

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^{-1} .

- 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^{-6} .

- 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 6×10^{-1} .

- 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 5.9×10^{-4} .

- 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

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

Give the magnitude of an earthquake that resulted in a seismographic reading of 68,792 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

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

Give the magnitude of an earthquake that resulted in a seismographic reading of 68,888 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

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

Give the magnitude of an earthquake that resulted in a seismographic reading of 92,594 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 94,103 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 3.5×10^{-6} .

- 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 99,432 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^{-2} .

- 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 91,639 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 5.3×10^{-8} .

- 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 91,909 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: WORKSHEET 8.5C_SOLVINGLOGARITHMAPPLICATIONS_V02

- 1) 1
- 2) 6
- 3) 0.22
- 4) 3.23
- 5) 7.8
- 6) 7.8
- 7) 8.0
- 8) 8.0
- 9) 5.46
- 10) 8.0
- 11) 2
- 12) 8.0
- 13) 7.28
- 14) 8.0
- 15) 4