Name: _____ Date: _____

UNIT 5 **LESSON 10**

Do Now: Cassandra bought an antique dresser for $500. If the value of her dresser increases 6% annually, what will be the value of Cassandra's dresser at the end of 3 years to the *nearest dollar*?

AIM: HOW DO WE SOLVE EXPONENTIAL WORD PROBLEMS?-DAY 2

1. The breakdown of a sample of a chemical compound is represented by the function $p(t) = 300(0.6)^t$, where $p(t)$ represents the number of milligrams of the substance and t represents the time, in years. In the function $p(t)$, explain what 0.6 and 300 represent.

2. Milton has his money invested in a stock portfolio. The value, $v(x)$, of his portfolio can be modeled with the function $v(x) = 30,000(0.78)^x$, where x is the number of years since he made his investment. Which statement describes the rate of change of the value of his portfolio?

   1) It decreases 78% per year.
   2) It decreases 22% per year.
   3) It increases 78% per year.
   4) It increases 22% per year.

3. The equation $A = 1300(1.02)^7$ is being used to calculate the amount of money in a savings account. What does 1.02 represent in this equation?

   1) 0.02% decay
   2) 0.02% growth
   3) 2% decay
   4) 2% growth

4. The New York Volleyball Association invited 64 teams to compete in a tournament. After each round, half of the teams were eliminated. Which equation represents the number of teams, *t*, that remained in the tournament after *r* rounds?

1) $t = 64(r)^{0.5}$

2) $t = 64(-0.5)^r$

3) $t = 64(1.5)^r$

4) $t = 64(0.5)^r$

5. A car depreciates (loses value) at a rate of 4.5% annually. Greg purchased a car for $12,500. Which equation can be used to determine the value of the car, *V*, after 5 years?

1) $V = 12,500(0.55)^5$

2) $V = 12,500(0.955)^5$

3) $V = 12,500(1.045)^5$

4) $V = 12,500(1.45)^5$

6. A used car was purchased in July 1999 for $11,900. If the car depreciates 13% of its value each year, what is the value of the car, to the *nearest hundred dollars*, in July 2002?

7. The value, *y*, of a $15,000 investment over *x* years is represented by the equation $y = 15000(1.2)^{\frac{x}{3}}$. What is the profit (interest) on a 6-year investment?

8. A bank is advertising that new customers can open a savings account with a $3\frac{3}{4}\%$ interest rate compounded annually.

   Robert invests $5,000 in an account at this rate. If he makes no additional deposits or withdrawals on his account, find the amount of money he will have, to the *nearest cent*, after three years.