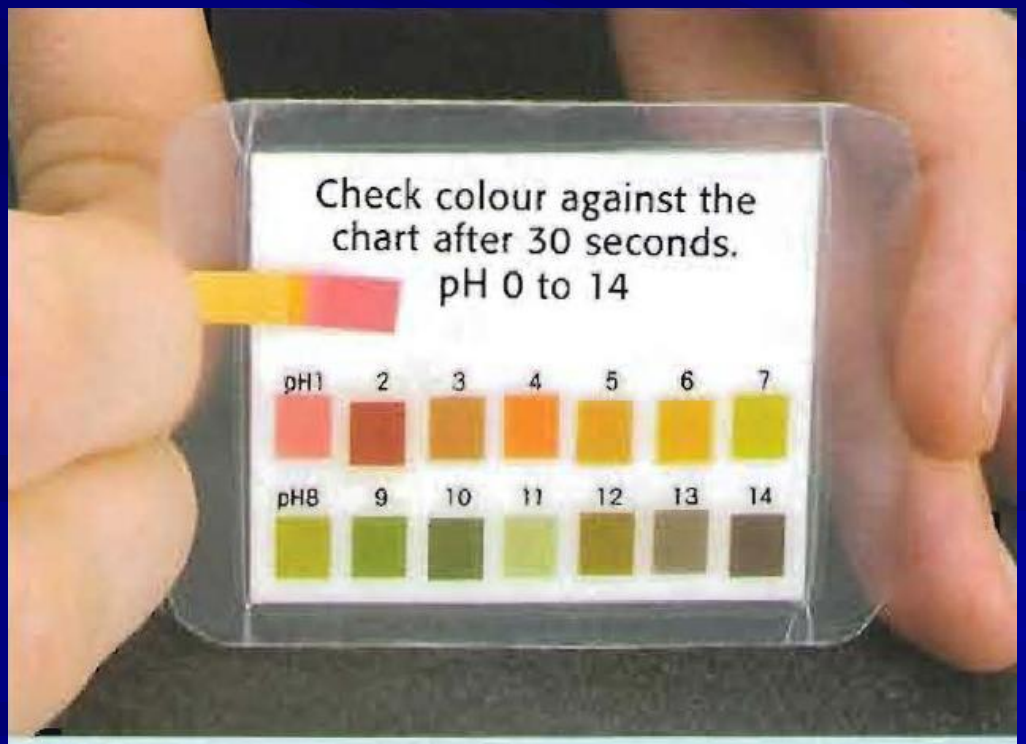
pH

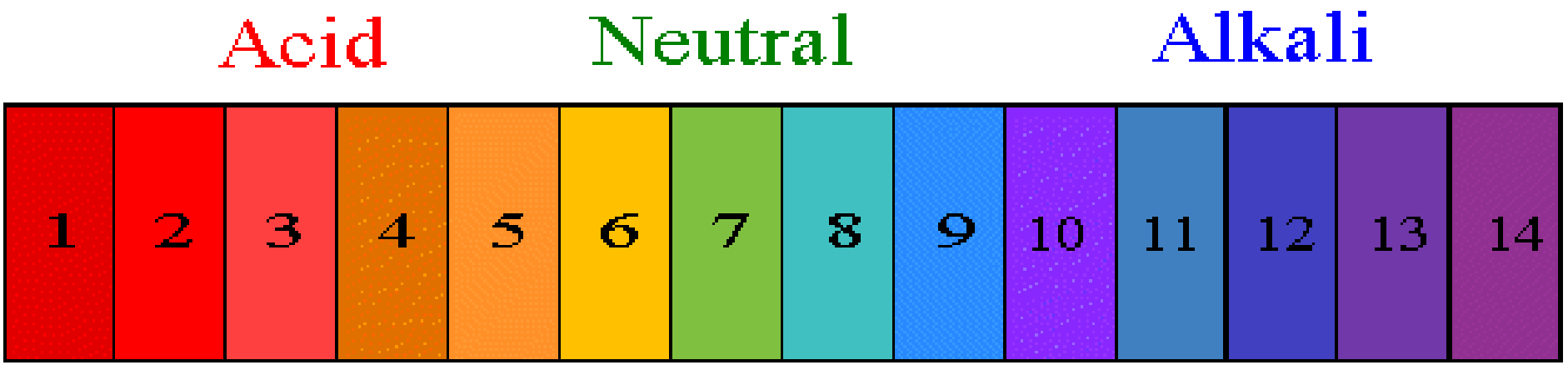
- One property that distinguishes acidic, basic and neutral solutions is their pH.

- One way is to do a test using a *pH indicator*, which is a chemical compound that changes colour according to the pH of the solution.
- Click the picture to play a video.

- *Universal indicator papers* provide a measure of the pH value.
- Each degree of acidity or alkalinity corresponds to a different color.



