The Spark Magazine

PUZZLES, QUIZZES, EXPERIMENTS

ISSUE No15

MARVELLOUS MINIBEASTS

SOURCE TO SEA LITTER

TREMENDOUS TREES

MEET THE WAUJA PEOPLE

With support from the Scottish Government

Net Zero Scotland
Scottish Government

GLASGOW SCIENCE CENTRE

Inside

This issue

HELLO!

Welcome to another exciting issue of The Spark - crammed full of creative and curious experiments, puzzles, quizzes and facts.

In this issue we are looking at single-use plastics, their effect on the environment and how we can help look after the wildlife impacted by discarded litter.

We are also taking a trip out to our local parks and forests to learn how to identify trees by their leaves and seeds. We'll investigate the leaf litter and see what we can uncover as we go on a Bug Hunt!

Best wishes,
Glasgow Science Centre

MINI GAME

Anagram Antics

Rearrange the letters in these anagrams to make words that can be found in the magazine.

Ambientsis
M_____

Abetterervin
I_____

Camelteaching
C_____ _____

Aftonriser
R_____

Answers on back page

SHARE YOUR PICS WITH US

If you try any of our activities, please show us how they turned out! Send your favourite pictures to CLDteam@gsc.org.uk or share with us @TheBothyGSC on Twitter. We'll include a selection of your pictures in the magazine.

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Meet the Wauja people

One of the Indigenous communities of the Amazon Basin in Brazil. Learn how climate change is affecting them.

We're saying so long to some single-use plastics!

You may have seen images of amazing creatures like sea turtles swimming in plastics, or seals swallowing plastics, with their tummies full of items such as bags, straws and bits of broken cutlery.

Plastic has lots of good uses because it's very long lasting, which is what makes it such a problem for our environment. The plastic spoon you use only once for your ice cream, could end up littering our land or oceans for hundreds of years. The fact that such a long-lasting material is only used once, but in huge quantities, is a big problem for our planet.

Plastic items used once and thrown away are called "single-use plastics", many of which are set to be banned in Scotland from 1 June 2022*, including: straws, cutlery, plates and polystyrene food containers and cups. Some people need plastic straws to eat and drink independently so these will be available for those who need them.

* subject to UK Internal Market Act 2020

What can I do?

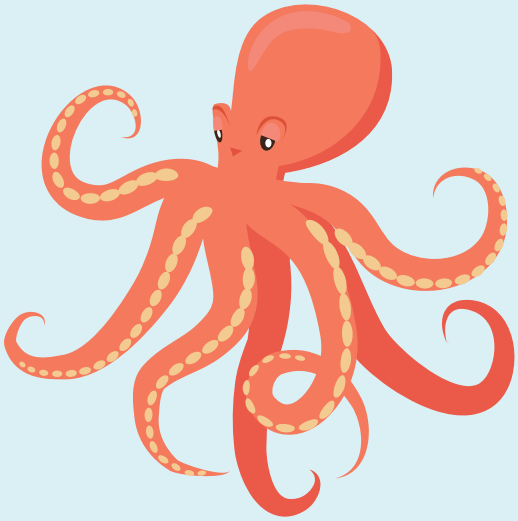
The best thing you can do to help the planet is say "no" to single-use, whether it be plastic or made from something else, and switch to reusables as much as possible instead.

DID YOU KNOW?

By 2050, there could be more plastic in our oceans than fish.

ZERO WASTE SCOTLAND

Source to Sea Litter Quest



How you can help protect the ocean – no matter where you live.

Become a scientist and help us stop ocean pollution in its tracks! Head to the streets and take part in the 'Great British Street Clean'.

Keep an eye out for common items like drinks bottles. 99% of litter picks last year found plastic bottles on the street. The information you collect will help us campaign for changes in the law, like the charge (5p) for plastic carrier bags in shops, which can help clean up our shores.

