The doubling time of an investment or a loan is the number of years it takes for the value to double. Doubling times are often estimated by using the rule of 72;

\[
(Doubling\ Time) \approx \frac{72}{r \times 100}
\]

where \( r \) is the rate.

1. Suppose you invest money at 6% interest compounded annually. Using the above formula, how long before it doubles?

2. Using the method of logarithms, solve exactly.

3. Suppose the rate is 6% compounded \textit{continuously}. How long before your investment doubles?

4. Using a calculator, find \( \frac{\log 2}{\log(1.08)} \) and \( \frac{\ln 2}{\ln(1.08)} \)

5. Solve \( 2 = e^{at} \) for \( t \).