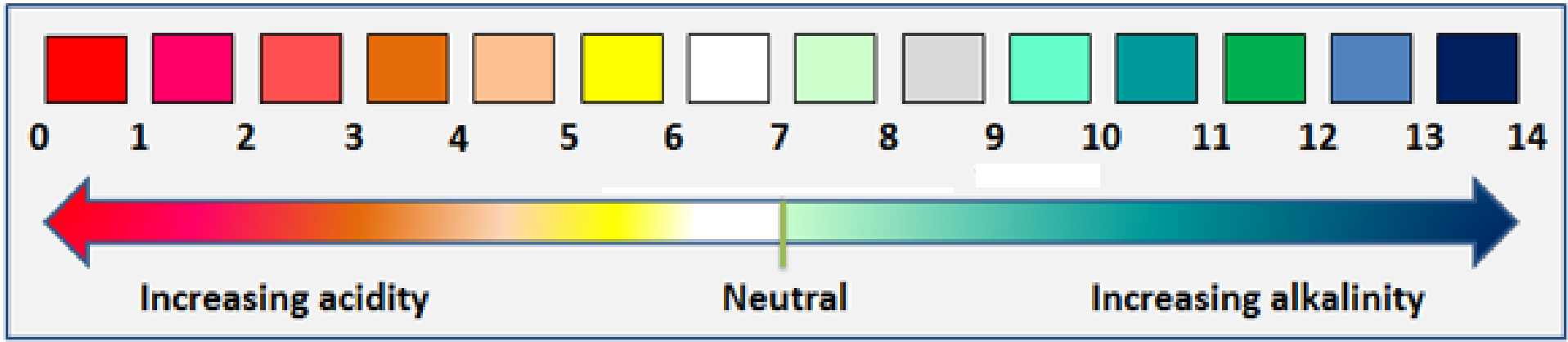
- We can determine the pH of a substance by comparing to a color chart the color of the universal Indicator paper that has been soaked in the substance.



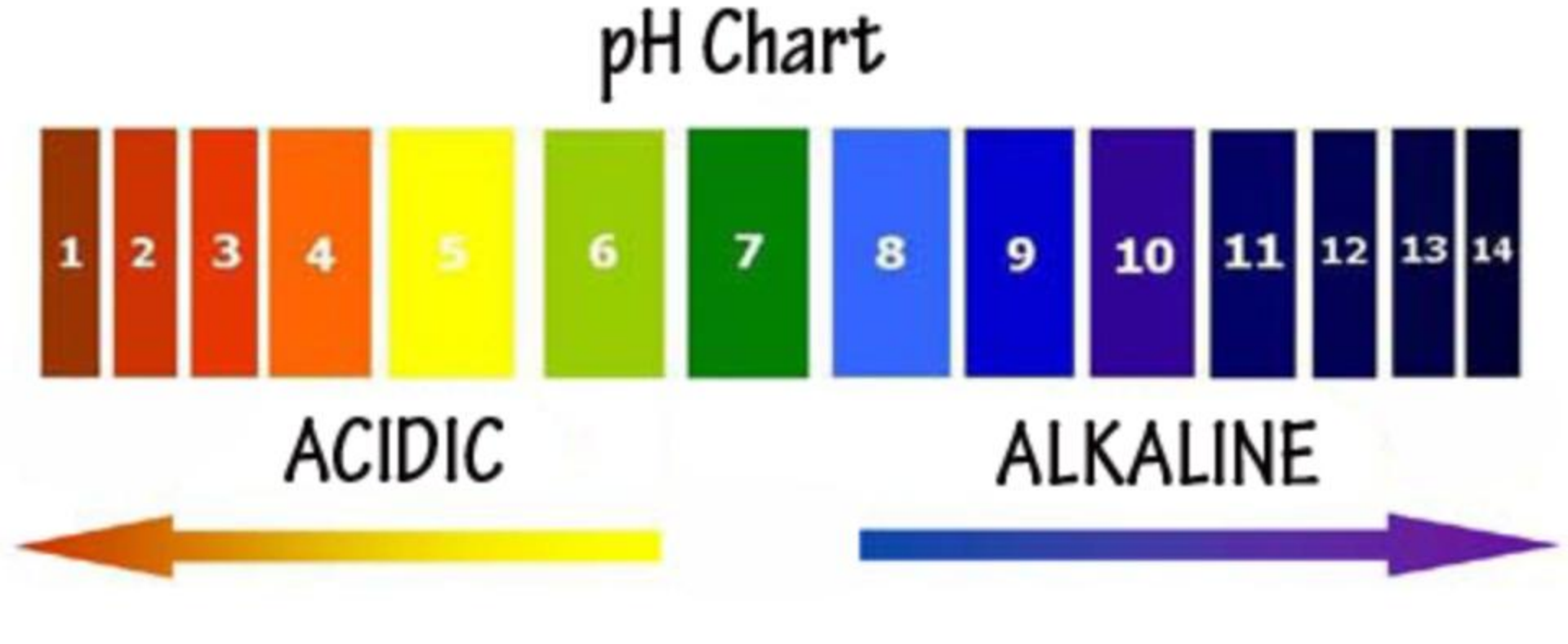
- *The pH meter* is an electronic instrument that directly provides the pH of a substance.
- It uses the capacity of these liquid substances to conduct electrical current.
- The more acidic or basic the substance, the better it conducts electrical current.