Used once and thrown in the bin

Single-use items are things that we use one or two times, and then throw away. These can include: cotton bud sticks, wet wipes, and plastic cutlery. We want to see less of these items used in future.

Staying Safe

1. Wear gloves.
2. Follow local social distancing rules.
3. Do not touch any sharp items.
4. Remember to wash your hands after your clean.

MARINE CONSERVATION SOCIETY

Great British Street Clean

Stopping litter from land to sea

Total participants:

Weight of litter:

Number of bags:

Weirdest item found:

Where did you clean? (please circle)

Town | Countryside | Park | Street | River

Playground | Grounds of the office | Other

☐ School group ☐ Youth group Age range:

First half of your postcode:

Spot the litter, tick what you find, then pick it up. Simple!

The litter you record will help us identify and create a snapshot of the rubbish (especially single-use items) that are harming the environment.

Sort the litter you find and recycle it at your nearest recycling centre.

You can take photos and share them using #LitterQuest.

Find out more information at www.mcsuk.org/what-you-can-do/fun-learning/ and send your results form to education@mcsuk.org

Glass bottles

Tally:

Metal drink cans

Tally:

Plastic drink bottles

Tally:

Plastic bottle lids

Tally:

Plastic drink cups

Tally:

Polystyrene cups

Tally:

Paper cups

Tally:

Plastic bags for life

Tally:

Single-use plastic bags

Tally:

Polystyrene containers

Tally:

Single-use plastic gloves

Tally:

Single-use face masks

Tally:

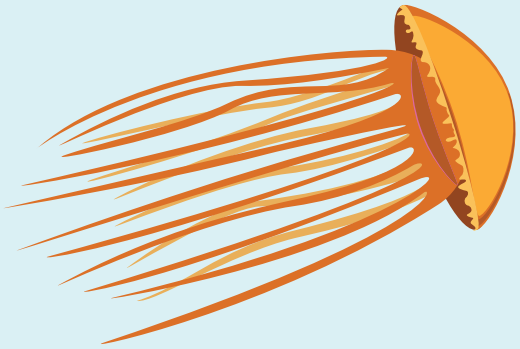
Balloons

Tally:

Wet wipes

Tally:

Litter Timeline



Can you match the rubbish in our ocean to the timeline?

Below are common items that we find washed up on the beach. How long do you think these last in the water? Draw an arrow to match the pairs.

2 years | 4 years | 20-50 years | 75 years | 500 years | 450-1000 years

Cardboard

Disposable nappy

Plastic bag

Crisp packet

Balloon

Plastic bottle

Answers on back page

DID YOU KNOW?

Plastic never disappears. It simply breaks up into smaller and smaller pieces called "microplastics". Over time, they travel through our environment and into our food chain.

At the Marine Conservation Society we see how important it is to repair, reduce and recycle our everyday items.

Find out more about the work we do at mcsuk.org

BRIGHT SPARKS!

Are you a bright spark? Test your knowledge with our tricky questions, check your answers on the back page.

