



Acids and bases: knowledge check

1.1 Label this diagram of the pH scale using the words below to show the pH of:

- (a) an acidic solution
- (b) an alkaline solution
- (c) a neutral solution.

acidic

alkaline

neutral

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

1.2 Use the words to complete the sentences.

acidic

acidity

alkaline

alkalinity

neutral

- (a) The pH scale measures the _____ or _____ of a solution.
- (b) _____ solutions have a pH less than 7.
- (c) _____ solutions have a pH of 7.
- (d) _____ solutions have a pH greater than 7.



1.3 Use the words to complete the sentences.

hydrochloric acid

hydrogen

nitric acid

sodium hydroxide solution

sulfuric acid

- (a) Three acids commonly found in school laboratories are _____, nitric acid and _____.
- (b) An alkali commonly found in school laboratories is _____.
- (c) _____ ions are present in all acid solutions.

1.4 Use the words to complete the sentences. You can use the words more than once.

carbon dioxide

salt

water

These general equations represent some methods used to make salts:

- (a) acid + metal → _____ + hydrogen
- (b) acid + metal oxide → salt + _____
- (c) acid + metal hydroxide → salt + _____
- (d) acid + metal carbonate → salt + _____ + _____

1.5 Use the words to complete the sentences.

laundry detergent

lemon juice

- (a) Two everyday acids you might find in your home are vinegar and _____.
- (b) Two everyday bases you might find in your home are _____ and baking soda.



Acids and bases: test myself

2.1 What is an indicator? Use the words to complete the sentence.

colour **concentration** **pH** **strength**

An indicator is a substance that changes _____
depending on the _____ of the solution.

2.2 What colour is universal indicator in an acidic solution, an alkaline solution and a neutral solution? Use the words to complete the sentences.

blue **green** **red**

- (a) Universal indicator is _____ in an acidic solution.
(b) Universal indicator is _____ in an alkaline solution.
(c) Universal indicator is _____ in a neutral solution.

2.3 What colour is universal indicator in a solution with a pH of 1? Use the words to complete the sentence.

blue **green** **red**

Universal indicator is _____ in a solution with a pH of 1.

2.4 What colour is the indicator litmus in acidic and alkaline solutions? Use the words to complete the sentence.

blue **green** **red** **yellow**

Litmus indicator solution turns _____ in acidic solutions
and _____ in alkaline solutions.



2.5 What is a base? Use the words to complete the sentences.

copper oxide **disappears** **reacts**

salt **sugar** **water**

A base is any substance that _____ with an acid to form
a _____ and _____.

For example, _____ is a base.

2.6 What is an alkali? Use the words to complete the sentences.

acids **bases** **pH** **sodium hydroxide**

Alkalis are soluble _____ and have a
_____ greater than 7. For example,

_____ is an alkali.

2.7 What type of reaction occurs when an acid reacts with an alkali? Use the words to complete the sentence.

combustion **conduction** **neutralisation**

A _____ reaction occurs when an acid reacts with an
alkali.

2.8 What names are given to the types of salts formed in reactions with these acids? Use the words to complete the sentences.

carbonates **chlorides** **hydrates**

nitrates **sulfates**

(a) Hydrochloric acid produces _____.

(b) Sulfuric acid produces _____.

(c) Nitric acid produces _____.



- 2.9** Name the salt made when copper oxide reacts with sulfuric acid. Use the words to complete the sentence.

copper

copper hydroxide

copper sulfate

The salt made when copper oxide reacts with sulfuric acid is

_____.

- 2.10** Draw lines to link the name of the acid with its formula.

(a) hydrochloric acid

H_2SO_4

(b) sulfuric acid

HNO_3

(c) nitric acid

HCl



Acids and bases: feeling confident?

3.1 Complete the word equations.

acid	hydroxide	nitrate	sodium
	sulfate	sulfuric	water

(a) Hydrochloric acid reacting with sodium hydroxide:

hydrochloric _____ + _____
hydroxide → sodium chloride + water

(b) Sulfuric acid reacting with sodium hydroxide:

_____ acid + sodium hydroxide → sodium
_____ + _____

(c) Nitric acid reacting with sodium hydroxide:

nitric acid + _____ → sodium
_____ + water

3.2 Complete and balance the equations for the reactions in question 3.1.

H_2O	H_2SO_4	NaCl	NaNO_3
	NaOH	Na_2SO_4	

(a) $\text{HCl} + \text{_____} \rightarrow \text{NaCl} + \text{H}_2\text{O}$

(b) $\text{_____} + \text{___NaOH} \rightarrow \text{Na}_2\text{SO}_4 + \text{___H}_2\text{O}$

(c) $\text{HNO}_3 + \text{NaOH} \rightarrow \text{_____} + \text{H}_2\text{O}$



Acids and bases: what do I understand?

Think about your answers and confidence level for each mini-topic. Decide whether you understand it well, are unsure or need more help. Tick the appropriate column.

Mini-topic	I understand this well	I think I understand this	I need more help
I can describe the pH scale.			
I know the pH of acidic and alkaline solutions.			
I can name common acids and alkalis.			
I can write general word equations for reactions of an acid with a: <ul style="list-style-type: none"> • metal • metal oxide • metal hydroxide • metal carbonate. 			
I can write chemical formulas for common laboratory acids.			
I can name types of salt produced by reactions with: <ul style="list-style-type: none"> • hydrochloric acid • sulfuric acid • nitric acid. 			
I can use universal and litmus indicators to identify acidic, alkaline and neutral solutions.			
Feeling confident? topics	I understand this well	I think I understand this	I need more help
I can write word equations for reactions between an acid and a: <ul style="list-style-type: none"> • metal • metal oxide • metal hydroxide • metal carbonate. 			
I can write symbol equations for reactions between an acid and a: <ul style="list-style-type: none"> • metal • metal oxide • metal hydroxide • metal carbonate. 			