pH Scale

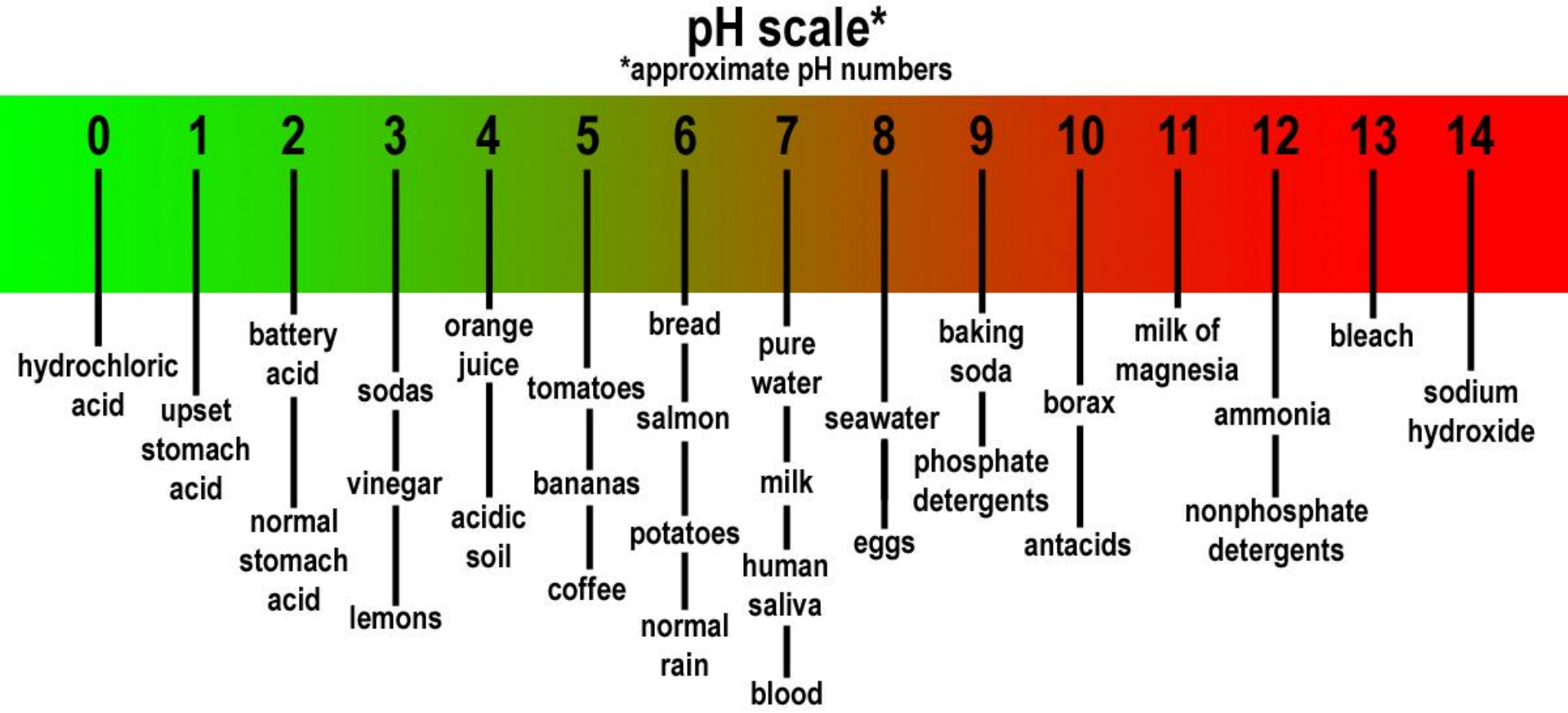
- pH scale indicates how acidic or basic a solution is.
- The pH scale ranges from 0 to 14.
- Acidic substances have a pH below 7.



- Basic substances have a pH above 7.
- Substances with a pH of 7 are neither acidic nor basic.
- They are neutral.