1 What plant flowers earliest in the year?

- A) Snowdrops
- B) Daffodils
- C) Roses

2 Which of these animals is not an invertebrate?

- A) Spider
- B) Mite
- C) Snake

3 What continent is home to the Amazon rainforest?

- A) Asia
- B) Africa
- C) South America

4 How long will it take for a plastic spoon to break down in the ocean?

- A) 250 years
- B) 500 years
- C) 750 years

5 Japan is known for its spring bloom of which flowers?

- A) Bluebells
- B) Cherry Blossoms
- C) Daisies

6 Conkers is a game played with seed from which tree?

- A) Oak
- B) Horse Chestnut
- C) Birch

7 Some species of bees and butterflies hibernate?

- True
- False

8 What is the favourite sport of the Wauja people?

- A) Tennis
- B) Football
- C) Cricket

9 Two and a half football fields of trees can capture how many tonnes of carbon?

- A) 100
- B) 250
- C) 400

10 What is the name of the process that plants use to make food?

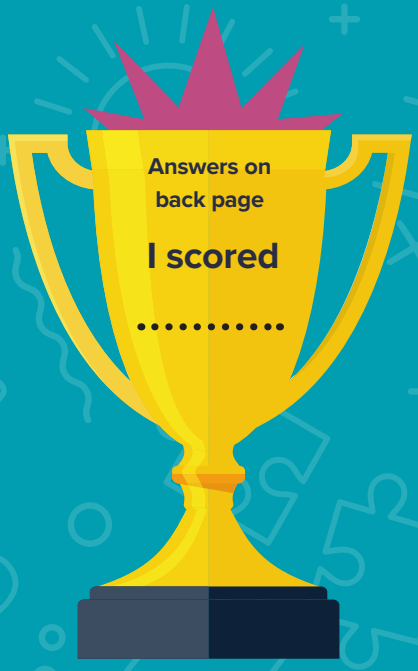
- A) Photosynthesis
- B) Osmosis
- C) Mitosis

11 Centipedes have 100 legs?

- True
- False

12 Which of these plants grows the fastest?

- A) Bamboo
- B) Giant Redwood tree
- C) Maple tree



Tremendous Trees

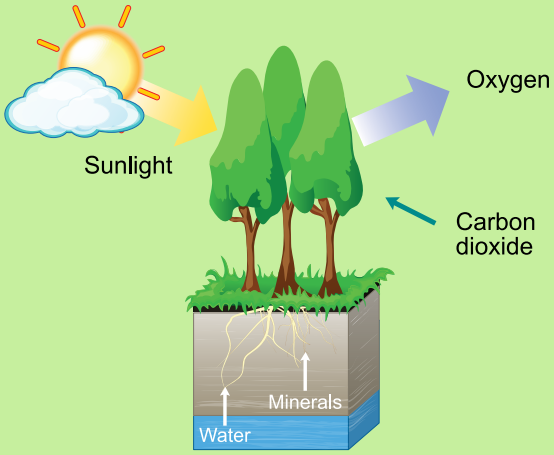
Celebrate the International 'Day of Forests' on the 21st of March by learning all the amazing things trees can do!

Trees are very important plants. They provide wood for us to build with, they produce oxygen for us to breathe, some even grow fruit for us to eat.

Photosynthesis

Photosynthesis is the process in which green plants use sunlight to make their own food. Green plants use this light energy to change water and carbon dioxide into oxygen, which is the gas we breathe.

The process of photosynthesis removes carbon dioxide from our atmosphere. Carbon dioxide is a greenhouse gas that contributes to climate change if there is too much of it!

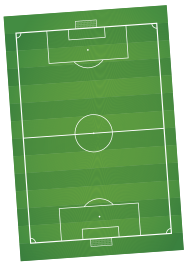


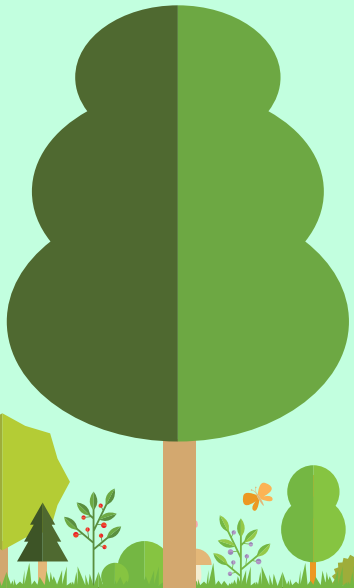
Trees are super, they also help:

- Prevent flooding.
- Reduce temperatures in cities.
- Keep our air clear of pollution.
- Keep soil healthy and full of nutrients.

DID YOU KNOW?

Two and a half football fields of trees and woodland can lock away **400** tonnes of carbon! Equivalent to driving 2.4 million kilometres (1.5 million miles) in a diesel car.



