EARTHQUAKE MAGNITUDE:

On the Richter scale, the magnitude R of an earthquake of intensity I is given by the formula:

$$R = \log_{10}\left(\frac{I}{I_0}\right)$$

where I_0 is a reference intensity used for comparisons.
Sometimes, I_0 can represent the intensity of an earthquake with a magnitude of 0.

The formula can also be re-arranged to find I, the intensity of an earthquake:

$$R = \log_{10}\left(\frac{I}{I_0}\right)$$

$$\frac{I}{I_0} = 10^R$$

$$I = I_0 \times 10^R$$

12.1 WORKED EXAMPLE

Calculate the intensity of an earthquake I when $I_0 = 400$ and $R = 2$, to $3dp$.

12.2 WORKED EXAMPLE

Find R for an earthquake that is 4.3 million times more intense than the reference intensity.