Science Worksheet

Neutralisation

In this worksheet, students will learn about neutralisation - the reaction of an acid with an alkali.

Key Information

Topic	Chemical Reactions
Level (1-3)	●●●
Questions	8
Key Stage	KS 3
Year	7
Curriculum Coverage	Chemistry: Chemical Reactions
Curriculum Skill	Acids and Alkalis: Neutralisation Reactions

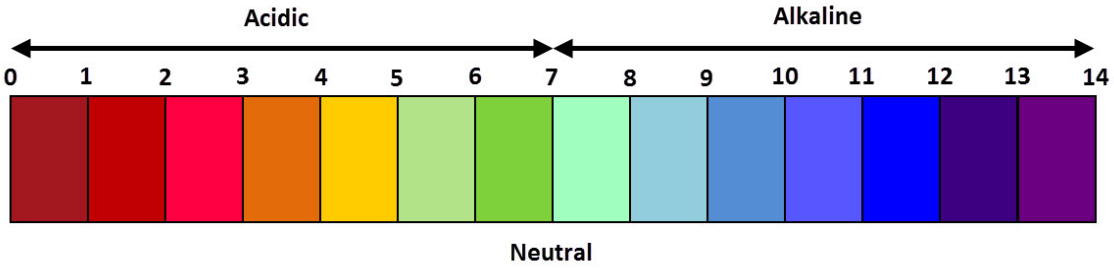
Name

Date

Introduction

Acids and alkalis react together to form new products in a **neutralisation** reaction.

If exactly the right amount of alkali is added to an acid, the resulting solution will have a pH of seven because the acid and alkali will 'cancel' each other out.



This means that the pH of the acid **increases** towards seven during neutralisation, but the pH of the alkali **decreases** towards seven.

Neutralisation reactions are performed every day. For example in the treatment of acid indigestion, or a farmer adding quicklime (an alkali) to his fields to neutralise acidic soil.

Acids and alkalis can also be used to treat insect stings:

Calamine lotion (an alkali) can be used to treat bee stings which are **acidic**.

Vinegar (an acid) can be used to treat wasp stings which are **alkaline**.

Just don't get the two mixed up or it may make the sting more painful – ouch!

QUESTIONS

Question 1

Using the table below, decide whether the substances listed are acidic, alkaline or neutral:

	Acidic	Alkaline	Neutral
Quicklime	○	○	○
Water	○	○	○
Vinegar	○	○	○
Calamine lotion	○	○	○
Indigestion remedies	○	○	○

Question 2

Tick the substances below that would **neutralise an acid**:

Answer 1	☐	Vinegar
Answer 2	☐	Lemon juice
Answer 3	☐	Chalk
Answer 4	☐	Bicarbonate of soda
Answer 5	☐	Quicklime
Answer 6	☐	Fizzy drink
Answer 7	☐	Calamine lotion

Question 3

Using the table below, decide which of the following substances would **neutralise an alkali.**

Tick all you agree with.

Answer 1	☐	Vinegar
Answer 2	☐	Lemon juice
Answer 3	☐	Chalk
Answer 4	☐	Bicarbonate of soda
Answer 5	☐	Quicklime
Answer 6	☐	Fizzy drink
Answer 7	☐	Calamine lotion

Question 4

Look at the sentence below.

When an acid is neutralised its pH _____ towards pH 7.

What word would complete this sentence accurately?

Answer 1	○	Does not move
Answer 2	○	Increases
Answer 3	○	Decreases

Question 5

Look at the sentence below.

When an alkali is neutralised its pH _____ towards pH 7.

Which word could be accurately applied to the sentence below to complete it?

Answer 1	○	Does not move
Answer 2	○	Increases
Answer 3	○	Decreases

Question 6

A bee sting is slightly acidic. Which of the following household products would neutralise a bee sting?

Answer 1	○	Vinegar
Answer 2	○	Lemon juice
Answer 3	○	Baking soda

Question 7

Wasp stings are alkaline. Which of the following would neutralise a wasp sting?

Answer 1	○	Vinegar
Answer 2	○	Soap
Answer 3	○	Baking soda

Question 8

Use the previous information to match the substances on the right with those that they would neutralise on the left.

Column A	**Column B**
Vinegar	Bicarbonate of soda
Sodium hydroxide	Hydrochloric acid

ANSWERS

Answer 1

Correct Answers

	Acidic	Alkaline	Neutral
Quicklime	○	◉	○
Water	○	○	◉
Vinegar	◉	○	○
Calamine lotion	○	◉	○
Indigestion remedies	○	◉	○

Answers Explanation

It is important to know common acids and alkalis that are used both in the home and in the science lab.

Answer 2

Correct Answers

Answer 1	☑	Chalk
Answer 2	☑	Bicarbonate of soda
Answer 3	☑	Quicklime
Answer 4	☑	Calamine lotion

Answers Explanation

All of the ticked substances are alkaline and would therefore neutralise an acid. Vinegar, lemon juice and most fizzy drinks are themselves acids.

Answer 3

Correct Answers

Answer 1	☑	Vinegar
Answer 2	☑	Lemon juice
Answer 3	☑	Fizzy drink

Answers Explanation

These substances are acidic, so they would neutralise an alkali. As you've already noted, the rest are alkalis anyway.

Answer 4

Correct Answers

Answer 1	⊙	Increases

Answers Explanation

During neutralisation, the pH of an acid increases towards 7 and the pH of an alkali decreases towards 7. Think about it: you start with an acid (pH is below 7) to get it to neutral (pH7) the pH of the mixture is going to have to increase, isn't it? For example: If you start at pH = 3 and end at pH = 7. The pH has risen and it'll take an alkali of, say, pH 11 to do that.

Answer 5

Correct Answers

Answer 1 Decreases

Answers Explanation

Answer 6

Correct Answers

Answer 1 Baking soda

Answers Explanation

Bee stings are acidic so an alkali such as baking soda will neutralise the sting. There's a little rhyme to help you remember this: "Vinegar - Vasp, Bicarb - Bee". In other words, wasp stings are treated with vinegar (an acid) and bee stings with bicarb(onate of soda) - an alkali. Worth remembering, that!

Answer 7

Correct Answers

Answer 1 Vinegar

Answers Explanation

Wasp stings are alkaline so an acid such as vinegar would neutralise the sting. Remember that little rhyme: "Vinegar - Vasp, Bicarb - Bee". In other words, wasp stings are treated with vinegar (an acid) and bee stings with bicarb(onate of soda) - an alkali.

Answer 8

Correct Answers

Column A	Column B
Vinegar	Bicarbonate of soda
Sodium hydroxide	Hydrochloric acid

Answers Explanation

Remember, vinegar is a weak acid, so needs a weak alkali (bicarb of soda) to neutralise it. Similarly, the strong alkali sodium hydroxide (it's really nasty stuff!) can be neutralised by the strong acid, hydrochloric acid. Mind you, this last reaction will get fairly warm as it goes on - one to be careful with!