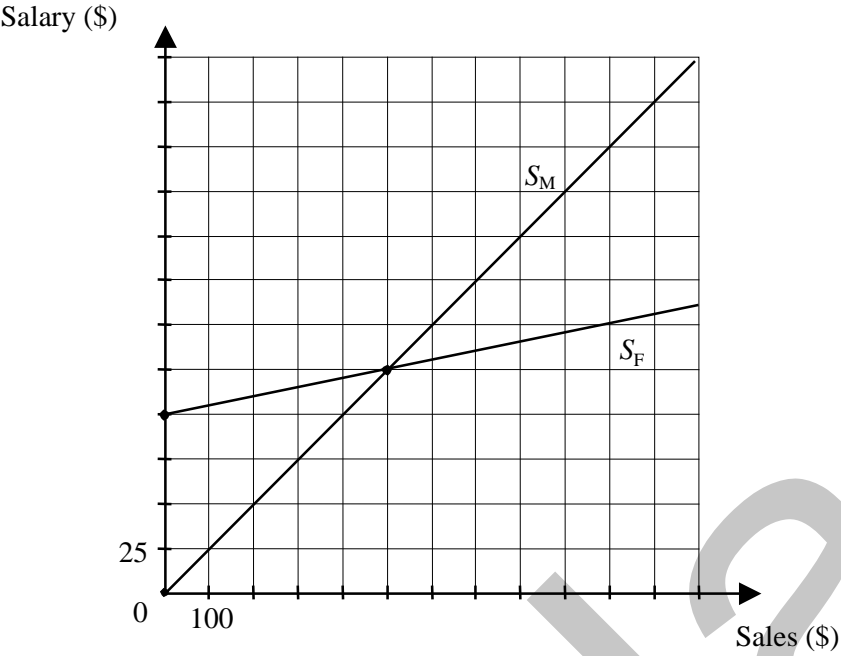
3

A

4

C

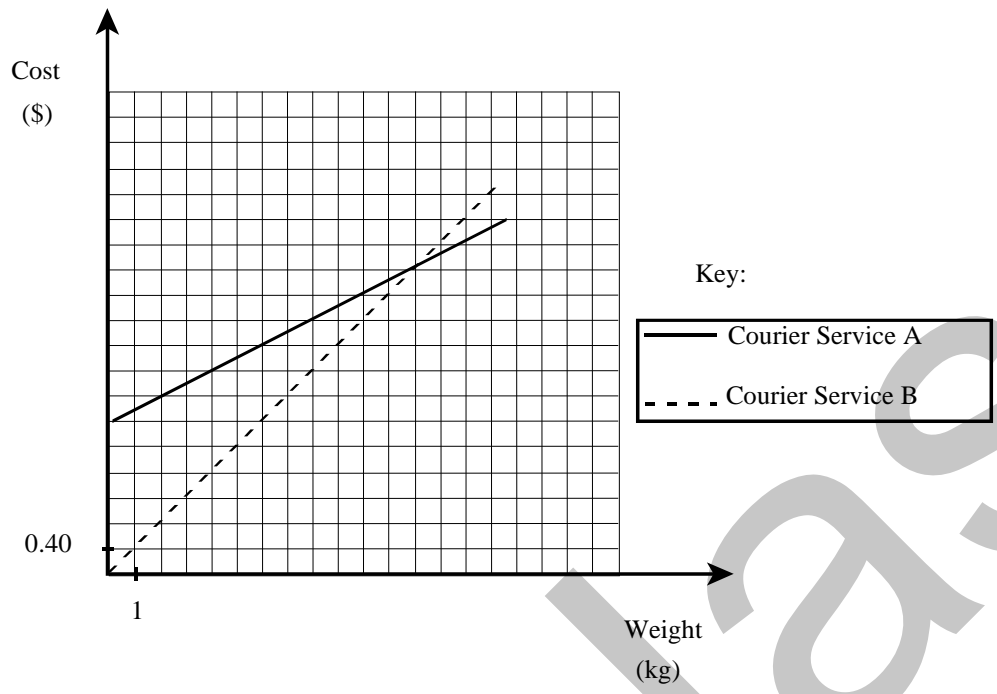
5



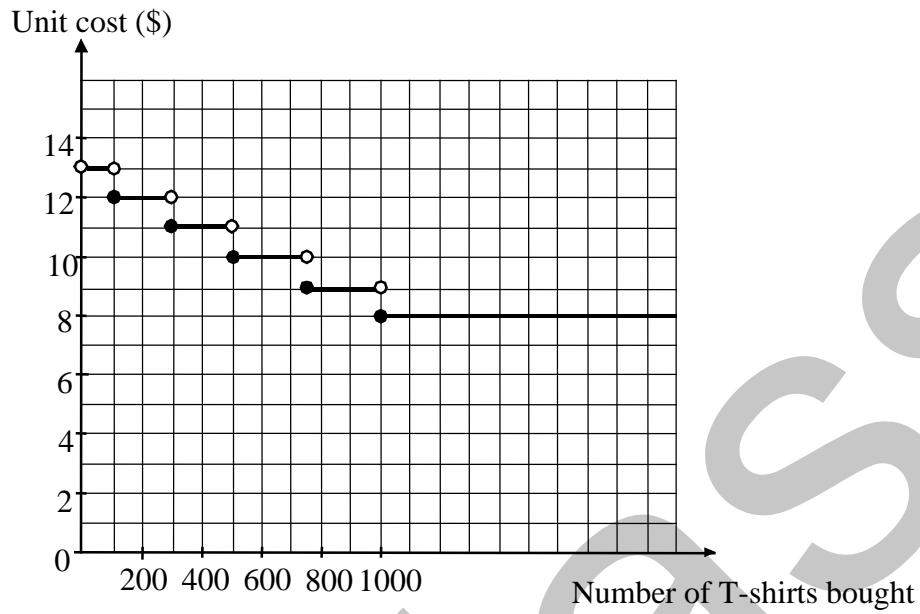
6

c

7



Note: Students will earn full marks if they correctly identify the half-lines without using the above key.

