



# HYDROGEN IONS AND ACIDITY

## Section Summary

### Objectives

- Define hydrogen ion concentration and relate it to the pH of a solution.
- Explain how the concentration of hydrogen ions in a solution is measured.
- Describe strong and weak acids.

### Key Vocabulary

<ul style="list-style-type: none"><li>concentration</li><li>hydrogen ion</li><li>ion</li><li>logarithm</li><li>logarithmic scale</li><li>acid</li><li>strong acid</li><li>weak acid</li><li>base</li><li>strong base</li><li>weak base</li><li>pH</li><li>hydroxide ion</li><li>conjugate acid</li><li>conjugate base</li></ul>	<ul style="list-style-type: none"><li>concentration</li><li>hydrogen ion</li><li>ion</li><li>logarithm</li><li>logarithmic scale</li><li>acid</li><li>strong acid</li><li>weak acid</li><li>base</li><li>strong base</li><li>weak base</li><li>pH</li><li>hydroxide ion</li><li>conjugate acid</li><li>conjugate base</li></ul>	<ul style="list-style-type: none"><li>concentration</li><li>hydrogen ion</li><li>ion</li><li>logarithm</li><li>logarithmic scale</li><li>acid</li><li>strong acid</li><li>weak acid</li><li>base</li><li>strong base</li><li>weak base</li><li>pH</li><li>hydroxide ion</li><li>conjugate acid</li><li>conjugate base</li></ul>
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### Key Equations

- $\text{pH} = -\log_{10}[\text{H}^+]$
- $\text{pH} = \log_{10}[\text{OH}^-]$

$$\text{pH} = -\log_{10}[\text{H}^+]$$

### Practice Calculations

Use the following equations to calculate the pH of a solution with a given concentration of hydrogen ions.

**Hydrogen ion concentration:**  $\text{H}^+$  concentration (hydrogen ions)  $\times$  concentration of water molecules  $\times$  concentration of ions in water

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**Hydrogen ion concentration:**  $\text{H}^+$  concentration (hydrogen ions)  $\times$  concentration of water molecules  $\times$  concentration of ions in water

### Answers

1. $\text{pH} = 1.0$	2. $\text{pH} = 1.0$
3. $\text{pH} = 1.0$	4. $\text{pH} = 1.0$
5. $\text{pH} = 1.0$	6. $\text{pH} = 1.0$
7. $\text{pH} = 1.0$	8. $\text{pH} = 1.0$
9. $\text{pH} = 1.0$	10. $\text{pH} = 1.0$
11. $\text{pH} = 1.0$	12. $\text{pH} = 1.0$
13. $\text{pH} = 1.0$	14. $\text{pH} = 1.0$
15. $\text{pH} = 1.0$	16. $\text{pH} = 1.0$
17. $\text{pH} = 1.0$	18. $\text{pH} = 1.0$
19. $\text{pH} = 1.0$	20. $\text{pH} = 1.0$
21. $\text{pH} = 1.0$	22. $\text{pH} = 1.0$
23. $\text{pH} = 1.0$	24. $\text{pH} = 1.0$
25. $\text{pH} = 1.0$	26. $\text{pH} = 1.0$
27. $\text{pH} = 1.0$	28. $\text{pH} = 1.0$
29. $\text{pH} = 1.0$	30. $\text{pH} = 1.0$
31. $\text{pH} = 1.0$	32. $\text{pH} = 1.0$
33. $\text{pH} = 1.0$	34. $\text{pH} = 1.0$
35. $\text{pH} = 1.0$	36. $\text{pH} = 1.0$
37. $\text{pH} = 1.0$	38. $\text{pH} = 1.0$
39. $\text{pH} = 1.0$	40. $\text{pH} = 1.0$
41. $\text{pH} = 1.0$	42. $\text{pH} = 1.0$
43. $\text{pH} = 1.0$	44. $\text{pH} = 1.0$
45. $\text{pH} = 1.0$	46. $\text{pH} = 1.0$
47. $\text{pH} = 1.0$	48. $\text{pH} = 1.0$
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51. $\text{pH} = 1.0$	52. $\text{pH} = 1.0$
53. $\text{pH} = 1.0$	54. $\text{pH} = 1.0$
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59. $\text{pH} = 1.0$	60. $\text{pH} = 1.0$
61. $\text{pH} = 1.0$	62. $\text{pH} = 1.0$
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81. $\text{pH} = 1.0$	82. $\text{pH} = 1.0$
83. $\text{pH} = 1.0$	84. $\text{pH} = 1.0$
85. $\text{pH} = 1.0$	86. $\text{pH} = 1.0$
87. $\text{pH} = 1.0$	88. $\text{pH} = 1.0$
89. $\text{pH} = 1.0$	90. $\text{pH} = 1.0$
91. $\text{pH} = 1.0$	92. $\text{pH} = 1.0$
93. $\text{pH} = 1.0$	94. $\text{pH} = 1.0$
95. $\text{pH} = 1.0$	96. $\text{pH} = 1.0$
97. $\text{pH} = 1.0$	98. $\text{pH} = 1.0$
99. $\text{pH} = 1.0$	100. $\text{pH} = 1.0$

## 19 2 Hydrogen Ions And Acidity Work Sheet Answers

**SJ Ball**

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