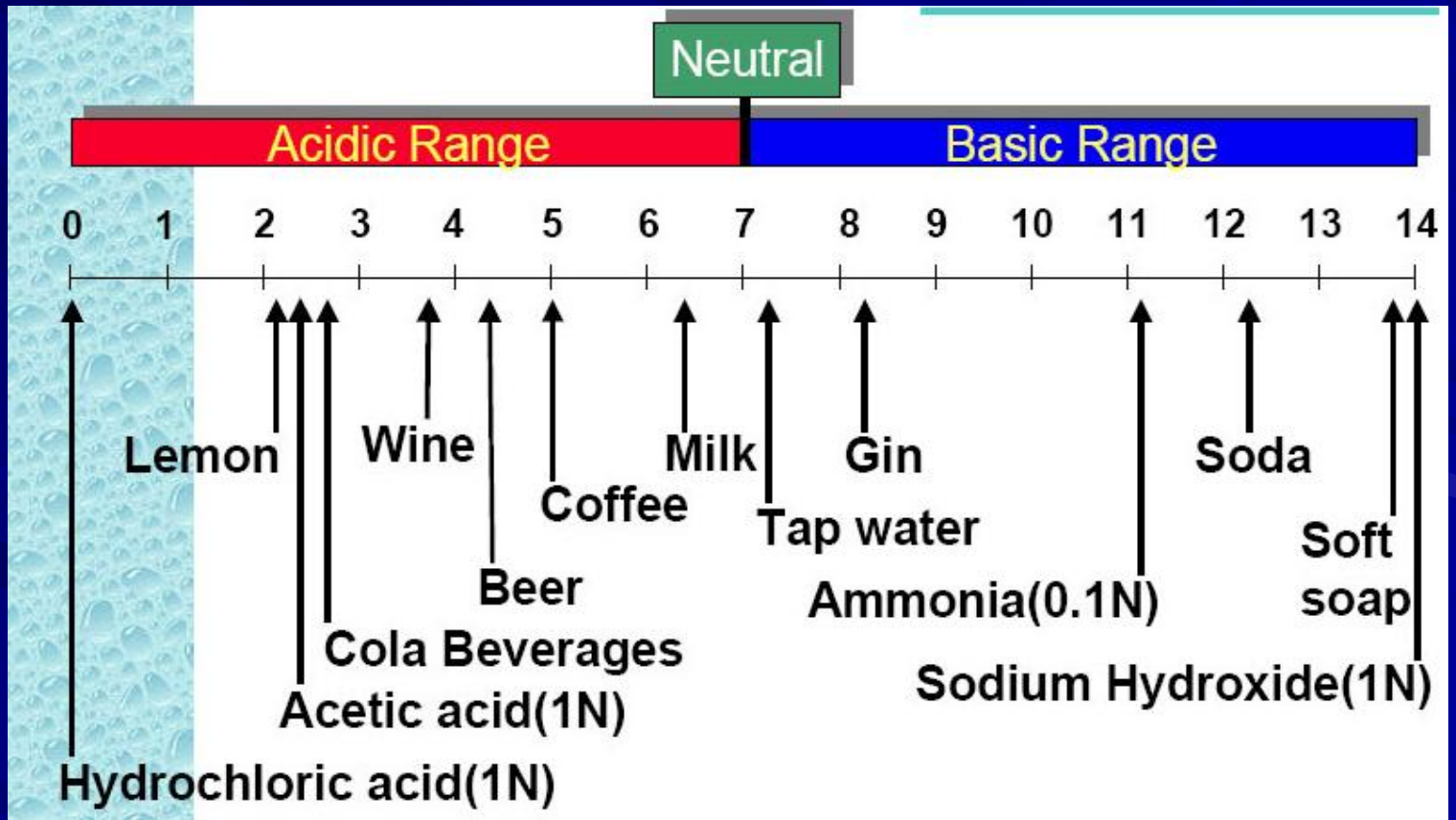


- Pure water has a pH of 7.
- As you move along the scale to the left, the substances become increasingly acidic.

