Answer Key · Lesson 8.6: Logarithmic Scales and Models

School Launch · Algebra II · Unit 8 · Worksheet A · for the parent

Key

1. 100 times

An earthquake of magnitude 10 is how many times as intense (in amplitude) as one of magnitude 8?

2. 10 times

An earthquake of magnitude 9 is how many times as intense (in amplitude) as one of magnitude 8?

3. 10 times

An earthquake of magnitude 4 is how many times as intense (in amplitude) as one of magnitude 3?

4. ≈ 2.15

1. $[H^+] = \dfrac{7}{1000} = 7 \times 10^{-3}$
2. $\text{pH} = -\log(7 \times 10^{-3}) = 3 - 0.8451 \approx 2.15$

Find the pH of a solution with $[H^+] = \frac{7}{1000}$ (nearest hundredth). Use $\text{pH} = -\log[H^+]$.

5. ≈ 7.52

1. $[H^+] = \dfrac{3}{100000000} = 3 \times 10^{-8}$
2. $\text{pH} = -\log(3 \times 10^{-8}) = 8 - 0.4771 \approx 7.52$

Find the pH of a solution with $[H^+] = \frac{3}{100000000}$ (nearest hundredth). Use $\text{pH} = -\log[H^+]$.

6. ≈ 6.52

1. $[H^+] = \dfrac{3}{10000000} = 3 \times 10^{-7}$
2. $\text{pH} = -\log(3 \times 10^{-7}) = 7 - 0.4771 \approx 6.52$

Find the pH of a solution with $[H^+] = \frac{3}{10000000}$ (nearest hundredth). Use $\text{pH} = -\log[H^+]$.

7. ≈ 8.70

1. $[H^+] = \dfrac{1}{500000000} = 1 \times 10^{-9}$
2. $\text{pH} = -\log(1 \times 10^{-9}) = 9 - 0.0000 \approx 8.70$

Find the pH of a solution with $[H^+] = \frac{1}{500000000}$ (nearest hundredth). Use $\text{pH} = -\log[H^+]$.

8. ≈ 7.30

1. $[H^+] = \dfrac{1}{20000000} = 1 \times 10^{-7}$
2. $\text{pH} = -\log(1 \times 10^{-7}) = 7 - 0.0000 \approx 7.30$

Find the pH of a solution with $[H^+] = \frac{1}{20000000}$ (nearest hundredth). Use $\text{pH} = -\log[H^+]$.

9. ≈ 3.40

1. $[H^+] = \dfrac{1}{2500} = 1 \times 10^{-3}$
2. $\text{pH} = -\log(1 \times 10^{-3}) = 3 - 0.0000 \approx 3.40$

Find the pH of a solution with $[H^+] = \frac{1}{2500}$ (nearest hundredth). Use $\text{pH} = -\log[H^+]$.

10. ≈ 5.40

1. $[H^+] = \dfrac{1}{250000} = 1 \times 10^{-5}$
2. $\text{pH} = -\log(1 \times 10^{-5}) = 5 - 0.0000 \approx 5.40$

Find the pH of a solution with $[H^+] = \frac{1}{250000}$ (nearest hundredth). Use $\text{pH} = -\log[H^+]$.