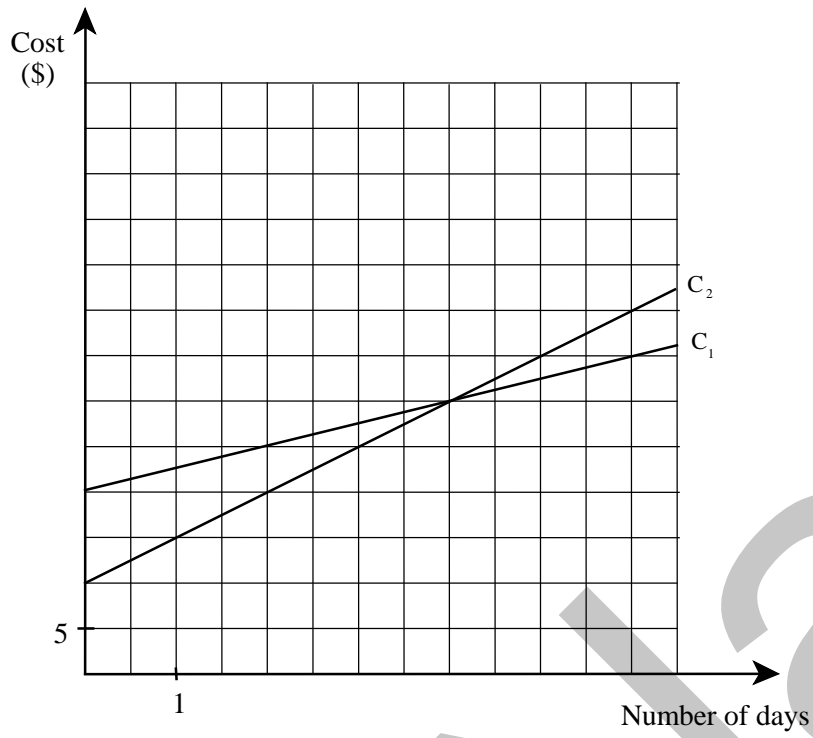


Accept the inclusion of point (0, 13).

Three criteria to meet:

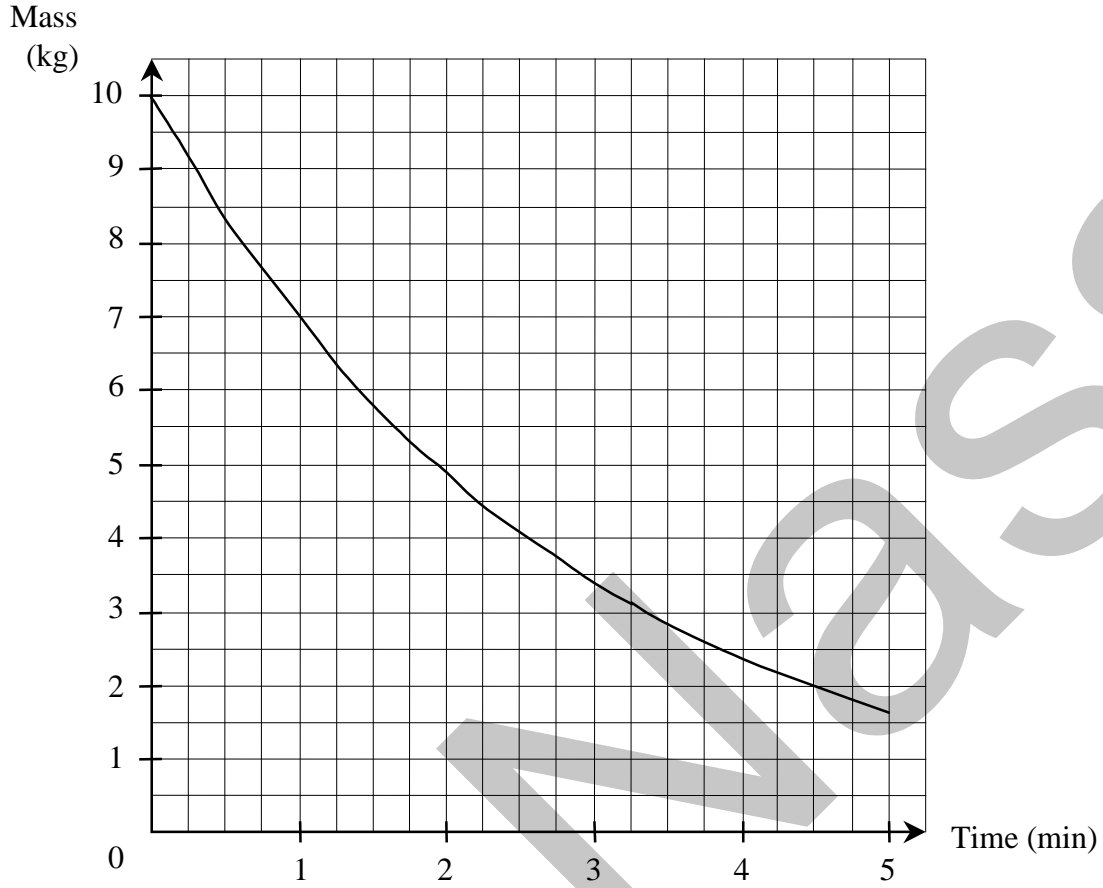
1. The graph is drawn correctly.
2. The axes are identified correctly.
3. Appropriate scales are used.

