

# The Spark

Magazine



PUZZLES, QUIZZES, OUTDOOR LEARNING

ISSUE  
No1

MAKE  
YOUR OWN  
VOLCANO!

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LET'S  
EXPLORE  
SPACE

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MEET A  
ZOOLOGIST

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WHAT'S A  
MINIBEAST?  
FIND OUT **INSIDE**



GLASGOW  
SCIENCE  
CENTRE!

# Inside

This issue

## WELCOME

Welcome to the first edition of The Spark! Every issue will have exciting experiments for you to try at home, fascinating facts to ponder over, and puzzles and quizzes to challenge your family.

This week we are looking at Space, Volcanoes and Minibeasts. So from the very big, to the very small. Do you think there are any minibeasts in space?

You can watch the videos that go along with the experiments this week on the Glasgow Science Centre Facebook page or YouTube channel. Veronica will be making a volcano and Amy will be counting bugs.

Best wishes,  
Glasgow Science Centre



## MINI PUZZLE

### SPACEWALK

An astronaut is a person specially trained to go to space. Astronauts may need to leave their spacecraft, for a spacewalk, so they can carry out repairs or experiments.

Can you help the astronauts find their way back to their spaceship?



## Find your way back!

## SHARE YOUR PICS WITH US



If you try any of our activities this week, please show us how they turned out! Send your favourite pictures to [CLDteam@gsc.org.uk](mailto:CLDteam@gsc.org.uk) or share with us [@TheBothyGSC](https://twitter.com/TheBothyGSC) on Twitter. We'll print a selection of your pictures in the magazine.

Share [@TheBothyGSC](https://twitter.com/TheBothyGSC)  
email to [CLDteam@gsc.org.uk](mailto:CLDteam@gsc.org.uk)



## FAMILY QUIZ

10 questions, linked to activities in this issue

### QUESTIONS

Answers on back page

- How many eyes does a Caterpillar have?  
A) 2 B) 4 C) 8 D) 12
- Where is the tallest volcano in the solar system?
- True or false? Snails have teeth.
- Who was the first woman to travel in space?
- Minibeasts are invertebrates. What do these animals not have?
- What is the name of the galaxy that planet Earth is in?
- True or False? There are volcanoes on every continent, including Antarctica.
- How long did it take astronaut Tim Peake to travel from the International Space Station back down to Earth?  
A) 3 days B) 1 day C) 3 hours D) 1 hour
- What's the difference between magma and lava?
- What type of minibeast can taste food with its feet?

### HINT

You may find some answers throughout this magazine or in our [#GSCAtHome](https://twitter.com/GSCAtHome) videos.

### DID YOU KNOW?



The word **Astronaut** comes from Greek words meaning 'space sailor'.



### Spacewalks!

can last up to **8 HOURS!** we'd need a spacenap after that!



## I'M A... ZOOLOGIST

### Meet Robyn Womack.

Robyn studies how birds sleep and spends lots of time outdoors or in the lab at the University of Glasgow.

"I love dinosaurs and decided to study zoology so that I could help with wildlife conservation. I study biological rhythms in wild birds, which means that I investigate how birds sleep and what things can keep them up during the night. My job involves checking nest boxes at our field site or spending time in the lab carrying out experiments. I think science is very important as we need to better understand how we can protect the animals and nature on our beautiful planet."

Hobbies: I love to play video games  
Favourite Food: pasta



We wrote a story about Robyn and her work. You can see the storytelling session on our Facebook page or YouTube channel: [Robyn and the Robin](https://www.youtube.com/channel/UC...).

## ACTIVITY

# Make your own Volcano!

## What will you do?

In this activity you will make your own volcano model and carry out an experiment to show how lava might flow. You'll also find out about volcanoes, magma and lava, and how volcanoes shape our landscape. **Make sure you have adult supervision before starting. This activity can get messy so it's best to do this with a cover on the table or floor, or outdoors.**

## What will you need?

Like all experiments, ensure you have permission from an adult and their supervision before starting. This experiment can be messy. So, it is best NOT to do it on the living room carpet!