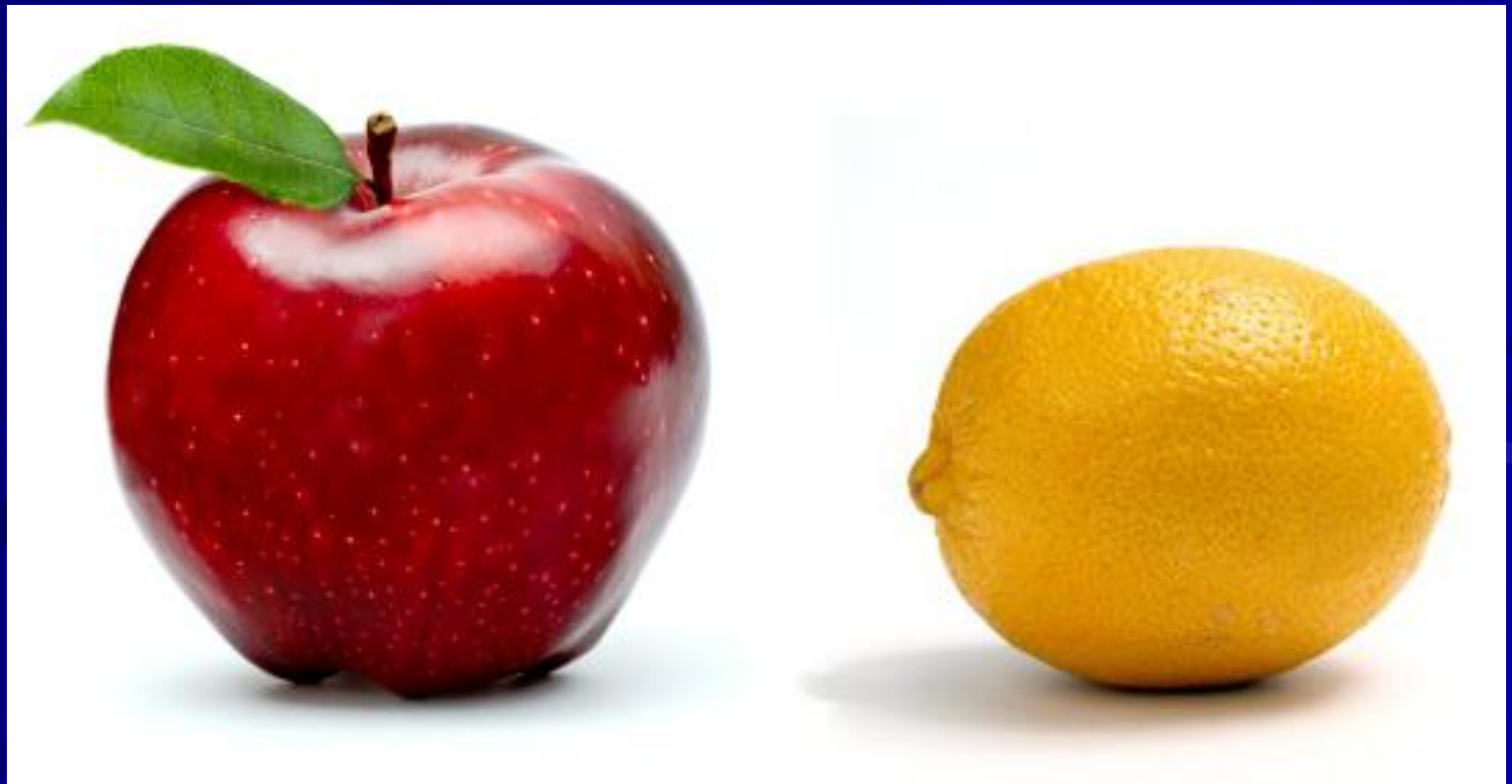


- The most acidic substance on the scale has a pH of about 0.
- As you move to the right of pure water, the substances become increasingly basic.

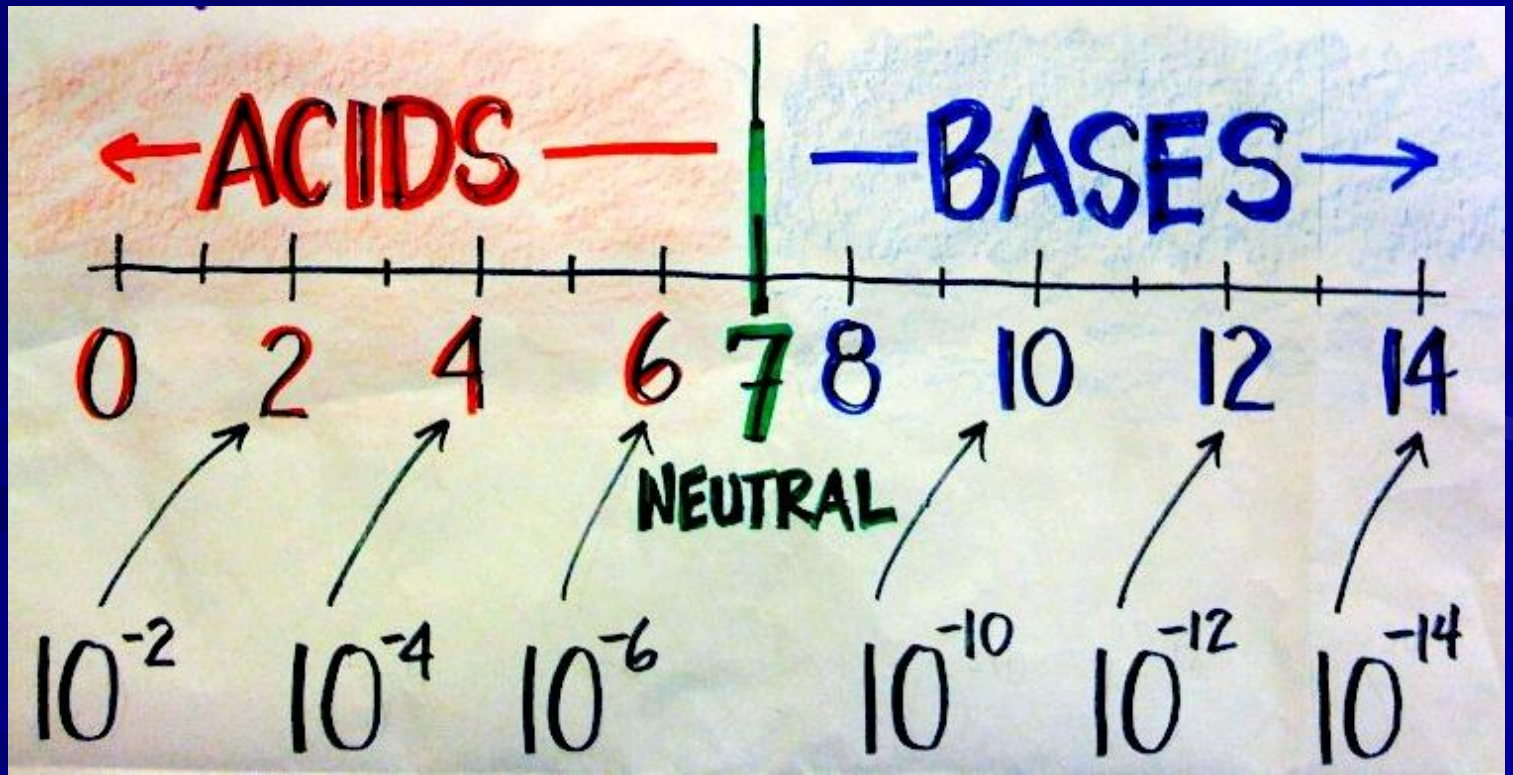
- The most basic substances have a pH of about 14.
- An apple has a pH of 3, and a lemon has a pH of 2.