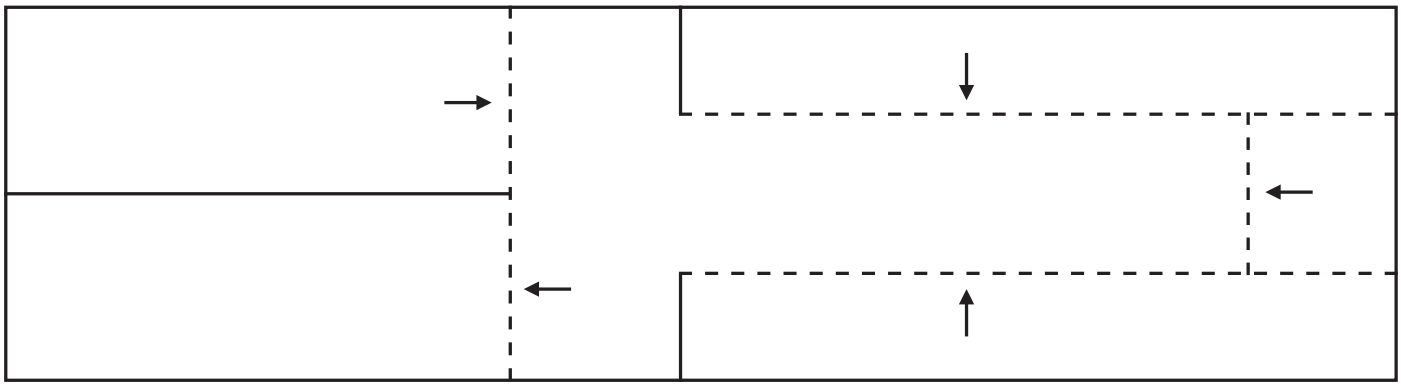


Tree Spotting

You can figure out what kind of trees you see by looking at their leaves and seeds. Can you find these common Scottish trees in your park or garden?

Find some of these trees in Scotland's Wee Forests. Scan for more information.

Sycamore tree seeds have "wings" which they use to catch the wind and travel away from the parent tree. People have given them the name "helicopters". One tree can produce up to 10,000 seeds! **You can make a sycamore seed model using this template.**



Cut along solid lines. Fold along dotted lines.
Place paperclip at the bottom to add weight.

Bloomberg®

tinyforest
Powered by earthwatch

Meet the Wauja People

DID YOU KNOW?

Indigenous people are native people of a specific area in the world.

Hear from the Wauja People, Indigenous people who live near the Xingu River in Brazil. Read about how climate change is endangering their way of life, and how we can help this vulnerable group.

Where do the Wauja live?

The Wauja people live in the Xingu Indigenous Territory, the first reservation for Indigenous people protected under the Brazilian Constitution. It's in the northeast of Mato Grosso state, in the Brazilian Amazon basin.

What do you like most about where you live?

We like being in the village, around the trees.
We love the rivers, being in the river, bathing and fishing.
We learn to live with our environment. Our history is our environment's history.

What games do you play? What do you do for fun?

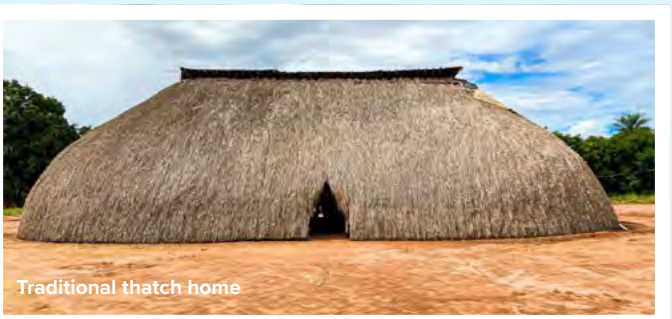
We really like playing football here. We play in the centre of the village. We practice Huka Huka fighting too. It's really fun. Children like it a lot. We also practice this fight in rituals.

Two people in a ritual Huka Huka fight.