9



10

Mass of Block of Ice



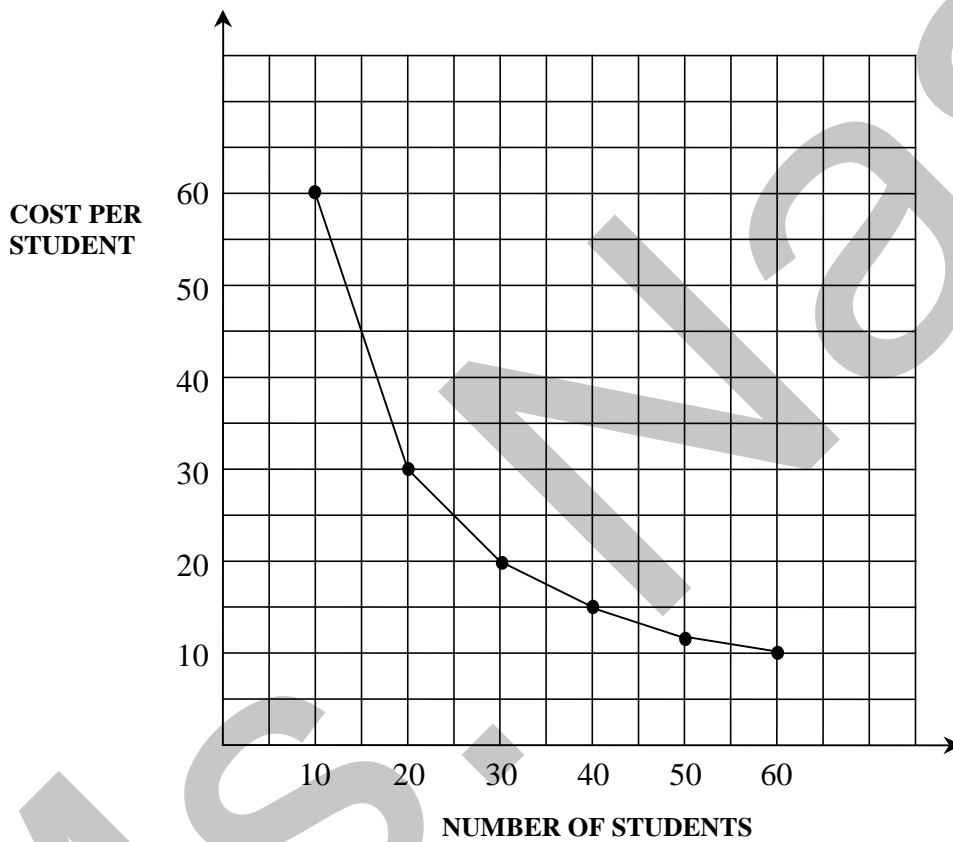
The allocation of marks follows the criteria below.

