

Agriculture
pH Quiz

Name

Key

1. Determine the pH of a solution when the concentration of hydrogen ion is $H^+ = 4.0 \times 10^{-4}$.

$$\begin{aligned} pH &= -\log H^+ \\ pH &= -\log 4.0 \times 10^{-4} \\ \boxed{pH} &= \boxed{3.4} \end{aligned}$$

2. Given a pH of 6.7, find the concentration of hydrogen ions for alfalfa.

$$\begin{aligned} pH &= -\log H^+ \\ 6.7 &= -\log H^+ \\ \frac{6.7}{-1} &= \frac{-\log H^+}{-1} \\ -6.7 &= \log H^+ \\ 10^{-6.7} &= 10^{\log H^+} \longrightarrow \boxed{H^+ = 2.0 \times 10^{-7}} \end{aligned}$$

3. Solve $4^x = 25$

$$\begin{aligned} \log_4 25 &= x \\ \frac{\log 25}{\log 4} &= x \\ \boxed{x} &= \boxed{2.32} \end{aligned}$$

4. Solve $\log_{10} 4x = 3.2$

$$\frac{10^{3.2}}{4} = \frac{4x}{4}$$

$$\boxed{x} = \boxed{396.22}$$

$$\begin{aligned} \text{OR } 10^{\log_{10} 4x} &= 10^{3.2} \\ 4x &= 10^{3.2} \end{aligned}$$

5. Solve $\log_2 x = 1.5$

$$2^{1.5} = x$$

$$\boxed{x} = \boxed{2.83}$$

$$\begin{aligned} \text{OR } 2^{\log_2 x} &= 2^{1.5} \\ x &= 2.83 \end{aligned}$$