How is climate change affecting your territory and your people?

What makes us really worried is the drought that's drying up our forests and our rivers. Fire is what we're most afraid of. It burns down our forests, our gardens and the thatch we use to build our houses. Sometimes it even threatens to destroy the village. High temperatures, drought and uncontrollable wind make the fire spread. The leaves on the trees are very dry, so they burn quickly and the fire spreads out of control.

The rivers and lakes are also drying up more and more. They lose their current, the water stagnates and it isn't good for the fish. This year we watched our river go really dry and many fish died. Fish is one of our staple foods and very important in our culture.



Traditional thatch home

Can you tell us why your land is special and why it's important to protect it?

We live in our land and we take care of it, just as it takes care of us. We like to show how we're fighting to defend the life of our home. Our home is the forest, the river. We're fighting for the forest not to be destroyed. This fight isn't just for us, it's for you too. It's for everyone. But there aren't enough of us to protect it.

What do you think of our way of life here in Scotland?

In Scotland, the climate is very different to ours. Your way of living is very different too. While we want rain to come and fill the river up and put the fish at ease, too much rain is a problem for you.

It's very cold there and it rains a lot. And so this rain causes flooding that affects your lives. Here, we suffer from heat and a lack of rain. It's very dry and the wind is very strong. The environment changes a lot depending on where you are.

Spring Watch

As winter comes to an end, longer days and warmer weather announce the arrival of spring. Here are a few springtime signals to look out for!

Blooming Brilliant

Buds and seeds use the water and nutrients from the thawing soil combined with warmer sunnier days to spring into life. Trees grow new green leaves and flowers begin to grow again, from snowdrops in January to daffodils in March and bluebells that arrive in May.

Big in Japan!

During spring in Japan, cherry blossom trees burst into life with beautiful pink flowers. You must be quick to see it as they only blossom for around two weeks.

Baby Animals

By far the biggest sign that spring has sprung is the arrival of lots of baby animals.

Scientists think so many baby animals are born in spring because of the warmer weather and lots of new food sources are growing.

Animals born in spring include: lambs, rabbits, deer, foxes and lots of baby birds.

ACTIVITY - Matching Set!

Can you match these animals with the correct name of the baby animal?

Chicken

Deer

Rabbit

Sheep

Fox

Hedgehog

Fawn | Hoglet | Cub | Kitten | Lamb | Chick

Answers on back page

Bees and Butterflies

Did you know some species of bees hibernate over winter? Bumble bees hibernate, honey bees do not. Only the Queen Bee will hibernate and snooze during the colder months, and at the first sign of warmer weather, she will emerge from her nest and get back to work.

Bees and butterflies are very important for the pollination of growing plants and fruits, especially during spring.

Birds are back in town

Look out for nests appearing as birds arrive back from their warm winter escapes. Spring mornings are filled with birdsong, as males try to attract mates. But only the best, most elaborate songs will win them a mate.

Why not have a listen to different birdsongs online and see which birds you can hear in your area?

Build your own Insect Hotel

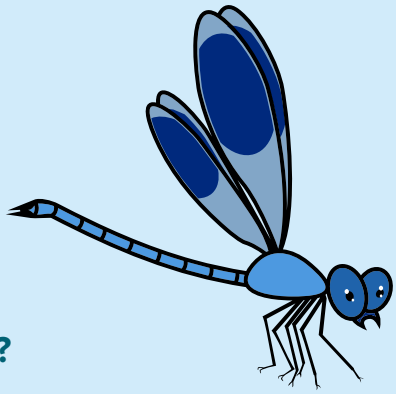
Bee and bug hotels can be made from loads of different materials.

You could create a cosy living space for insects, using natural materials like **logs and twigs, old bricks with holes, old pots, pinecones, soil, moss and hollow bamboo canes or plant stems.**

You are trying to build a box full of holes - these give insects **spaces to hide, stay safe from the weather and even lay their eggs.**

Once you find your main box, fill or pile your materials to create lots of little spaces. **Place in your garden or green space and watch the insects move in!**

Invertebrate Investigation



What is an invertebrate and how do we classify them?