### You will need:

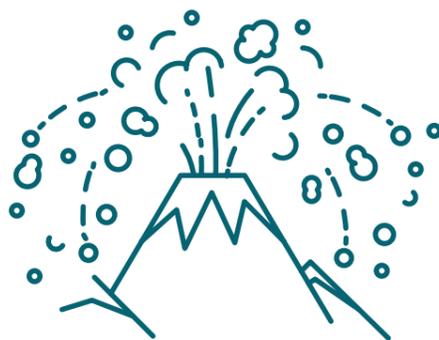
#### Part 1

A large piece of cardboard  
Cover for your table or floor  
Masking tape or sellotape  
Newspaper  
Plastic bottle  
Flour  
Water  
Salt  
Paints & paintbrushes  
Scissors



#### Part 2

Small plastic cup  
Washing-up liquid  
Vinegar  
Bicarbonate of Soda  
Food colouring



## Part 2 - The Lava Eruption

**Step 7.** In a small cup, mix 2 tablespoons of bicarbonate of soda with a few drops of water and a small squirt of washing-up liquid. Stir until this is a smooth pourable mixture. Add a few drops of food colouring, taking care not to spill any as it can stain clothes or furniture.

**Step 8.** Carefully pour this mixture into the plastic bottle inside your volcano. This may be tricky so ask an adult to help.

**Step 9.** Pour a small amount of vinegar into the plastic bottle, stand back and watch your volcano erupt!

## More to try

**This is best done outside, or place your volcano in the bath.**

You can try this again using a bigger volcano built around a full bottle of fizzy juice with the cap on (Diet Coke works best).

Once your volcano is built, decorated and dry, add in a few Mentos and watch the chemical reaction happen. It may be a bigger eruption than before!

## Fun facts

The Earth is made up of many layers. It has a hot solid inner core, an outer core made up of mostly liquid iron, a hot mantle made up of rocks and minerals and then the thin crust at the outside.

A lot of our planet's mantle is made from magma, molten liquid minerals. This magma is slowly churned through the mantle towards the crust, finding cracks and weaknesses along the tectonic plates.

When the magma pressure is released through the edges of these plates it causes a volcanic eruption. When the magma reaches the surface, it's then called lava and that spewing lava flows down the side of the volcano.

The biggest volcano to exist in our solar system isn't on planet Earth. It's on Mars and it's about the same size as France!

The word volcano originally comes from the Roman God of Fire, Vulcan.

**Share pictures of your activities with us by sending to [CLDteam@gsc.org.uk](mailto:CLDteam@gsc.org.uk) or message [@TheBothyGSC](https://twitter.com/TheBothyGSC) on Twitter**

## How to do this experiment

You can either make a volcano model to showcase your bubbling lava, or you can go straight to the lava eruption by starting at Step 7.

### Part 1 - Volcano Model

**Step 1.** Remove the cap from your plastic bottle and secure the bottle to the cardboard with tape. This is where your magma will be held, in the centre of the volcano.

**Step 2.** Take several sheets of newspaper, crunch them up and arrange them around the bottle. Secure the newspaper with tape. This will form the shape of your volcano. Remember to not cover the top of the bottle, as this is where the lava will flow from.

**Step 3.** To create the surface of the volcano we will use papier mache. To create your papier mache mix 1 part flour to 4 parts of lukewarm water and stir until it forms a smooth paste. Add 1 teaspoon of salt to stop it going mouldy.

**Step 4.** Tear some newspaper into strips, dip them in papier mache and smooth them onto your volcano. Repeat this until the entire surface of the volcano is covered, leaving the top of the bottle uncovered.

**Step 5.** Leave this to dry overnight.

**Step 6.** When your volcano is dry, paint the outside and leave this to dry.



**Watch the Volcano video on**  
**#GSCAtHome Facebook or YouTube page**

## ACTIVITY

# Walking Bug Count



## What will you do?

You will explore the world of minibeasts – find out what they are, how to classify them and the importance of minibeasts for biodiversity. Then conduct your own bug count in your garden or park.