1. The graph is drawn correctly.
2. The axes are correctly labeled.
3. The graph stops at  $x = 5$ .

11

Example of an appropriate solution

<b>Number of students</b>	<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>
<b>Cost per student</b>	<b>60</b>	<b>30</b>	<b>20</b>	<b>15</b>	<b>12</b>	<b>10</b>



The following criteria for the graph must be satisfied:

1. The graph must correctly represent the relation.
2. The axes must be correctly scaled.



3. The axes must be correctly labelled.

**Note** Accept a smooth curve or a curve as shown above with or without extensions beyond  $x = 10$  and  $x = 60$ .

Ms. Nassif

12

Example of an appropriate method

$$y = 400 + 50x$$

$$y = 550 + 20x$$

$$550 + 20x = 400 + 50x$$

$$150 = 30x$$

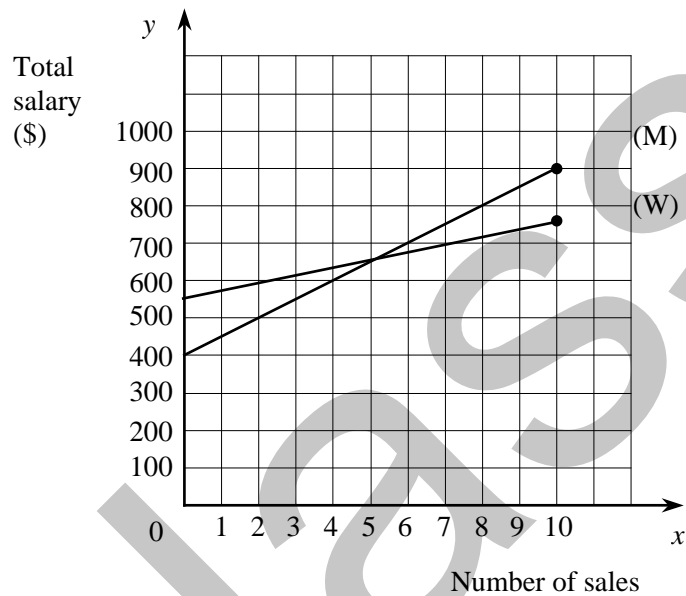
$$5 = x$$

If  $x = 5$ 

$$y = 400 + 50(5)$$

$$y = 400 + 250$$

$$y = 650$$



$x$	0				10
$y_1$	400				900
$y_2$	550				750

**Note:** This graph may be a system of straight lines or sets of points in a straight line.

Work should include table of values and/or equation for 1<sup>st</sup> variable and/or point of intersection i.e. sufficient work to produce the graph shown.

The following criteria must be satisfied:

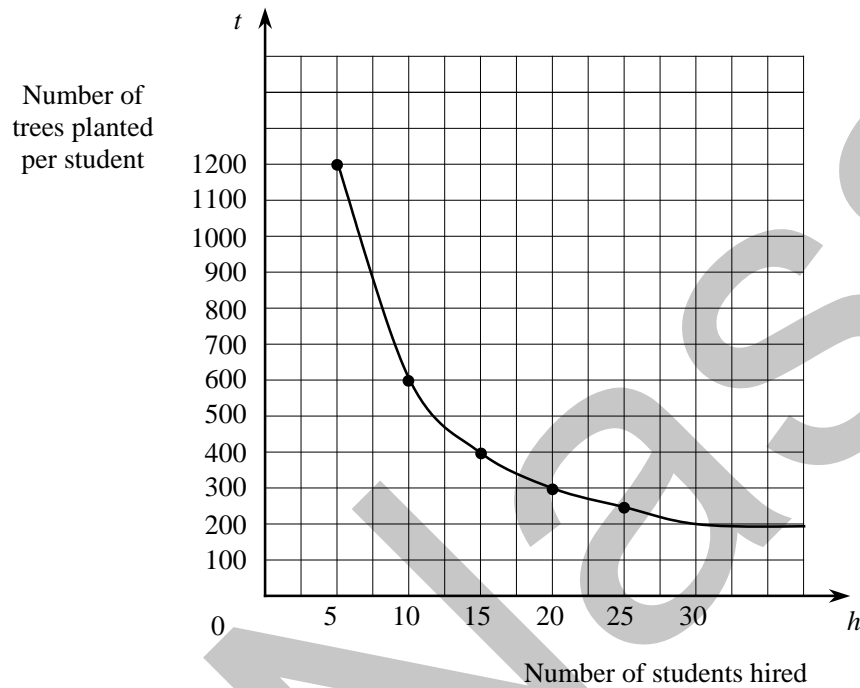
- 1) Axes labelled correctly

- 2) Axes scaled appropriately
- 3) Work shown as described
- 4) Lines graphed correctly

