Name

Logarithmic Scales - Magnitude to Measured Value (Number)

1

What is the hydrogen ion concentration of a solution with a pH of 8 on the pH scale?

$$pH = -\log[H^+]$$
$$pH = 8$$

A $[H^+] = 1 \times 10^{-8} mL/mol$

B $[H^+] = 3.16 \times 10^{-7} mL/mol$

2

What is the hydrogen ion concentration of a solution with a pH of 6 on the pH scale?

$$pH = -\log[H^+]$$
$$pH = 6$$

A $[H^+] = 3.16 \times 10^{-5} mL/mol$

B $[H^+] = 1 \times 10^{-6} mL/mol$

3

What is the hydrogen ion concentration of a solution with a pH of 9 on the pH scale?

$$pH = -\log[H^+]$$
$$pH = 9$$

A $[H^+] = 1 \times 10^{-9} mL/mol$

B $[H^+] = 1 \times 10^{-8} mL/mol$

4

What is the hydrogen ion concentration of a solution with a pH of 1 on the pH scale?

$$pH = -\log[H^+]$$
$$pH = 1$$

A $[H^+] = 0.1 mL/mol$

B $[H^+] = 0.001 mL/mol$

5

$$dB = 10\log\left(\frac{I}{I_0}\right)$$
$$I_0 = 10^{-12} W/m^2$$
$$\beta = 20 dB$$

What is the sound intensity of a sound with a sound intensity of 20 dB on the decibel scale?

A $I = 1 \times 10^{-8} W/m^2$

B $I = 1 \times 10^{-10} W/m^2$

6

$$dB = 10\log\left(\frac{I}{I_0}\right)$$
$$I_0 = 10^{-12} W/m^2$$
$$\beta = 60 dB$$

What is the sound intensity of a sound with a sound intensity of 60 dB on the decibel scale?

A $I = 1 \times 10^{-6} W/m^2$

B $I = 1 \times 10^{-5} W/m^2$

7

$$M = \log\left(\frac{I}{I_0}\right)$$
$$I_0 = 1\mu m$$
$$M = 3$$

What is the wave height of an earthquake with a magnitude of 3 on the Richter scale?

A $I = 10\mu m$

B $I = 1,000\mu m$

8

$$dB = 10\log\left(\frac{I}{I_0}\right)$$
$$I_0 = 10^{-12} W/m^2$$
$$\beta = 80 dB$$

What is the sound intensity of a sound with a sound intensity of 80 dB on the decibel scale?

A $I = 0.0001 W/m^2$

B $I = 0.01 W/m^2$