1. In one hour, a substance decay by 20% and so \((1/2)n = 0.80\). The number of half-lives that have elapsed is...
   
   \[ \begin{align*} 
   A & \quad n = - \frac{\log(0.80)}{\log(2)} = \log(8)/\log(2) \\
   B & \quad n = - \frac{\log(0.80)}{\log(2)} = (\log(8)-1)/\log(2) \\
   C & \quad n = - \frac{\log(0.80)}{\log(2)} = (-\log(8)+1)/\log(2) \\
   D & \quad \text{None of the above} 
   \end{align*} \]

2. In one hour, a substance decay by 20%. This means...
   
   \[ \begin{align*} 
   A & \quad (1/2)n = 20. \\
   B & \quad (1/2)n = 0.20 \\
   C & \quad (1/2)n = 80. \\
   D & \quad (1/2)n = 0.80 
   \end{align*} \]

3. In one hour, a substance decays by 20% and so \((1/2)n = 0.80\). We can solve for \(n\) using
   
   \[ \begin{align*} 
   A & \quad n = 0.80/\log(1/2) = -0.80/\log(2) \\
   B & \quad n = 0.80/\log(2) \\
   C & \quad n = - \log(0.80)/\log(2) \\
   D & \quad n = \log(0.80)/\log(2) = \log(0.80/2) 
   \end{align*} \]

4. In one hour, a substance decay by 20% and so \((1/2)n = 0.80\). The number of half-lives that have elapsed is...
   
   \[ \begin{align*} 
   A & \quad 0.20 \\
   B & \quad 0.25 \\
   C & \quad 0.50 \\
   D & \quad 0.80 \\
   E & \quad \text{None of these} 
   \end{align*} \]

5. A substance decays with half-life 6.0 min. The fraction of the substance present after 20 minutes is \(x\). Which expression is correct?
   
   \[ \begin{align*} 
   A & \quad x = 20./6.0 \\
   B & \quad x = 1/6.0 \\
   C & \quad (1/2)^{10/3} = x \\
   D & \quad (1/2)^{-10/3} = x 
   \end{align*} \]

6. A substance decays with half-life 6.0 min. The fraction of the substance present after 20 minutes, \(x = (1/2)^{-10/3}\), is
   
   \[ \begin{align*} 
   A & \quad 0.20 \\
   B & \quad 0.25 \\
   C & \quad 0.80 \\
   D & \quad \text{None of these} 
   \end{align*} \]
At a particular moment of time, a sample of a radioactive element contains 1,000,000 atoms. After 10 hours, 125,000 atoms of the element remain. What is the half-life of the radioactive decay?

A  10 hours  
B  5 hours  
C  2.5 hours  
D  None of the above.