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13

Example of an appropriate method

**Note:**

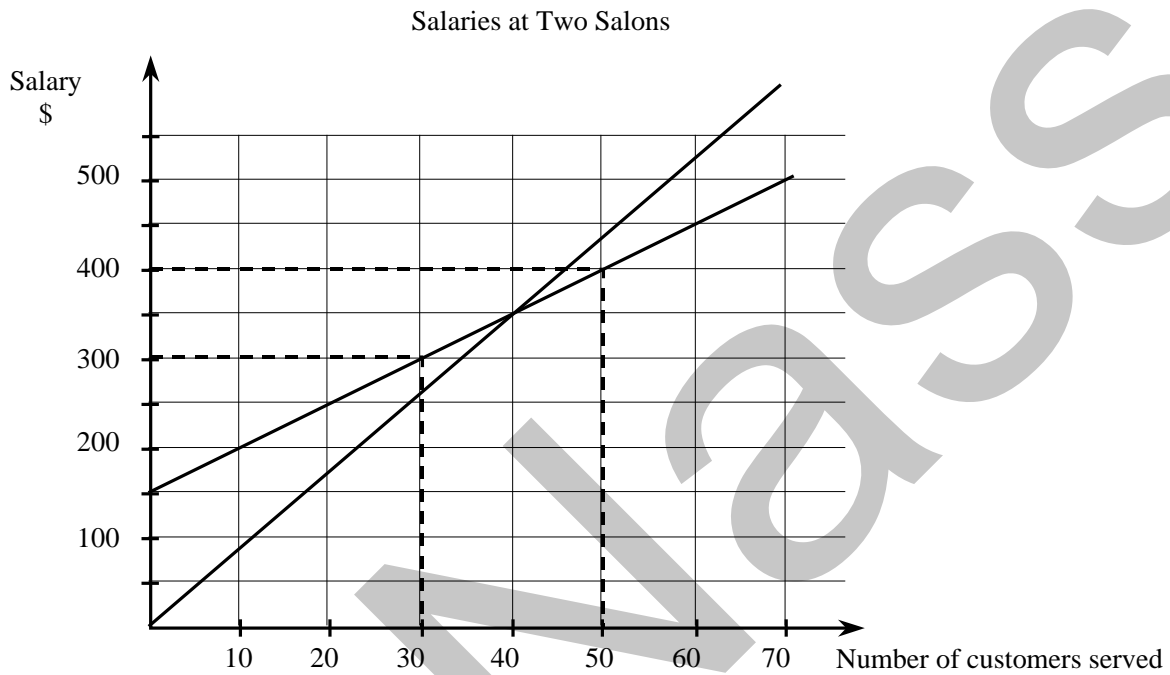
- Axes may have: variable letter, variable description or both.
- Graph of curve may or may not have arrows.
- Graph may have 1 appropriate number per axis.

The following criteria must be satisfied:

- 1) Graph correctly represents the relation
- 2) Axes labelled correctly
- 3) Axes scaled appropriately
- 4) Curved graph with or without arrows; no heavy dots at the end

14

a)



b) The salary will be the same at each salon if they serve **40** customers.

**Note:** Do not penalize students who have correctly interpreted the point of intersection on an incorrectly drawn graph.

15

c)

Ms. Nassif

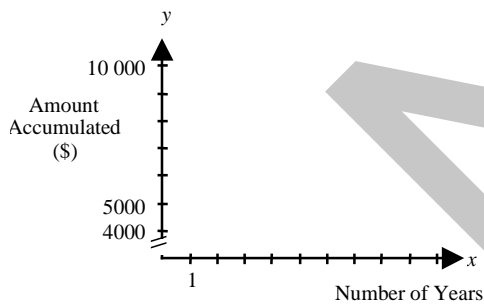
3

An amount of \$4500 is invested for 10 years at an annual compound interest rate of 8%. The equation that can be used to calculate the accumulated sum,  $y$ , after a certain number of years,  $x$ , is:

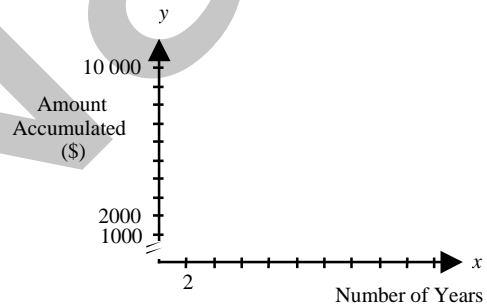
$$y = 4500(1.08)^x.$$

Among the Cartesian planes below, which one best illustrates this situation?

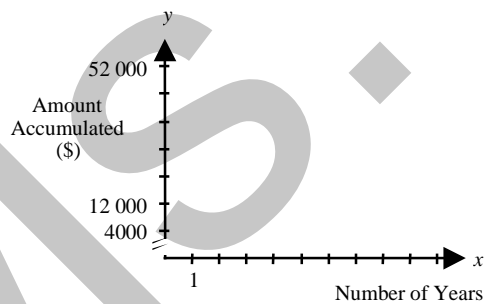
A)



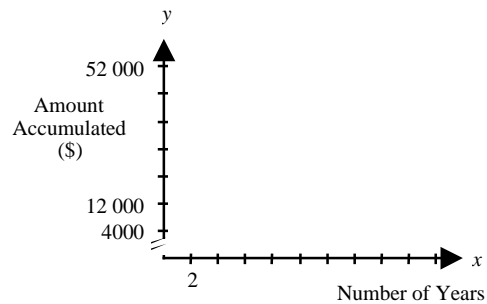
C)



B)

