

pH Scale and Indicators

KS3 Chemistry · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

A solution has pH 3. Is it acidic, neutral or alkaline?

Step 1 · Recall the scale

Below 7 = acidic; 7 = neutral; above 7 = alkaline.

Step 2 · Apply

3 is below 7.

Answer: Acidic

Check: Universal indicator would turn orange.

2. Now try one with the steps

Put these in order from most acidic to most alkaline: bleach (pH 13), vinegar (pH 3), water (pH 7), stomach acid (pH 1).

Step 1 · Most acidic = lowest pH

Step 2 · Then neutral and alkaline

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. What pH is neutral? [1]

2. What range of numbers does the pH scale usually cover? [1]

3. Is a substance with pH 11 acidic or alkaline? [1]

4. What is an indicator? [1]

5. What colour is universal indicator in a neutral solution? [1]

6. What colour does universal indicator turn at pH 1? [1]

7. What colour does universal indicator turn at pH 13? [1]

8. Which is more acidic: pH 2 or pH 5? [1]

9. What colour does phenolphthalein turn in an alkali? [1]

10. Name a piece of equipment that measures pH more accurately than indicator paper. [1]

11. Acid is added to an alkali drop by drop. Describe how the pH changes. [2]

12. Why is it hard to use universal indicator to test the pH of blackcurrant squash? [2]

13. Rain is naturally about pH 5.6 because carbon dioxide dissolves in it. Is it acidic or alkaline? [1]

14. Each step down the pH scale means the solution is about 10 times more acidic. How many times more acidic is pH 3 than pH 5? [2]

4. Before you hand it in

"pH 1 is weakly acidic because it's a small number."

The LOWER the pH, the MORE acidic. pH 1 is very acidic.

"Universal indicator gives the exact pH."

Use a pH meter for an accurate reading.

Saying litmus turns green in neutral solutions.

Litmus: red in acid, blue in alkali, purple when neutral.

"Neutral means there's nothing in it."

Neutral just means pH 7: neither acidic nor alkaline.