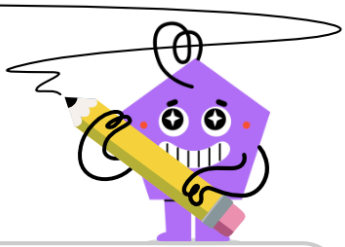
Name



Logarithmic Scales - Measured Value (Power) to Magnitude

1

$$M = \log\left(\frac{I}{I_0}\right)$$

What is the magnitude on the Richter scale when the wave height is 10^2.5 micrometers?

$$I_0 = 1\mu m$$
$$I = 10^{2.5}\mu m$$

A	B
$M = 1.5$	$M = 2.5$

2

$$M = \log\left(\frac{I}{I_0}\right)$$

What is the magnitude on the Richter scale when the wave height is 10^8.1 micrometers?

$$I_0 = 1\mu m$$
$$I = 10^{8.1}\mu m$$

A	B
$M = 7.6$	$M = 8.1$

3

$$M = \log\left(\frac{I}{I_0}\right)$$

What is the magnitude on the Richter scale when the wave height is 10^4.6 micrometers?

$$I_0 = 1\mu m$$
$$I = 10^{4.6}\mu m$$

A	B
$M = 4.6$	$M = 4.1$

4

$$M = \log\left(\frac{I}{I_0}\right)$$

What is the magnitude on the Richter scale when the wave height is 10^6.2 micrometers?

$$I_0 = 1\mu m$$
$$I = 10^{6.2}\mu m$$

A	B
$M = 6.2$	$M = 4.2$

5

$$M = \log\left(\frac{I}{I_0}\right)$$

What is the magnitude on the Richter scale when the wave height is 10^6.8 micrometers?

$$I_0 = 1\mu m$$
$$I = 10^{6.8}\mu m$$

A	B
$M = 7.8$	$M = 6.8$

6

What is the pH on the pH scale when the hydrogen ion concentration is 10^-2,147,483,647 mL/mol?

$$pH = -\log[H^+]$$
$$[H^+] = 10^{-2,147,483,647}\,mL/mol$$

A	B
$pH = 12.9$	$pH = 13.4$

7

$$pH = -\log[H^+]$$
$$[H^+] = 10^{-501}\,mL/mol$$

What is the pH on the pH scale when the hydrogen ion concentration is 10^-501 mL/mol?

A	B
$pH = 2.7$	$pH = 4.7$

8

$$dB = 10\log\left(\frac{I}{I_0}\right)$$

What is the dB magnitude on the decibel scale when the sound energy is 10^47 W/m^2?

$$I_0 = 10^{-12}\,W/m^2$$
$$I = 10^{47}\,W/m^2$$

A	B
$\beta = 61dB$	$\beta = 59dB$