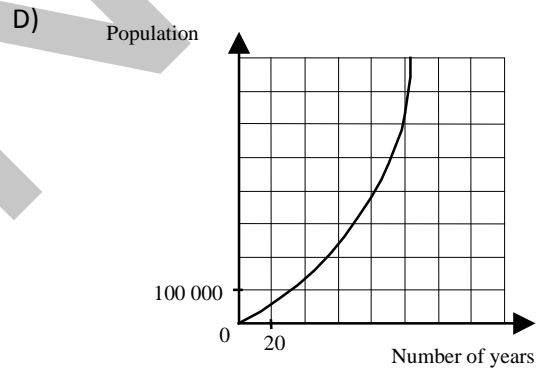
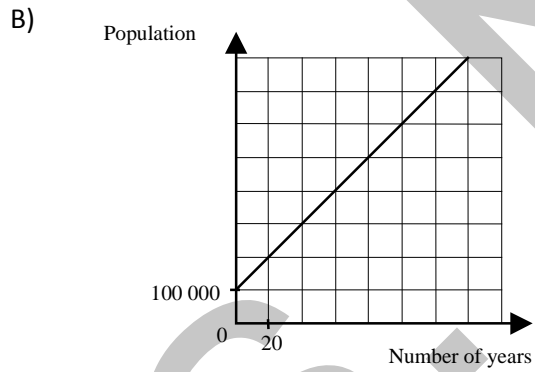
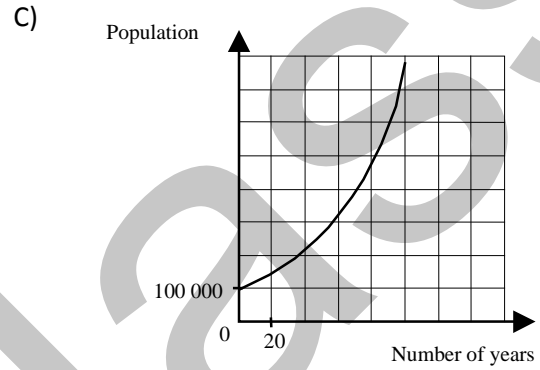
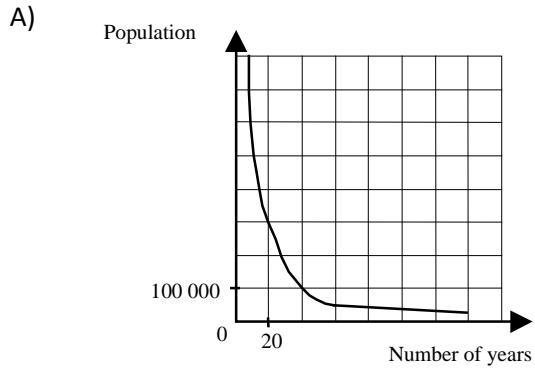


D)



4 The population of a city of 100 000 increases by 2% each year. A study was made of the relationship between the number of years elapsed and the population growth of the city.

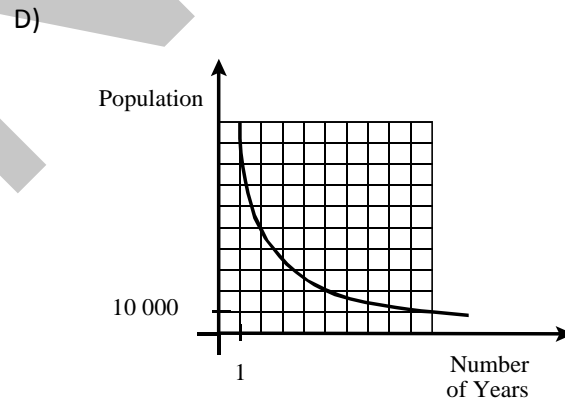
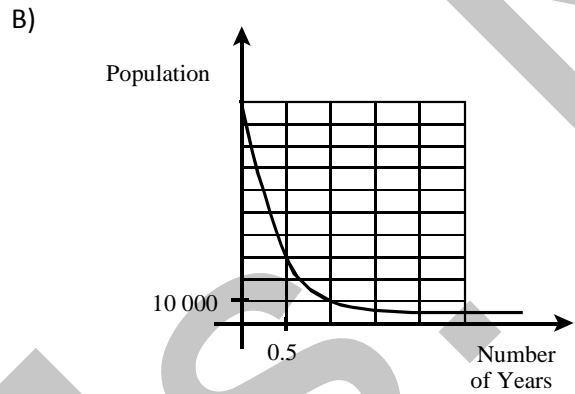
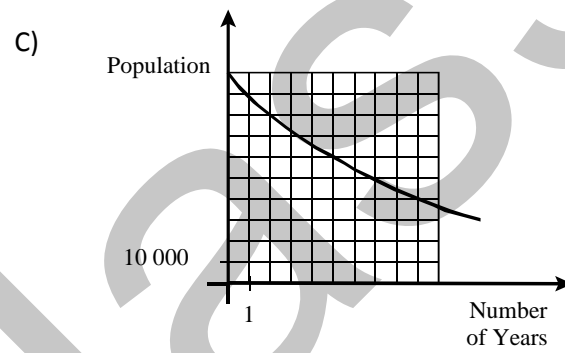
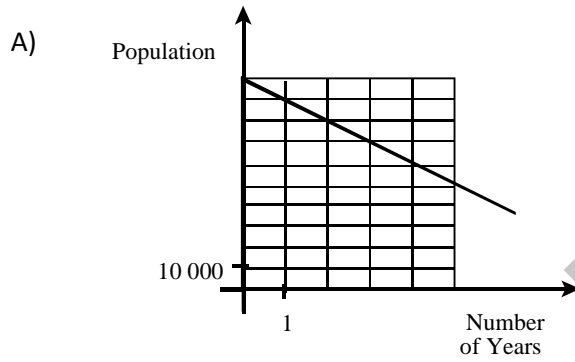
Which of the graphs below represents this situation?





