

Name _____

Solve the problem.

- 1) The pH of a solution ranges from 0 to 14. An acid has a pH less than 7. Pure water is neutral and has a pH of 7. The pH of a solution is given by $\text{pH} = -\log(\text{H}^+)$ where H^+ represents the concentration of the hydrogen ions in the solution in moles per liter. Find the pH if the hydrogen ion concentration is 1×10^{-6} .

- 2) The pH of a solution ranges from 0 to 14. An acid has a pH less than 7. Pure water is neutral and has a pH of 7. The pH of a solution is given by $\text{pH} = -\log(\text{H}^+)$ where H^+ represents the concentration of the hydrogen ions in the solution in moles per liter. Find the pH if the hydrogen ion concentration is 1×10^{-2} .

- 3) The pH of a solution ranges from 0 to 14. An acid has a pH less than 7. Pure water is neutral and has a pH of 7. The pH of a solution is given by $\text{pH} = -\log(\text{H}^+)$ where H^+ represents the concentration of the hydrogen ions in the solution in moles per liter. Find the pH if the hydrogen ion concentration is 7.8×10^{-4} .

- 4) The pH of a solution ranges from 0 to 14. An acid has a pH less than 7. Pure water is neutral and has a pH of 7. The pH of a solution is given by $\text{pH} = -\log(\text{H}^+)$ where H^+ represents the concentration of the hydrogen ions in the solution in moles per liter. Find the pH if the hydrogen ion concentration is 2.7×10^{-3} .

- 5) The Richter Scale measures the magnitude M of an earthquake. An earthquake whose seismographic reading measures x millimeters 100 kilometers from the epicenter has magnitude M given by $M(x) = \log\left(\frac{x}{10^{-3}}\right)$.
Give the magnitude of an earthquake that resulted in a seismographic reading of 68,708 millimeters 100 kilometers from its epicenter.

- 6) The Richter Scale measures the magnitude M of an earthquake. An earthquake whose seismographic reading measures x millimeters 100 kilometers from the epicenter has magnitude M given by $M(x) = \log\left(\frac{x}{10^{-3}}\right)$.
Give the magnitude of an earthquake that resulted in a seismographic reading of 69,574 millimeters 100 kilometers from its epicenter.

- 7) The Richter Scale measures the magnitude M of an earthquake. An earthquake whose seismographic reading measures x millimeters 100 kilometers from the epicenter has magnitude M given by $M(x) = \log\left(\frac{x}{10^{-3}}\right)$.
Give the magnitude of an earthquake that resulted in a seismographic reading of 92,670 millimeters 100 kilometers from its epicenter.

- 8) The Richter Scale measures the magnitude M of an earthquake. An earthquake whose seismographic reading measures x millimeters 100 kilometers from the epicenter has

$$\text{magnitude } M \text{ given by } M(x) = \log\left(\frac{x}{10^{-3}}\right).$$

Give the magnitude of an earthquake that resulted in a seismographic reading of 97,226 millimeters 100 kilometers from its epicenter.

- 9) The pH of a solution ranges from 0 to 14. An acid has a pH less than 7. Pure water is neutral and has a pH of 7. The pH of a solution is given by $\text{pH} = -\log(\text{H}^+)$ where H^+ represents the concentration of the hydrogen ions in the solution in moles per liter. Find the pH if the hydrogen ion concentration is 9.4×10^{-4} .

- 10) The Richter Scale measures the magnitude M of an earthquake. An earthquake whose seismographic reading measures x millimeters 100 kilometers from the epicenter has

$$\text{magnitude } M \text{ given by } M(x) = \log\left(\frac{x}{10^{-3}}\right).$$

Give the magnitude of an earthquake that resulted in a seismographic reading of 90,743 millimeters 100 kilometers from its epicenter.

- 11) The pH of a solution ranges from 0 to 14. An acid has a pH less than 7. Pure water is neutral and has a pH of 7. The pH of a solution is given by $\text{pH} = -\log(\text{H}^+)$ where H^+ represents the concentration of the hydrogen ions in the solution in moles per liter. Find the pH if the hydrogen ion concentration is 1×10^{-5} .

- 12) The Richter Scale measures the magnitude M of an earthquake. An earthquake whose seismographic reading measures x millimeters 100 kilometers from the epicenter has

$$\text{magnitude } M \text{ given by } M(x) = \log\left(\frac{x}{10^{-3}}\right).$$

Give the magnitude of an earthquake that resulted in a seismographic reading of 95,697 millimeters 100 kilometers from its epicenter.

- 13) The pH of a solution ranges from 0 to 14. An acid has a pH less than 7. Pure water is neutral and has a pH of 7. The pH of a solution is given by $\text{pH} = -\log(\text{H}^+)$ where H^+ represents the concentration of the hydrogen ions in the solution in moles per liter. Find the pH if the hydrogen ion concentration is 5.6×10^{-1} .

- 14) The Richter Scale measures the magnitude M of an earthquake. An earthquake whose seismographic reading measures x millimeters 100 kilometers from the epicenter has

$$\text{magnitude } M \text{ given by } M(x) = \log\left(\frac{x}{10^{-3}}\right).$$

Give the magnitude of an earthquake that resulted in a seismographic reading of 96,978 millimeters 100 kilometers from its epicenter.

- 15) The pH of a solution ranges from 0 to 14. An acid has a pH less than 7. Pure water is neutral and has a pH of 7. The pH of a solution is given by $\text{pH} = -\log(\text{H}^+)$ where H^+ represents the concentration of the hydrogen ions in the solution in moles per liter. Find the pH if the hydrogen ion concentration is 1×10^{-4} .

Answer Key

Testname:

- 1) 6
- 2) 2
- 3) 3.11
- 4) 2.57
- 5) 7.8
- 6) 7.8
- 7) 8.0
- 8) 8.0
- 9) 3.03
- 10) 8.0
- 11) 5
- 12) 8.0
- 13) 0.25
- 14) 8.0
- 15) 4