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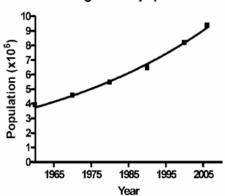
Algebra 1
WS 6.4 Exponential Growth/Decay and Compound Interest

1. A new 2018 Honda Accord was valued at $25,000. It depreciates at a rate of 13% a year.
   a. What is the value in 2021?

   b. What will be the value in 2034?

2. The amount of a certain drug in the bloodstream decreases by 30% in 1 hour. A person take 125 mg of the drug.
   a. What is the concentration of the drug in the bloodstream after 3 hours?

   b. What is the concentration of the drug in the bloodstream after 1 day?

Do the following situations model exponential growth or decay?

3. Atmospheric pressure decreases as the height above sea level increases, at a rate of 12% per 1000m.

4. $y = 120{,}000(1.1)^t$

5. The value of a house appreciates at 12% a year.

6. $y = 120{,}000(0.9)^t$

7. The value of a car depreciates at 12% a year.

8. A savings account earns interest at a rate of 4% a quarter.

9. A savings account compounds its interest quarterly at a rate of 8%. If you invest $1500 what will the principal be in...
   a. 9 months   b. 5 years

10. A house appreciates in value at a rate of 5%. The house is valued at $130,000 in 2010. What is the value in 2020?

11. A car depreciates in value at a rate of 10%. The car currently has a value of $12,000. What will its value be in 10 years?

12. You invest $500 in an account with 8.5% interest rate for 9 years. How much money will you have at the end of the 9 years?

13. When did the Georgia's population double compared to its population in 1960?

Georgia - total population

14. You decide to sell your iPhone. You initially paid $300 for it. It has been 2 years and each year the value depreciated by 35%. How much is it worth?

15. A savings account compounds interest quarterly. The interest rate is 12% and you deposit $5000 into the account. You want to double your money. How long will you have to wait?

   a. 6.12 years   b. 5.86 years   c. 23.45 years   d. 1.53 years