

pH scale

power of Hydrogen

pH

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Scale used to measure the concentration of hydrogen ions, H^+ , in a solution.

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Scale generally runs from **0 - 14**

pH

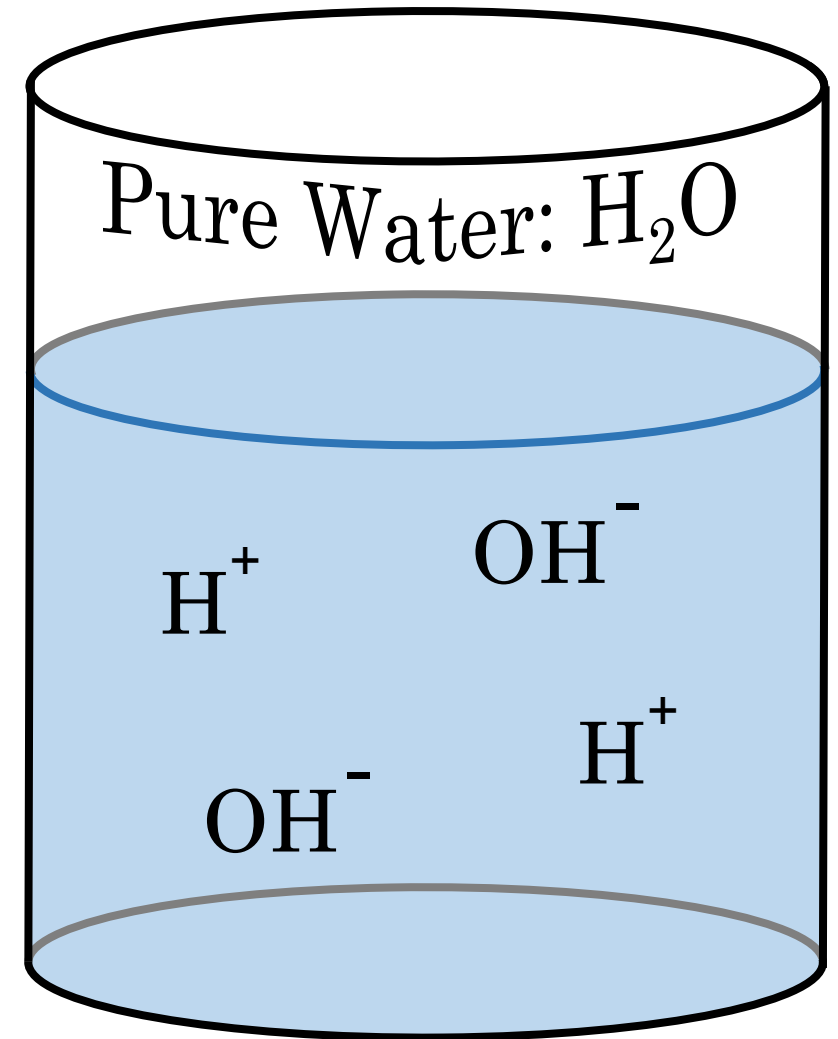
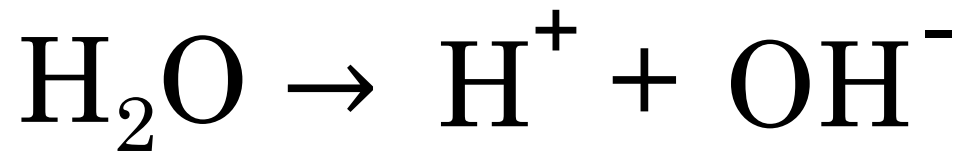
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Scale generally runs from 0 - 14

pH

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

In pure water a few of the water, H_2O , molecules will split up into hydrogen, H^+ , and hydroxide, OH^- , ions.