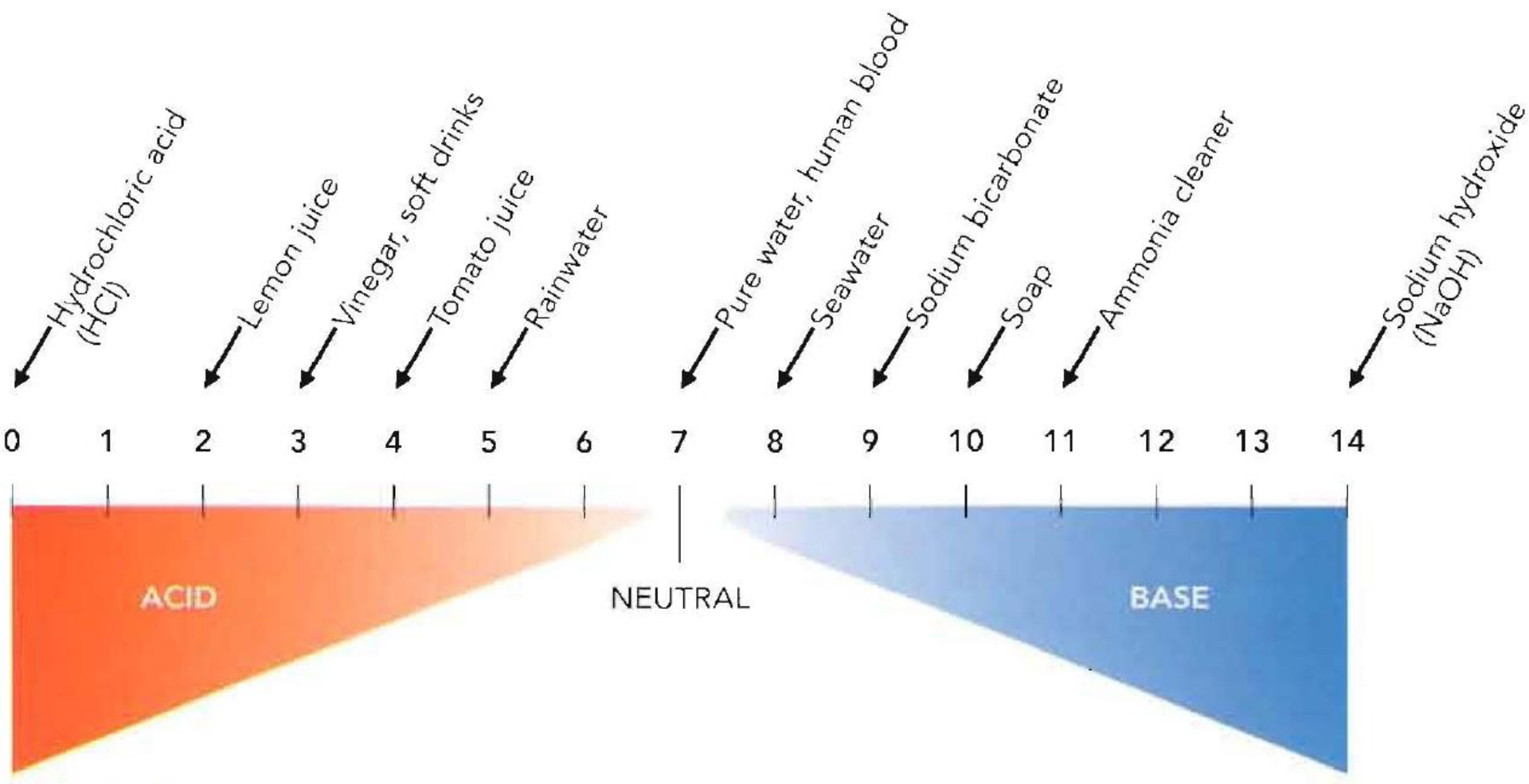
- Does this mean that a lemon is only slightly more acidic than an apple?
- Actually, every increment on the pH scale represents a factor of 10.