## What will you need?

- Pen or pencil
- Paper or notebook
- Small plastic tub
- Large tray
- Gloves (optional)
- The bug count worksheet (included)



Ensure you have permission from an adult and their supervision before starting. Any minibeasts that we find aren't ours to keep and after they've been counted, we need to put them back where we found them. Remember to be gentle with the minibeasts - they are living things too. There are some that we don't want to touch like bees and wasps but make sure you still count them and let them carry on with their important work!

If you don't have a garden you can complete your bug count in a local park. Make sure you stay safe by taking an adult with you and staying two meters apart from others.

## How to do this experiment

### On a walk:

**Step 1.** Take our worksheet on your walk. You can change the table to suit your walk and the kind of places you walk through, and you can also add on more types of minibeast that you see along the way.

**Step 2.** You're looking out for any bugs that fly.

**Step 3.** Keep note of what you saw and where you saw them. Keep a count of how many you saw using tally marks.

### In your garden or in the park:

**Step 1.** Identify your habitats to study, for example - undergrowth, grass, soil, bushes or trees.

**Step 2.** Start with the soil. Scoop a small amount of soil into the tub and search it for minibeasts. Record what you find onto our worksheet. Add more types of minibeast you find to the bottom the worksheet.

**Step 3.** Put the minibeasts you have found into your larger tray so you don't accidentally count them twice.

**Step 4.** Carry on with your bug count for 10 or 15 minutes, repeating the above process.

**Step 5.** When you have finished your count remember to put your minibeasts back where you found them.

**Step 6.** Chose a different habitat area - maybe trees, bushes or plants this time.

**Step 7.** Put your large tray under the tree or bush.

**Step 8.** Shake the bush or tree - you can use a stick for higher areas - and catch any minibeasts that fall out into your tray.

**Step 9.** Investigate your bugs and record your findings in your worksheet.

**Step 10.** Carry on with your bug count for 10 or 15 minutes, repeating the above process.

**Step 11.** When you have finished your count remember to put your minibeasts back where you found them.

## More to try

**This is best done outside, or place your volcano in the bath.**

Have a look and see what you found the most of and think about why those minibeasts in particular might like to hang around down on the ground?

Think about the differences between the types of minibeasts we found on the ground and up in the plants. Where did you find most of your minibeasts?

What was the most popular minibeast on the ground? What about in the trees and bushes?

Why might some minibeasts prefer to be up high? What will they find higher up in the trees and bushes? Is there something for them to eat in the trees and bushes?

## External Resources

There are lots of other citizen science projects you can get involved in from home with Zooniverse - [www.zooniverse.org](http://www.zooniverse.org)

## Fun facts

Bug counts are a helpful method for scientists to keep an eye on biodiversity and to monitor whether climate change and human activity are having an effect on the survival of the minibeasts around us.

People in many countries around the world eat insects as part of their diet, including mealworms, crickets and scorpions.

Dragonflies may have been on planet earth at the same time as the dinosaurs. Scientists believe they have been around for 300 million years.

Caterpillars usually have six pairs of eyes.

Butterflies have taste sensors on their feet and this can help them find out where to lay their eggs. When butterflies land on a plant, they can tell if the leaves are suitable tasty food for their caterpillars.

Take pictures of the minibeasts you find and share with us: [CLDteam@gsc.org.uk](mailto:CLDteam@gsc.org.uk) or message [@TheBothyGSC](https://twitter.com/TheBothyGSC) on Twitter.