pH

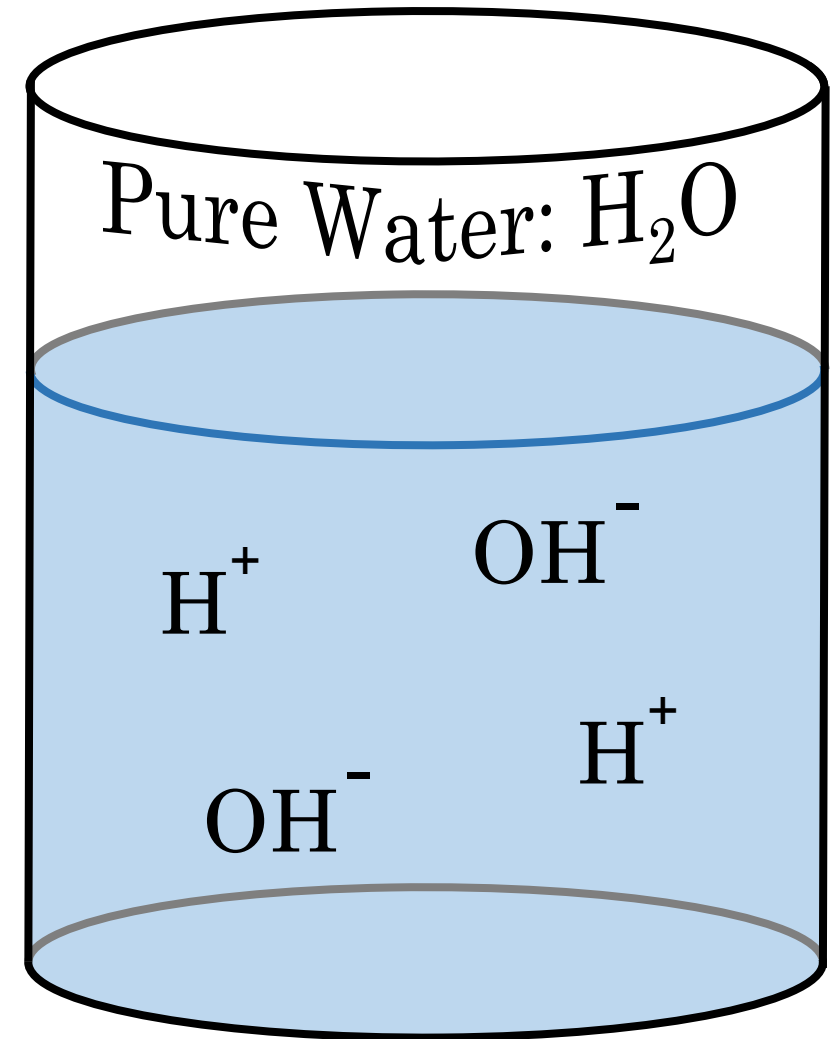
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

In pure water the number of H^+ and OH^- ions are equal.

H^+ and OH^- are balanced.

This corresponds to a pH of 7.

pH 7 = Neutral



pH

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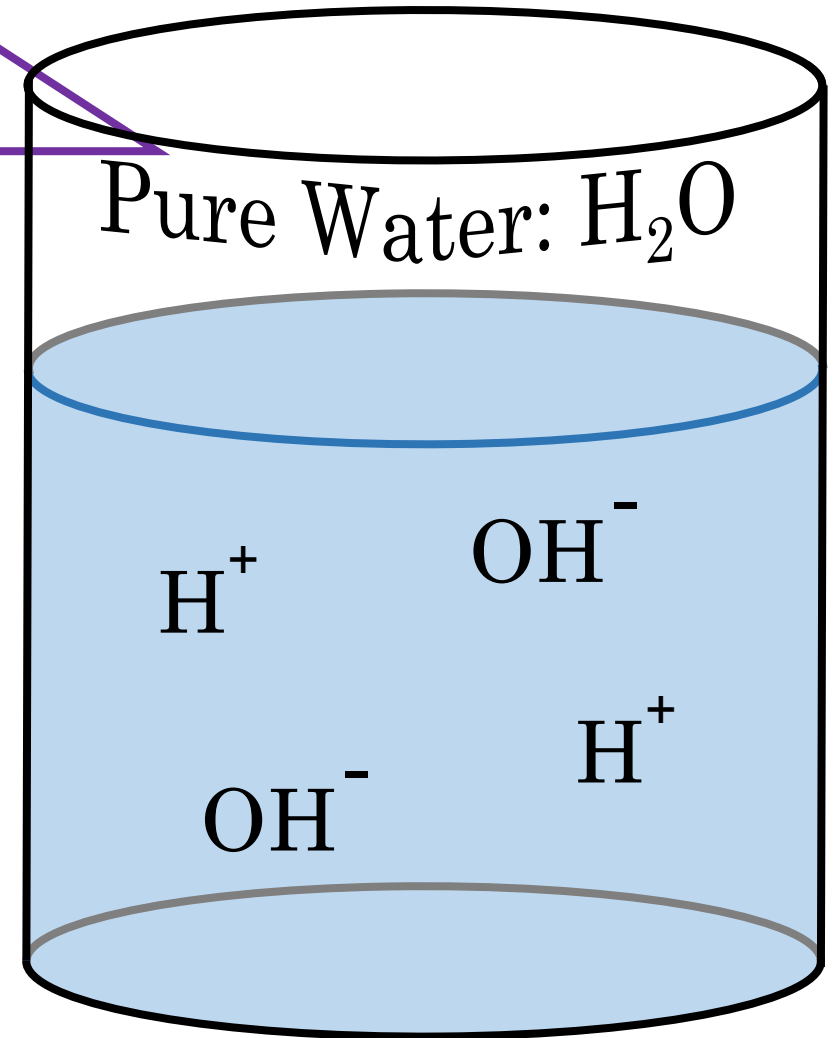
Pure Water: H_2O

H^+

OH^-

OH^-

H^+



pH

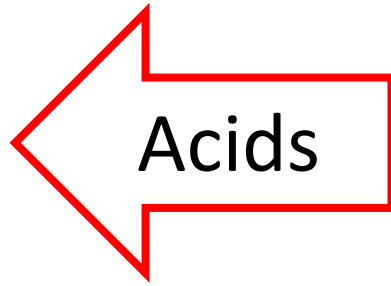
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

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

If an acid is added to the water, the quantity of H^+ will increase.

