

Name: _____

Date: _____

Homework :- Models of Exponential Functions

For #s 1 – 4, use the information given in the following table.

Earthquake Location	Year	Richter Scale Measure
New Madrid, Missouri	1812	7.9
San Fransisco, California	1906	7.7
Valdivia, Chile	1960	9.5
Prince William Sound, Alaska	1964	9.2
Kobe, Japan	1995	6.9
Charlottesville, Virginia	2001	3.2

1. How many times more energy was released by the earthquake in New Madrid than the earthquake in Charlottesville?
2. Compare the energy of the earthquake in Chile with the one in Japan.
3. How many times more energy was released by the earthquake in Alaska than the one in California?
4. Compare the energy of the earthquake in California with the earthquake in Chile.
5. Hg-197 is used in kidney scans. It has a half-life of 64.128 hours. Write the exponential decay function for a 12-mg sample. Find the amount remaining after 72 hours.
6. Sr-85 is used in bone scans. It has a half-life of 64.9 days. Write the exponential decay function for a 8-mg sample. Find the amount remaining after 100 days.

7. Suppose you invest \$5000 in an account earning 6.9%, compounded monthly. How much will be in the account after 30 years?
8. If you put \$100 into an account earning 2.5% compounded continuously, how much will be in the account after 10 years?
9. If you have \$1500 to put into an account earning 5.6%, and you plan to leave it there for 15 years, would it be better to have the interest compounded continuously, or compounded quarterly? Why?
10. You want to save \$500 for a new iPad in 2 years. How much should be put into an account that earns 5.2% annual interest, compounded continuously?
11. How long would it take to double your principal at an annual interest rate of 8% compounded continuously?

Exponential Review

1. $\sqrt{32} - \sqrt{108} + \sqrt{75}$

Simplify the radical expression. Use absolute values where needed.

2. $\sqrt[4]{81x^{28}y^8}$

Multiply and simplify if possible.

3. $\sqrt{20} \cdot \sqrt{2}$

4. Simplify $\sqrt[3]{162a^{13}b^9}$. Assume that all variables are positive.

Divide and simplify. Assume that all variables are positive.

5. $\frac{\sqrt[3]{750x^{23}}}{\sqrt[3]{2x}}$

6. A garden has width $\sqrt{14}$ and length $8\sqrt{14}$. What is the **perimeter** of the garden in simplest radical form?

Simplify.

7. $8^{\frac{4}{3}}$

Multiply.

8. $\left(\sqrt{2} + \sqrt{6}\right)\left(\sqrt{2} - \sqrt{6}\right)$

Solve the equation.

9. $\sqrt{x + 10} - 3 = 4$

10. $(x + 10)^{\frac{2}{3}} = 4$