Bugs, insects, beasties, creepy crawlies, minibeasts - are all names we give to the biggest group of animals on planet Earth.

Invertebrates are any animal that does not have vertebrae - the bones that make up the spinal column.

You may already know some examples of invertebrates including: insects, spiders and worms.

FUN FACT

Ladybirds, like all beetles, have two pairs of wings. The outer wings are thicker and form a protective layer over the delicate wings beneath.

Do your own investigation

There are lots of different types of invertebrates, so identifying them can be tricky but, scientists use lots of tools to help them along the way.

A sorting key uses the physical characteristics of an organism to help sort them into different groups.

Try using the key on the next page to do an invertebrate investigation of your own.

Watch our Minibeast videos to learn more about these fascinating creatures.

Not just on land!

Invertebrates are also found in our oceans. Organisms like corals, octopus and jellyfish are all invertebrates.

We're going on a...
Bug Hunt

Depending on where you look, it is likely that you will find different varieties of invertebrates.

Why not head outside to the garden or park and try to find and identify as many invertebrates as you can.

Write total here

Hold a small tub underneath a branch or bush. Shake downwards into the tub.

What did you find?

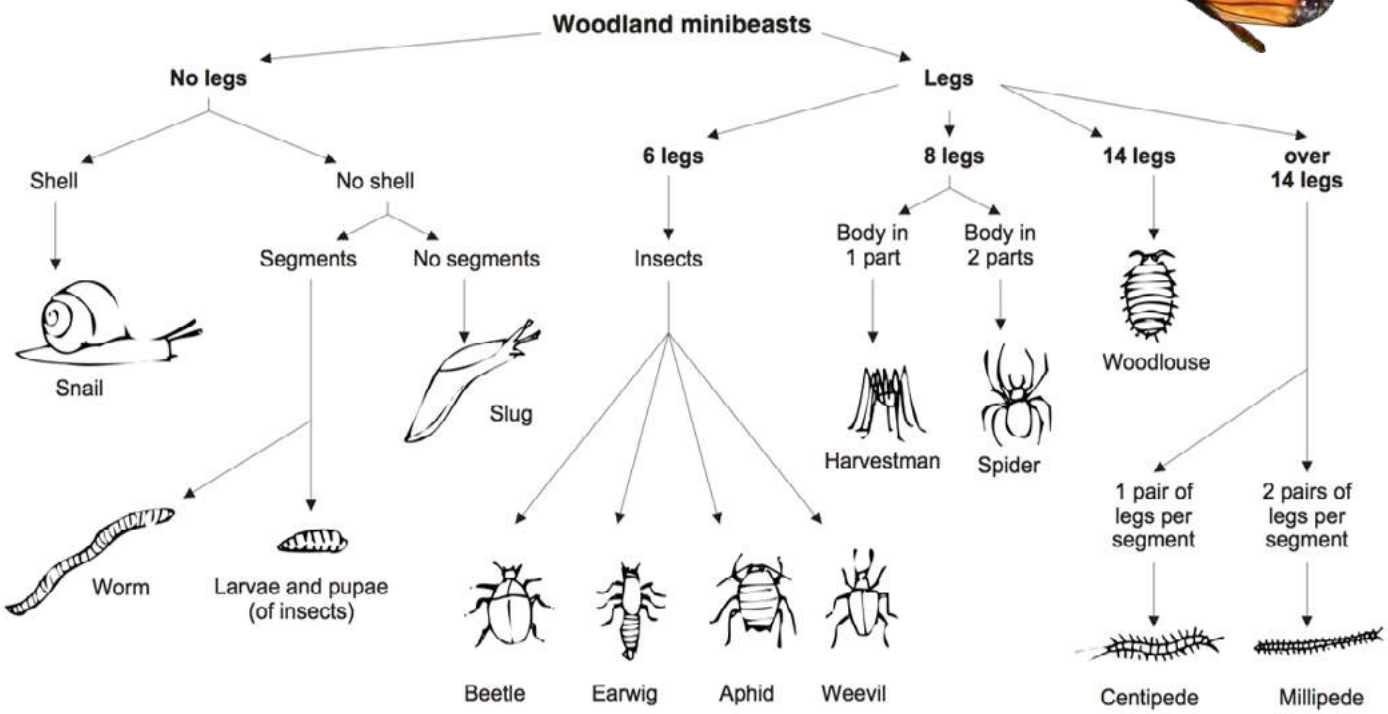
We suggest looking in leaf litter, under rocks, in the soil, on plants and flowers, in bushes or trees.

