Worksheet Section 8.4 v01
F2009 Math 098
Dressler

Name___________________________________

Solve.

1) What is the intensity in watt/m^2 of a noise measured at 78 decibels? $D = 10 \log_{10}(S/S_o)$, where S_o is 10^{-12} watt/m^2. (Round to 3 significant digits.)

2) What is the intensity in watt/m^2 of a noise measured at 88 decibels? $D = 10 \log_{10}(S/S_o)$, where S_o is 10^{-12} watt/m^2. (Round to 3 significant digits.)

3) What is the intensity in watt/m^2 of a noise measured at 72 decibels? $D = 10 \log_{10}(S/S_o)$, where S_o is 10^{-12} watt/m^2. (Round to 3 significant digits.)

4) What is the intensity in watt/m^2 of a noise measured at 94 decibels? $D = 10 \log_{10}(S/S_o)$, where S_o is 10^{-12} watt/m^2. (Round to 3 significant digits.)

5) The number of visitors to a tourist attraction (for the first few years after its opening) can be approximated by $V(x) = 50 + 10 \log_2 x$, where x represents the number of months after the opening of the attraction. Find the number of visitors 8 months after the opening of the attraction.

6) The number of visitors to a tourist attraction (for the first few years after its opening) can be approximated by $V(x) = 50 + 10 \log_2 x$, where x represents the number of months after the opening of the attraction. Find the number of visitors 32 months after the opening of the attraction.

7) The number of visitors to a tourist attraction (for the first few years after its opening) can be approximated by $V(x) = 50 + 10 \log_2 x$, where x represents the number of months after the opening of the attraction. Find the number of visitors 4 months after the opening of the attraction.

8) The loudness of a sound can be approximated by the formula $d = 10 \log_{10}\left(\frac{I}{I_o}\right)$, where d is the number of decibels. The higher the value of d, the louder the sound. Find the number of decibels when $I = 1000$ and $I_o = 1$.

9) The loudness of a sound can be approximated by the formula $d = 10 \log_{10}\left(\frac{I}{I_o}\right)$, where d is the number of decibels. The higher the value of d, the louder the sound. Find the number of decibels when $I = 100$ and $I_o = 1$.

10) The loudness of a sound can be approximated by the formula $d = 10 \log_{10}\left(\frac{I}{I_o}\right)$, where d is the number of decibels. The higher the value of d, the louder the sound. Find the number of decibels when $I = 10{,}000$ and $I_o = 1$.

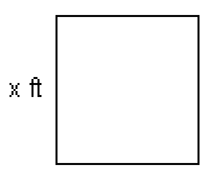
11) The hydrogen potential, pH, of a substance is defined by pH = $-\log_{10} [H^+]$, where $[H^+]$ is measured in moles per liter. Find the hydrogen ion concentration of a solution whose pH is 7.7.

12) The hydrogen potential, pH, of a substance is defined by pH = $-\log_{10} [H^+]$, where $[H^+]$ is measured in moles per liter. Find the hydrogen ion concentration of a solution whose pH is 8.3.

13) The hydrogen potential, pH, of a substance is defined by pH = $-\log_{10} [H^+]$, where $[H^+]$ is measured in moles per liter. Find the hydrogen ion concentration of a solution whose pH is 6.1.

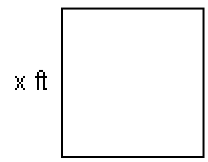
14) The hydrogen potential, pH, of a substance is defined by pH = $-\log_{10} [H^+]$, where $[H^+]$ is measured in moles per liter. Find the hydrogen ion concentration of a solution whose pH is 5.6.

15) The length of the side of the fence surrounding the square garden shown in the following diagram can be found by solving the equation $\log_{25} x = \frac{1}{2}$.



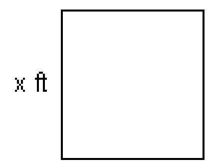
What does the base in the equation represent?

16) The length of the side of the fence surrounding the square garden shown in the following diagram can be found by solving the equation $\log_{49} x = \frac{1}{2}$.



What does the base in the equation represent?

17) The length of the side of the fence surrounding the square garden shown in the following diagram can be found by solving the equation $\log_{64} x = \frac{1}{2}$.



What does the base in the equation represent?

Answer Key
Testname: WS8.4V01

1) 6.31×10^{-5} watt/m^2
2) 6.31×10^{-4} watt/m^2
3) 1.58×10^{-5} watt/m^2
4) 2.51×10^{-3} watt/m^2
5) 80 visitors
6) 100 visitors
7) 70 visitors
8) 30 decibels
9) 20 decibels
10) 40 decibels
11) 2.00×10^{-8} moles per liter
12) 5.01×10^{-9} moles per liter
13) 7.94×10^{-7} moles per liter
14) 2.51×10^{-6} moles per liter
15) The area enclosed by the fence
16) The area enclosed by the fence
17) The area enclosed by the fence