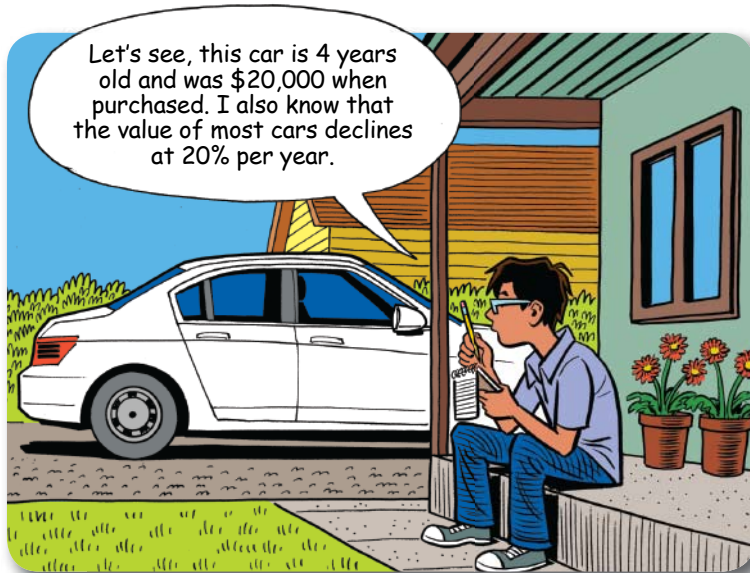


The Case of the Decaying Car

In class you learned about how the *growth formula* can be used to calculate how certain things increase over time. A similar formula, the *decay formula*, can be used to calculate how certain things decrease over time. The formula is written $y = p(1 - r)^n$, where y is the ending number, p is the starting number, r is the rate of decrease, and n is the number of time periods (generally years).

Assume your older cousin wants to see how much his car is worth in order to possibly help him pay for a new one. You would like to help him estimate what his car is currently worth and help him decide how much he can afford to spend on a new car. Here's key information you pull together:



- Your cousin's car was purchased four years ago
- The purchase price was \$20,000
- The value of most cars declines at a rate of 20% per year

WORK THE MATH

Show your work—use separate paper as needed.

- 1 Use the decay formula to determine the current value of your cousin's car.
- 2 How much more would the car's value decline if your cousin decided to keep it two more years before selling it?

NOW TRY THIS:

Your cousin is considering several new cars for purchase. Use the decay formula to calculate the future value of these cars:

1. How much will a car that costs \$30,000 now be worth in three years?
2. How much will a car that costs \$25,000 now be worth in one year?
3. How much will a car that costs \$40,000 now be worth in five years?