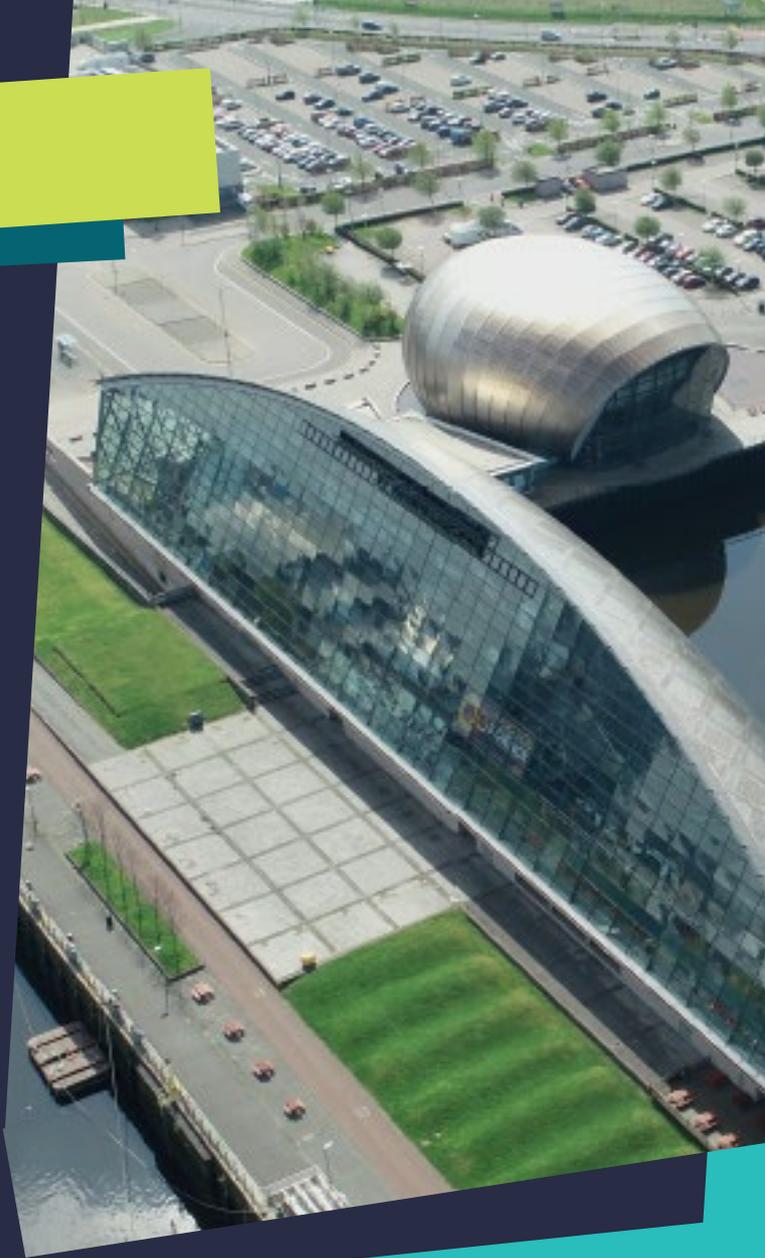


Watch the Bug Count video on [#GSCAtHome](#) Facebook or YouTube page

# 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. Explore the inner workings of the human body, find out how we can power the future, challenge your family and friends to solve puzzles, explore technologies of the future and marvel at the wonders of the solar system under our full-dome Planetarium. Our team of passionate presenters are always on hand to bring you exciting experiences in our hands-on workshops and live demos in our spectacular Science Show Theatre.

During these challenging times while we are unable to open our doors to you, we are bringing you the excitement of Glasgow Science Centre through GSC At Home. We're online every morning at 10am on our Facebook page and YouTube channel.



## QUIZ ANSWERS



- 1 (d) - A caterpillar usually has 12 eyes.
- 2 Mars has the tallest volcano. It's called Olympus Mons, it is 27 km high and is about the size of France!
- 3 True. Snails have thousands of microscopic teeth known as a radula.
- 4 Valentina Tereshkova. She made a solo voyage in space in June 1963.
- 5 Invertebrates don't have a backbone.
- 6 Earth is in The Milky Way.
- 7 True. Scientists have so far discovered more than 100 volcanoes in Antarctica.
- 8 (c) It took Tim Peake 3 hours to return from the ISS.
- 9 Magma is molten rock trapped below the surface of the earth. When it erupts through the surface and flows out, it is called lava.
- 10 Butterflies can taste with their feet.

## WE WANT YOUR FEEDBACK

### We would love to hear what you think!



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

Don't forget to send us photos of your creations, discoveries and experiments. **You can send feedback and pictures to [CLDteam@GSC.org.uk](mailto:CLDteam@GSC.org.uk) or message us on twitter @TheBothyGSC.** We'll print a selection of your pictures in the magazine.

### KEEP IN TOUCH



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GLASGOW  
**SCIENCE  
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