

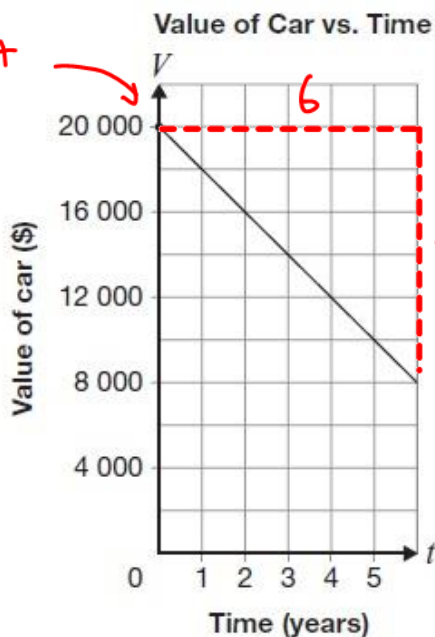
67 Hot New Wheels

Cybelles and Peter each buy a car. The graph below represents the value of Cybelles's car over time.

cybelles's car's value over time

$$V = -2000t + 20000$$

cybelles's starting cost



$$m = \frac{\text{rise}}{\text{run}} = \frac{-12000}{6} = -2000$$

or

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{20000 - 8000}{0 - 6} = \frac{12000}{-6} = -2000$$

Peter's car costs less than Cybelles's. The value of both cars **changes at the same rate.** Same slope

Determine a possible equation to represent the relationship between the value of Peter's car, V , in dollars, and time, t , in years.

$$V = -2000t + 8000$$

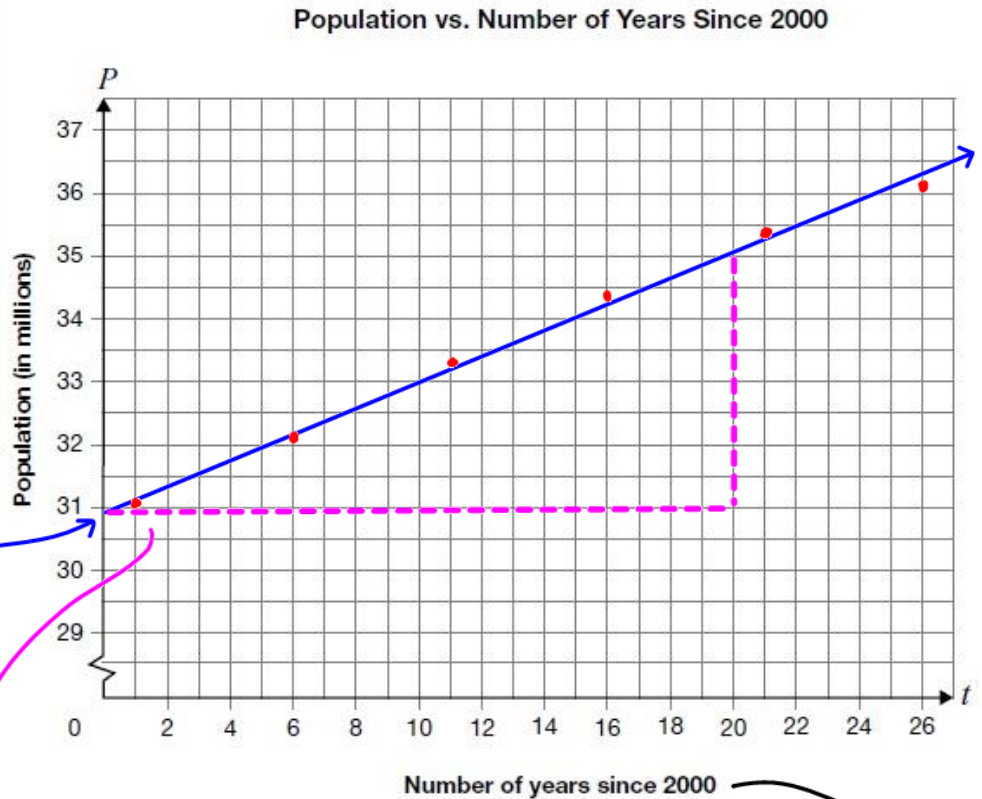
Justify your equation.

The value of both cars change at the same rate, so Peter's slope must equal to -2,000. The y-intercept can be anything less than 20,000, I chose 8,000

73 Population Plans

Alvin is researching the population of Canada. He finds data for the year 2001 and predictions for every 5 years after that, as shown below.

Number of years since 2000, t	Population (in millions), P
1	31.1
6	32.2
11	33.4
16	34.4
21	35.4
26	36.2



y-intercept = 31

Determine an algebraic model for Alvin's data, and use it to make a reasonable prediction for the population of Canada in 2036.

Justify your answer.

36 years since 2000

$$\begin{aligned}
 m &= \frac{\text{rise}}{\text{run}} \\
 &= \frac{35 - 31}{20 - 0} \\
 &= \frac{4}{20} \\
 &= 0.2
 \end{aligned}$$

$$\begin{aligned}
 y &= mx + b \\
 \boxed{P} &= 0.2t + 31
 \end{aligned}$$

$$\begin{aligned}
 \text{let } t &= 36 \\
 P &= 31 + 0.2(36) \\
 P &= 38.2
 \end{aligned}$$

∴ The population of Canada will be 38.2 million in 2036 according to the trend