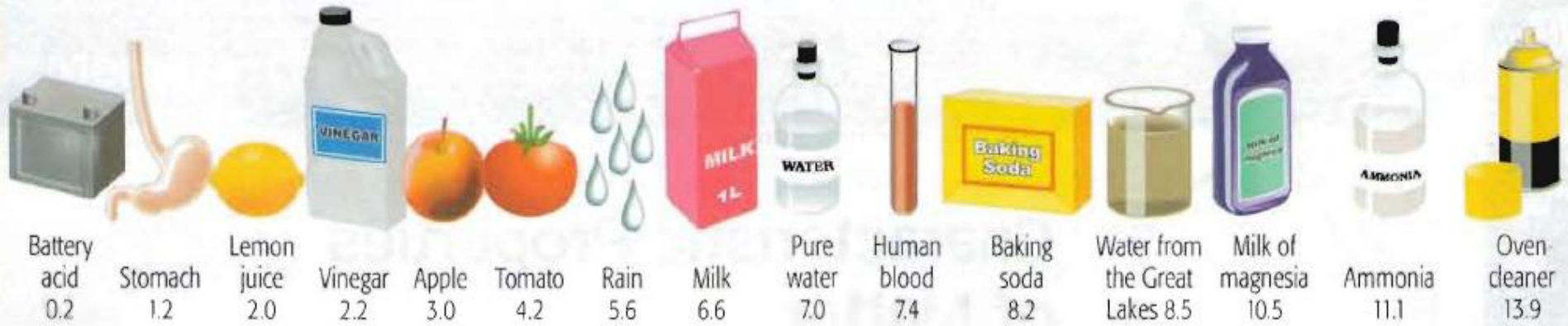


- In other words, a lemon is 10 times more acidic than an apple.
- Similarly, you must divide by 10 every time the pH increases by one.