6 In 1990, a town had a population of 100 000. Since 1990, the population of this town has decreased by 10% per year.

Which of the following graphs shows the relationship between population and the number of years that have passed since 1990?



7

A printing plant needs to have its parcels delivered and can choose between two courier services.

The following rule of correspondence is used to determine the cost of courier service A:

$$c = 0.2m + 2.4$$
 where  $c$ : cost of delivery in \$

$m$ : weight of the parcel in kg

The cost of courier service B is proportional to the weight of the parcel. The following table gives examples of rates charged by courier service B.

Weight of Parcel (kg)	Cost of Delivery (\$)
1	0.40
5	2.00
8	3.20
12	4.80

The manager of the printing plant wants to draw a graph that compares the costs of the two courier services.

In your answer booklet, draw the graph showing how much each courier service costs.

10 Upon exposure to the sun, a 10-kg block of ice loses 30% of its mass for each minute that elapses.

Draw the graph showing the variation of the mass of the block of ice for the first five minutes that it is exposed to the sun.

11 A group of students rents a pool for a party. The rental cost is \$600.

Complete the table of values and draw the Cartesian graph to illustrate the relation between the number of students and the cost per student.

<b>Number of students</b>	10	20	30	40	50	60
<b>Cost per student</b>						

Show all your work.

12 At *Marine Heaven*, motorboat salespeople earn \$400 a week and \$50 per sale of a motorboat.

At *Waterides Inc.*, the total salary of motorboat salespeople is calculated

by the rule:  $y = 550 + 20x$

where  $y$  = total salary

and  $x$  = number of motorboats sold

Graph the salaries paid by these two companies for 0 to 10 sales.

13 As part of a reforestation program, the Canadian government will plant 6000 trees.

Students are hired to plant the trees during the summer months.

The following table shows the relationship between the number of students hired,  $h$ , and the number of trees each student is expected to plant,  $t$ .

A minimum of 5 students will be hired.

$h$	5	10	15	20	25
$t$	1200	600	400	300	240

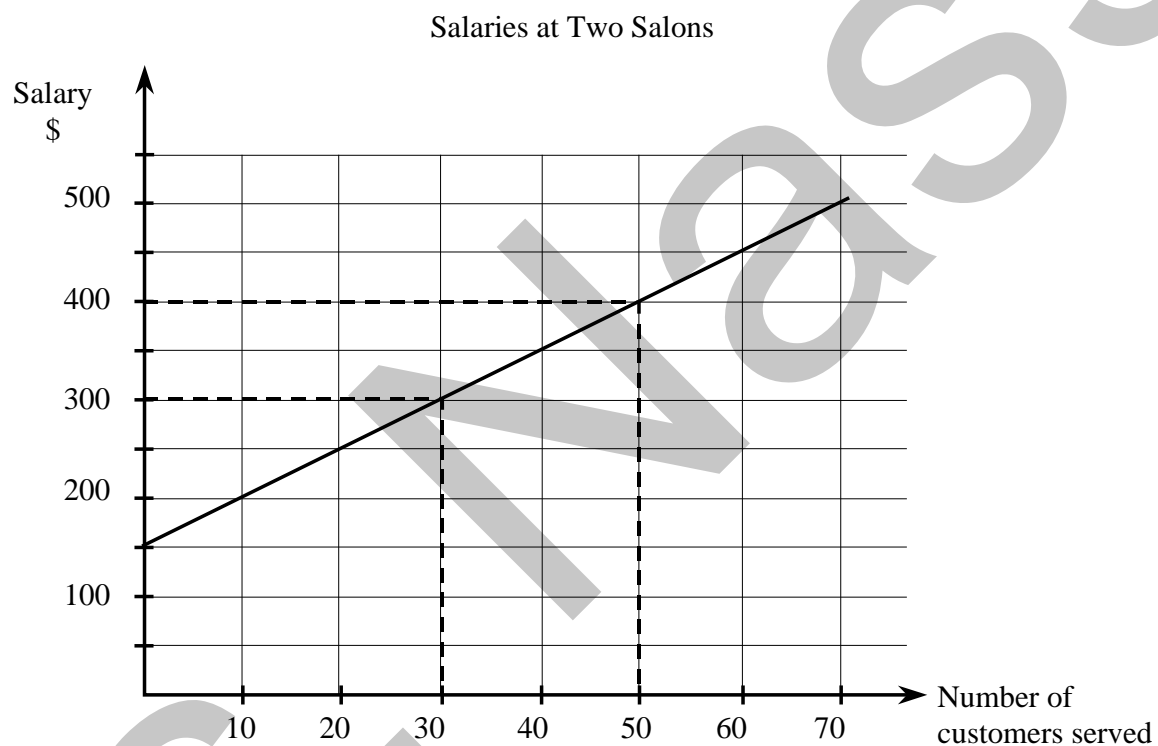
Draw the graph that represents this situation.

