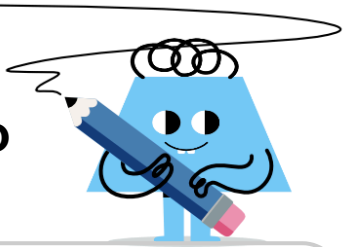
Name

Logarithmic Scales - Magnitude Pair to Measured Value Ratio



1

$$pH = -\log[H^+]$$
$$pH_2 = 1$$
$$pH_1 = 12$$

If 2 solutions have pHs of 12 and 1 on the pH scale what is the ratio of their Hydrogen ion concentration measurements?

A	B
$\frac{[H^+]_2}{[H^+]_1} = 1 \times 10^{11}$	$\frac{[H^+]_2}{[H^+]_1} = 3.16 \times 10^{12}$

2

$$pH = -\log[H^+]$$
$$pH_2 = 2$$
$$pH_1 = 6$$

If 2 solutions have pHs of 6 and 2 on the pH scale what is the ratio of their Hydrogen ion concentration measurements?

A	B
$\frac{[H^+]_2}{[H^+]_1} = 100$	$\frac{[H^+]_2}{[H^+]_1} = 10,000$

3

$$dB = 10\log\left(\frac{I}{I_0}\right)$$
$$\beta_2 = 130dB$$
$$\beta_1 = 120dB$$

If 2 sounds have dB magnitudes of 120 and 130 on the decibel scale what is the ratio of their sound energy measurements?

A	B
$\frac{I_2}{I_1} = 2.51$	$\frac{I_2}{I_1} = 10$

4

$$pH = -\log[H^+]$$
$$pH_2 = 2$$
$$pH_1 = 3$$

If 2 solutions have pHs of 3 and 2 on the pH scale what is the ratio of their Hydrogen ion concentration measurements?

A	B
$\frac{[H^+]_2}{[H^+]_1} = 10$	$\frac{[H^+]_2}{[H^+]_1} = 0.316$

5

$$M = \log\left(\frac{I}{I_0}\right)$$
$$M_2 = 7$$
$$M_1 = 2$$

If 2 earthquakes have magnitudes of 2 and 7 on the Richter scale what is the ratio of their wave size measurements?

A	B
$\frac{I_2}{I_1} = 100,000$	$\frac{I_2}{I_1} = 316,228$

6

$$dB = 10\log\left(\frac{I}{I_0}\right)$$
$$\beta_2 = 80dB$$
$$\beta_1 = 40dB$$

If 2 sounds have dB magnitudes of 40 and 80 on the decibel scale what is the ratio of their sound energy measurements?

A	B
$\frac{I_2}{I_1} = 6,310$	$\frac{I_2}{I_1} = 10,000$

7

$$M = \log\left(\frac{I}{I_0}\right)$$
$$M_2 = 6$$
$$M_1 = 1$$

If 2 earthquakes have magnitudes of 1 and 6 on the Richter scale what is the ratio of their wave size measurements?

A	B
$\frac{I_2}{I_1} = 100,000$	$\frac{I_2}{I_1} = 316,228$

8

$$M = \log\left(\frac{I}{I_0}\right)$$
$$M_2 = 8$$
$$M_1 = 5$$

If 2 earthquakes have magnitudes of 5 and 8 on the Richter scale what is the ratio of their wave size measurements?

A	B
$\frac{I_2}{I_1} = 1,000$	$\frac{I_2}{I_1} = 100$