Acids release H^+

more H^+
pH value drops



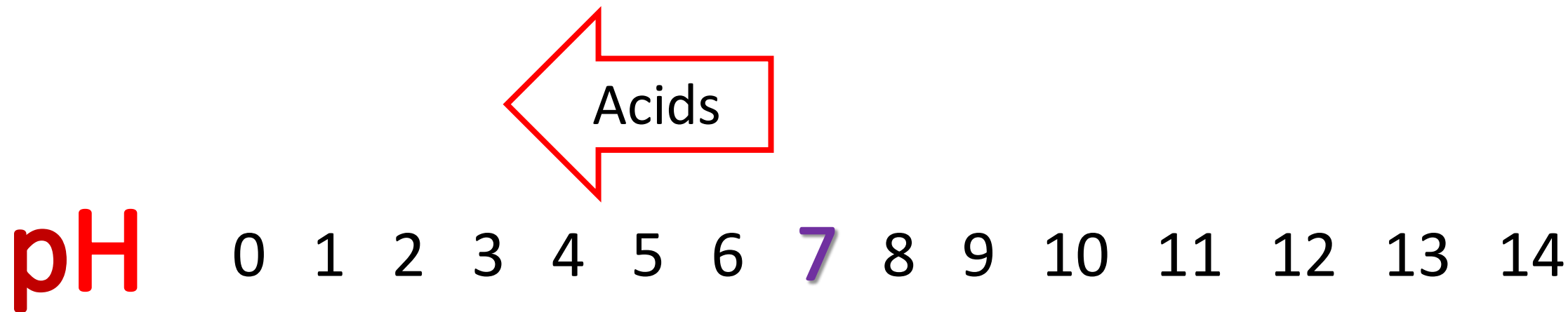
pH

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

If an acid is added to the water, the quantity of H^+ will increase.

Acids release H^+

more H^+
pH value drops



❖ The stronger the acid, the lower the pH.

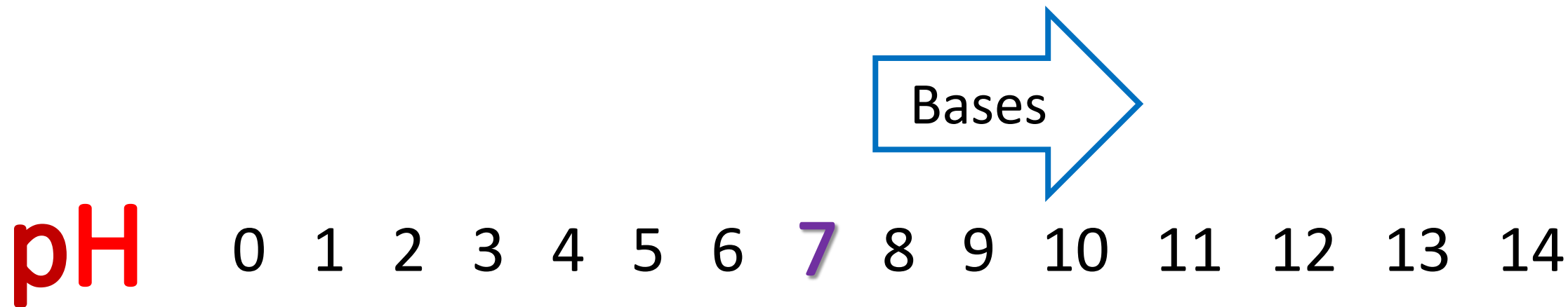
- An acid with $\text{pH} = 5$ is 10X stronger than $\text{pH} = 6$
- An acid with $\text{pH} = 3$ is 10X stronger than $\text{pH} = 4$
- An acid with $\text{pH} = 2$ is 100X stronger than $\text{pH} = 4$

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

If a base is added to the water, the quantity of OH^- will increase.

Bases release OH^-

less H^+
pH value rises



If a base is added to the water, the quantity of OH^- will increase.

Bases release OH^-

less H^+
pH value rises

❖ The stronger the base, the higher the pH.

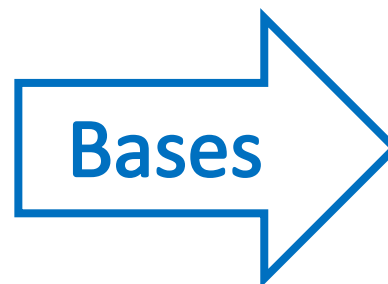
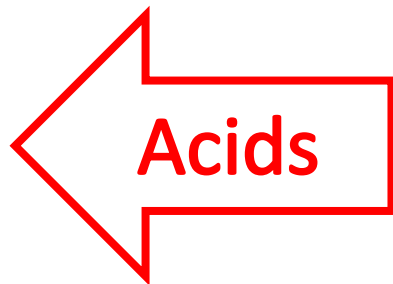
pH 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Dissolving a salt in the water (*normally*) does not affect the balance between H^+ and OH^- ions.

Saline (salt) solutions are usually neutral: $\text{pH} = 7$

pH

More H^+



more OH^-
less H^+

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