14

Jenny is offered a job at two hairdressing salons.

In salon A, the salary is \$8.75 per customer served during the week.

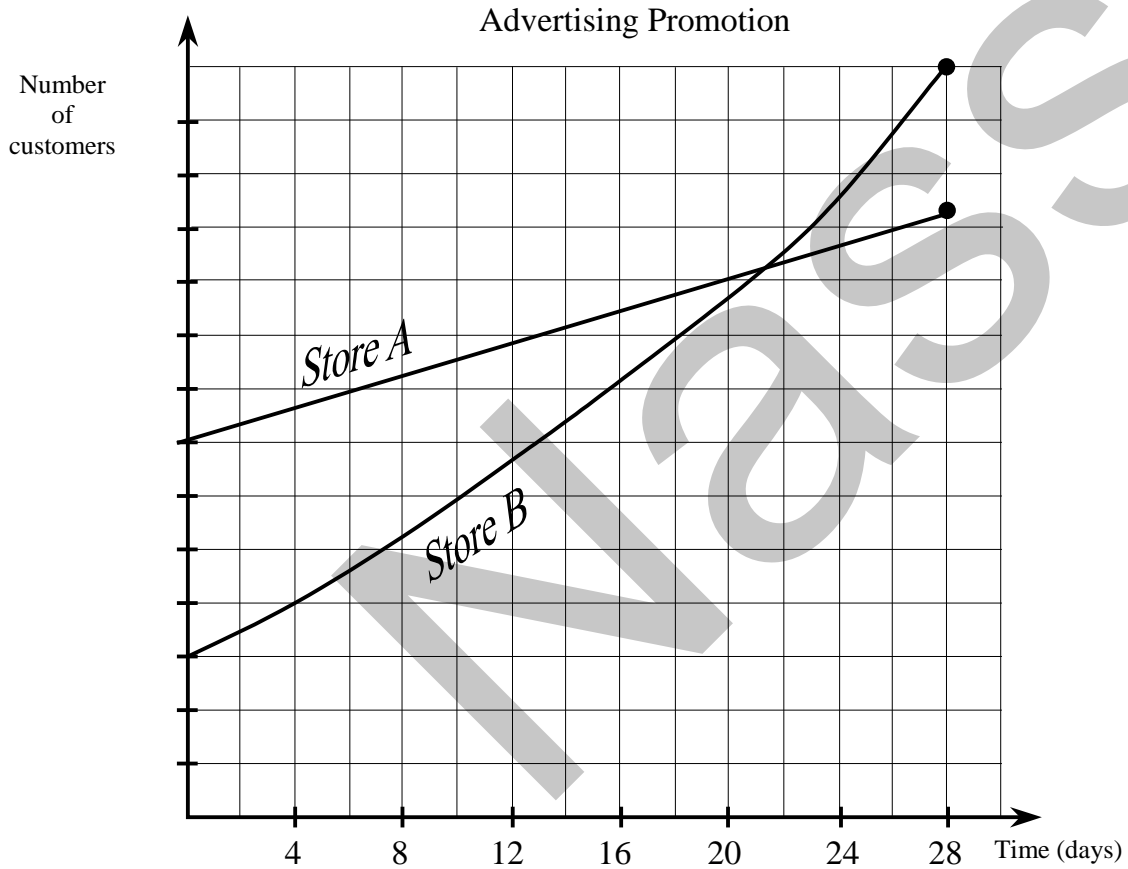
In salon B, the salary given is shown in the graph below.



- a) On the same set of axes, draw the graph representing the salary offered by salon A.
- b) How many customers would Jenny have to serve to earn the same salary at each salon?

15

Two competing sport stores started a 28-day advertising promotion to attract new customers. The following graph shows the relationship between the number of customers who have visited each store since the promotion began.



Which of the following statements are TRUE?

- 1) Halfway through the promotion, Store A had fewer customers than Store B.
- 2) By the end of the promotion, more customers had visited Store B than Store A.
- 3) The two stores never had the same number of customers.

4) The difference between the number of customers who had visited the two stores at the beginning of the promotion was greater than the difference at the end.

A) 1 and 2 only

C) 2 and 4 only

B) 1 and 3 only

D) 2, 3 and 4 only