Date: _____   Name: _____

PRACTICE Exponential Word Problems

1. Every 2 cm of a light filter reduces the intensity of the light passing through it by 10%. Let I represent the light intensity and t represent the thickness of the light filter in centimetres.
   a. Which equation best models the situation?
   b. What percent of the light will be transmitted by a filter that is 3.2 cm thick?
   c. How thick is the filter if only 25% of light comes through?

2. There are approximately 500 wolves in Algonquin Provincial Park. Under ideal conditions, this population would double every 35 years
   a. Which equation models this population growth?
   b. How many wolves were in the park 10 years ago? (time will be negative)
   c. How long till the population of wolves would triple?

3. You have been given $1000 Canada Savings Bonds that will earn 1.5% quarterly interest, compounded quarterly
   a. Write down the equation that represents this.
   b. What is the value of the bond after 5 years?
   c. How long till the value would reach $1050?

4. The number of insects in a colony doubles every 5 months. There are currently about 3500 insects in the colony.
   a. Write an equation that models this population growth.
   b. How many insets will there be after 16 month?
   c. How many insects will there be after one year?
   d. How long till the population reaches 3000?

5. The population of marmots on Mt. Washington is estimated at 5000. If the growth of marmots is 5% every 2 years, what will be the population in 15 years?

6. A cottage is originally bought for $150 000. If the value of this cottage appreciates at the rate of 7% per year, what will the cottage be worth in 10 years?

7. A colony of 10 000 bees doubles in number every 3 months. How many bees will be in the colony after 6 months?

ANSWERS
1.
   a. L=100(0.9)^(c/2)
   b. 84.5%
   c. 26 cm
2.
   a. W=500(2)^(y/35)
   b. 410 wolves
   c. 55.5 years
3.
   a. V=1000(1.015)^(y/4)
   b. $1018.79
   c. 13 years
4.
   a. I=3500(2)^(m/5)
   b. 32164 insects
   c. 18473 insects
5. P=5000(1.05)^(y/2), 7209 marmots
6. V=150 000(1.07)^y, $295 072.70
7. B=10000(2)^(m/3), 40000 bees