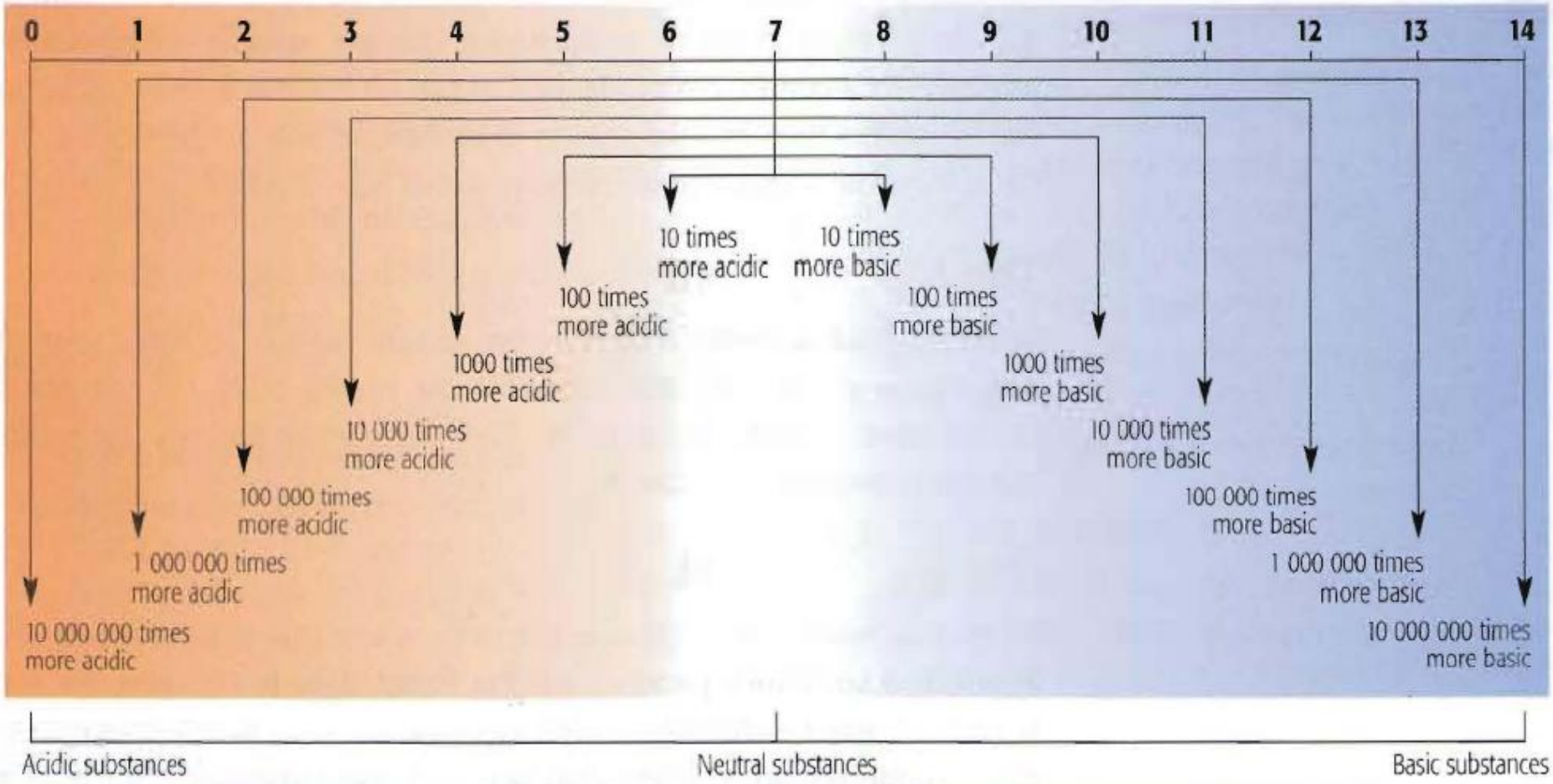


- Figure compares the pH of different substances.





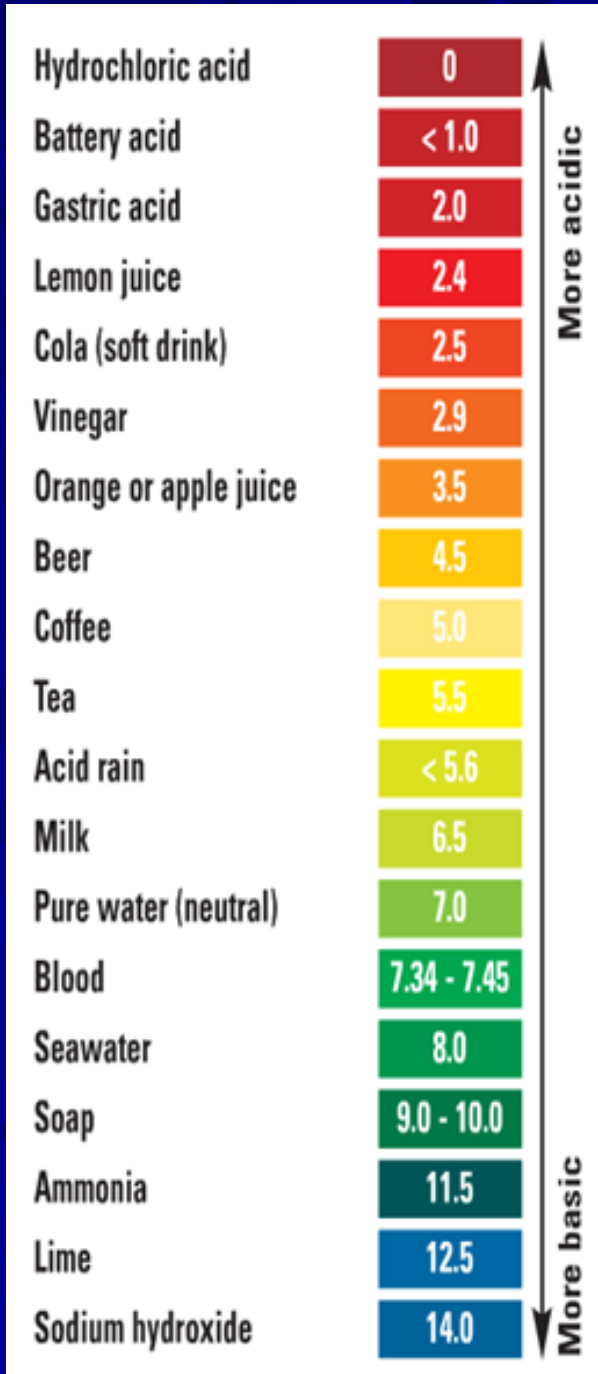
Battery acid 0.2	Stomach 1.2	Lemon juice 2.0	Vinegar 2.2	Apple 3.0	Tomato 4.2	Rain 5.6	Milk 6.6	Pure water 7.0	Human blood 7.4	Baking soda 8.2	Water from the Great Lakes 8.5	Milk of magnesia 10.5	Ammonia 11.1	Oven cleaner 13.9



QUESTIONS:

1. Is a solution with a pH of 5.6 an acid, base or neutral? Explain your answer.

   A solution with a pH of 5.6 is an acid, since its pH < 7.



2. Some soaps have a pH of 10. How many times more acidic is distilled water with pH of 7 than soap?

   Distilled water with a pH of 7 is 1 000 times more acidic than the soap with pH of 10, since every increment on the pH scale represents a factor of 10.

Have a Fireworks of Success With This Lesson

You are amazing

Thank you