

Exponential Function Word Problems

I Try

Example #1:

An electric scooter purchased for \$1000 depreciates at an annual rate of 15%. When will the value fall below \$100?

$$A(t) = a(1 \pm r)^t$$

The diagram shows the exponential function formula $A(t) = a(1 \pm r)^t$ with four labels and arrows pointing to specific parts of the formula:

- Initial amount** (green text, green arrow pointing to a)
- Number of time periods** (blue text, blue arrow pointing to t)
- Final amount** (purple text, purple arrow pointing to $A(t)$)
- Rate of increase** (red text, red arrow pointing to r)

We Try:

Example #2:

In 2000, the world population was 6.08 billion and was increasing at a rate 1.21% each year. Write a function for the world's population. Does it represent growth or decay?

Example #3:

Naomi invests \$5000 in an account that pays 6.25% interest per year. After how many years will her investment be worth \$10,000?

You try: The value of Kimberly's \$3000 computer decreases about 30% each year. Write a model to represent the value of her computer if Kimberly wants to sell it on Craig's List.

- Use your model to predict the value after 4 years of owning it.

Example #4:

The annual amount that we spend to attend sporting events can be modeled by: $f(x) = 2.5 + 1.3\log x$, where x represents the number of years after 1984 and $f(x)$ represents the total annual expenditures for admission to spectator sports, in billions of dollars. In 2000, approximately how much was spent on admission to spectator sports?

