

pH Notes

0 - 6.9 7 7.1 - 14

Calculating strength of pH

For every unit on the pH scale there is a 10x difference between strengths.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

How much weaker is an acid of 4 vs 1?

How much stronger is a base of 13 vs 8?

How much stronger is a base of 9 vs an acid of 5?

Determining strength to neutralize pH

- Each specific unit has its opposite on the pH scale.

- To neutralize must have same amount and strength of the opposite unit.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

1- What would you add to neutralize 30 mL of a pH of 6?

2- What would you add to neutralize 60 mL of a pH of 10?

3- You want to neutralize 50 mL of a pH of 3. You only have pH 8 available. What do you do?

Must remember: The pH of rain water is_____

Identifying unknowns

Buffer solution: _____

Indicators: _____

Indicator + Buffer solutions =

- Sometimes the colour change gives a lot of info, sometimes very little info.

Past exam Questions

- Using pH paper, a student determined that rainwater has a pH of 5 and that seawater has a pH of 8. What can the student conclude from these results?
A) Seawater is 3 times more acidic than rainwater.
B) Seawater is 3 times more alkaline than rainwater.
C) Seawater is 1000 times more acidic than rainwater.
D) Seawater is 1000 times more alkaline than rainwater.
- Following a chemical spill, the contaminated soil reaches a pH value of 10. After a few days, a neutralization process begins and a second test is conducted. Its results show that the pH of the soil has become 10 times more acidic. What is the pH value after the second test?
A) pH= 1 B) pH= 7 C) pH= 9 D) pH= 11
- Joanne carried out experiments to determine the pH value of different substances. The following table shows the results.

| Substances | Lemon juice | Coffee | Seawater | Soap | Liquid bleach |
|------------|-------------|--------|----------|------|---------------|
| pH value | 2 | 5 | 8 | 9 | 12 |

Which of the following statements is true?

- Liquid bleach is 6 times less acidic than lemon juice.
- Lemon juice is 4 times more acidic than seawater.
- Liquid bleach is 7 times less basic than coffee.
- Soap is 10 times more basic than seawater.