TOP TIP

A magnifying glass can help with examining and identifying your specimens.

Sorting Key!

Take a note of what type of invertebrates you find and where you find them. Can you come up with ideas about why they might live there?



ABOUT US

Glasgow Science Centre is a 5-star visitor attraction located beside the River Clyde. We are home to hundreds of interactive exhibits where you can discover how the world works.

Glasgow Science Centre is a registered Scottish charity SC030809.

For more information and bookings, visit: glasgowsciencecentre.org

PUZZLE SOLUTIONS

Anagram Antics

Ambientsis
MINIBEASTS

Abetterervin
INVERTEBRATE

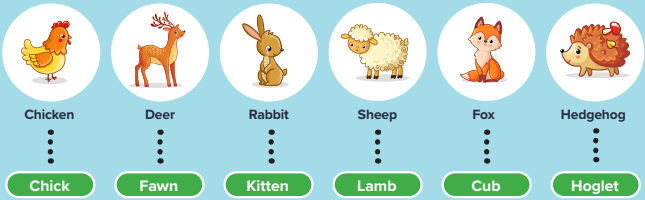
Camelteaching
CLIMATE CHANGE

Aftonriser
RAINFOREST

There's more to learn!

Curious to know more about Climate Change? Then check our Curious About: Our Planet website, which focuses on climate change and how you can get involved in building a more sustainable future. Explore the website now:
curiousabout.glasgowsciencecentre.org

Matching Set



Bright Spark QUIZ ANSWERS

Q1. (A) Snowdrops.
Q2. (C) Snake – it has vertebrae that make a backbone.
Q3. (C) South America.
Q4. (B) It will take 500 years for one plastic spoon to break down in the ocean.
Q5. (B) Cherry blossoms.
Q6. (B) The Horse chestnut seed is used to play the game of conkers.
Q7. True. Some species will hibernate or sleep over winter and wake as the weather gets warmer.
Q8. (B) Football is their favourite sport. They also enjoy practising Haku Haku fighting.
Q9. (C) 400 tonnes. Trees are helping us fight climate change!
Q10. (A) Photosynthesis. Plants take in carbon dioxide and release oxygen as a byproduct of this process.
Q11. False. Centipedes can have anywhere from 10 to 300 legs. Oddly enough, you'll never find one with exactly 100 legs because they only have an odd number of pairs.
Q12. (A) Bamboo. It is the fastest-growing plant on Earth. In fact, some types of bamboo can grow almost a metre in a single day.

Litter Timeline Answers:

2 = cardboard
4 = balloon
20-50 = plastic bag
75 = crisp packet
500 = disposable nappy
450-1000 = plastic bottle

WE WANT YOUR FEEDBACK

We would love to hear what you think!

We hope you liked this issue, but if you didn't, what could we change? What other things would you like to see? What topics are you most interested in?

You can send feedback and pictures to CLDteam@GSC.org.uk or message us on Twitter @TheBothyGSC

KEEP IN TOUCH

0141 420 5000 | glasgowsciencecentre.org
50 Pacific Quay, Glasgow G51 1EA