IW - APPLICATIONS DAY 1

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NAME_	Pol		

L. Annual sales for a fast food restaurant are \$650,000 and are increasing at a rate of 4% each year. Write an exponential function to model the sales.

1=650,000(1.04)

a) What are the sales after 7 years 650,000(1.04)

855,355.66

b) After how many years will the sales be \$1,000,000?

$$\frac{30}{13} = 1.04$$

$$\frac{30}{13} = \frac{30}{13} = \frac{30}{13}$$

- 2. The population of a town is 2500 people and is decreasing at a rate of 3.5% each year. Write an exponential function = 2500 (.965) to model the population.
- What is the population of town after 5 years?

$$3500(.965)^{5}$$

~2092

b) When will only half the population be left?

When will only flat the population
$$\frac{1}{4} = .965^{\times}$$

3. A photocopier is purchased for \$5200, and its value each year is about 80% of the value of the preceding year.

a) What is the value of the machine after 3 years? 5 years? 10 years?

\$2662.40) 5200(.8) 5= \$1703,94) 5200(.8)

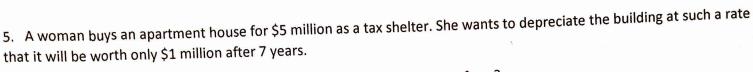
b) Approximately when will the value be only \$100?

log. 8 52 = X

- 4. A certain satellite has a power supply whose output in watts is given by the equation $P = 40e^{\frac{-t}{900}}$, where t is the number of days the battery has operated.
- a) If it has operated continuously after the satellite is placed into orbit, how many watts is the battery putting out after one year? P= 41)-

b) If it takes at least 10 watts to operate the satellite, how many days can the satellite be used?

t=1247. ~ 3,5 yrs



a) What rate of depreciation should she claim on her income tax form?

$$1,000,000 = 5,000,000 (1-r)^7$$

b) If she wanted to claim 15% depreciation per year, how long would it take to depreciate to \$1 million?

6. The exponential growth rate of the population of Europe west of Russia is 1% each year. What is the doubling time?

growth rate of the population of Europe west of Russia is 1% each
$$2 = 1 (1+.01)$$
 $3 = 1$ 3

7. Anna purchased her house in 1972 for \$35,000. If the value of real estate increases at a rate of 15% per year, when, to the nearest year, will her house be worth \$300,000?

8.57=
$$1.15^{x}$$

$$1991.15^{8}$$
 1991.15^{8}
 1997
 1991.15^{8}
 1997

- 8. Suppose a Cadillac depreciates at 18% a year.
 - a) How long does it take for the car to be worth half of its original price?

$$\frac{1}{2} = 1(.82)^{x}$$
 $\Rightarrow 109.82^{1/2} = x$ $1/2 = .82^{x}$ $\Rightarrow 109.82^{1/2} = x$

c) What percent of its original price is it worth after 5 years?

