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1	0118	ALG.01.04	Multiple-choice answer	Concepts
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5	0277	ALG.01	Short-constructed answer	Applications
6	2045	ALG.01.05	Extended answer	Problem solving

2- Correction key

1

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2 Example of an appropriate method

Time (in h)	Type A bacteria	Type B bacteria
0	1000	500
1	2000	1500
2	4000	4500
3	8000	13 500
4	16 000	40 500
5	32 000	121 500

Answer Type B bacteria would be more numerous.

3 Example of an appropriate method

Number of years passed	Value of the sport car (\$)	Value of the truck (\$)
0	60 000	40 000
1	48 000	36 000
2	38 400	32 400
3	30 720	29 160
4	24 576	26 244
5	19 660.80	23 619.60

Answer: The vehicle that will be worth the most is the truck.

4 Example of an appropriate solution

Gains with company A

Month	0	1	2	...	12
Sum (\$)	100	105	110.25	...	179.59

After 1 year, the shares in company A are worth \$179.59.

Gains with company B

From the table of values, the shares of company B are worth \$58.85.

Total gains

$$179.59 + 58.85 = 238.44$$

Profit

$$238.44 - (100 + 75) = 63.44$$

Answer: After 12 months, her profit is \$63.44.

5 At the end of 2002, the value of the car was \$13 784.20.

6

Example of an appropriate method

The Montreal School

$$\begin{aligned}y &= 300(1.2)^x \\ &= 300(1.2)^{10} \\ &= 1857.52\dots\end{aligned}$$

The Chateauguay School

$$\begin{aligned}y &= 300 + 130x \\ y &= 300 + 130(10) \\ &= 300 + 1300 \\ &= 1600\end{aligned}$$

Difference

$$1857 \text{ or } 1858 - 1600 = 257 \text{ or } 258$$

Answer: On its 10th anniversary, The Montreal School had the greater population by 257 (or 258) students.

Name : _____

Group : _____

Date : _____

568416 - Mathematics

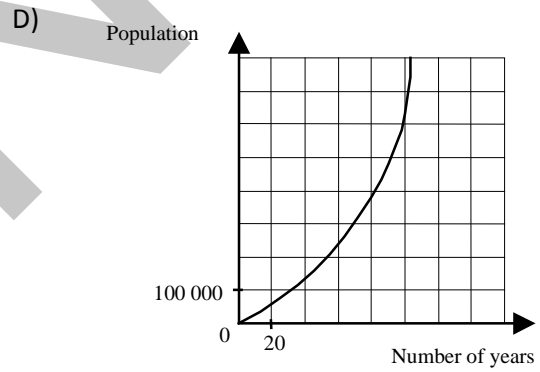
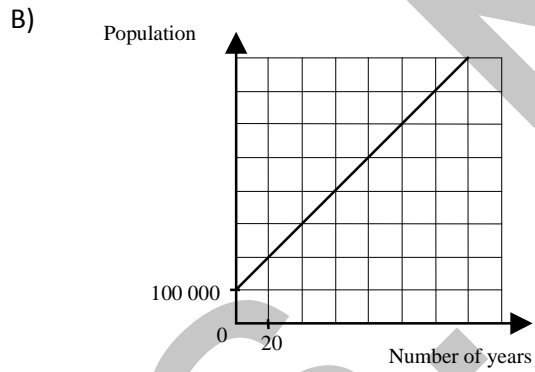
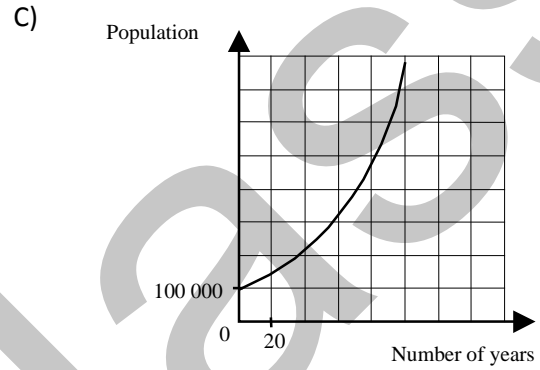
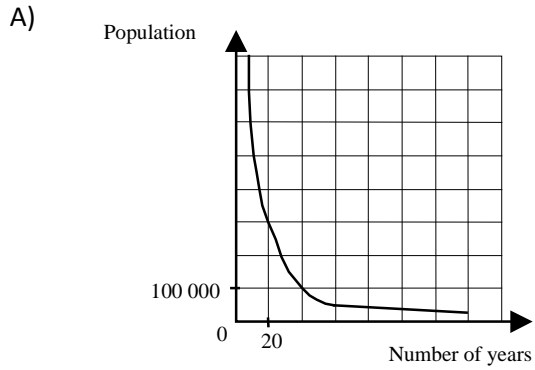
Question Booklet

MS.

Ms. Narasiff

1 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?



- 2 A lab technician notes that the number of type A bacteria doubles every hour whereas the number of type B bacteria triples every hour.

At the outset there are 1000 of type A bacteria and 500 of type B bacteria.

Which of the two bacteria will be more numerous after five hours?

Show all your work.

- 3 The value of a \$60 000 car diminishes at a rate of 20% a year. However, the value of a \$40 000 truck diminishes at a rate of 10% a year.

The two vehicles are going to be sold after 5 years.

At resale time, which vehicle will be worth the most?

Show all your work.

4 Nancy invested \$100 in company A and \$75 in company B. After a year, she checked to see how her investments were doing.

- The value of her shares in company A increased at a rate of 5% a month.
- The value of her shares in company B decreased according to the pattern below:

Month	0	3	6	9	12
Amount (\$)	75	70.59	66.44	62.53	58.85

After twelve months, what was the total profit that Nancy earned from her two investments?

Show all your work.

5 At the end of 1999, Paul bought a new car for \$25 000. Each subsequent year the car lost 18% of its previous year's value.

Consider the relation between the value of the car and the number of years since the car was bought.

How much was the car worth at the end of 2002?

6 Two schools opened in the same year each with a population of 300 students.

The Chateaugay School 's population increased at a rate of 130 students per year. The population of The Montreal School increased every year according to the rule:

$$y_M = 300(1.2)^x$$

where y_M = total population of The Montreal School

and x = the number of years since the school opened

On the 10th anniversary of its opening, which school had the greater population and by how many students?