CAMBRIDGE SCIENCE CENTRE

OpenUpScience

Issue 5

Welcome to OpenUpScience, the weekly magazine from Cambridge Science Centre. This week's issue is all about Earth's rocky companion: the Moon. Let's take a closer look at what the Moon is, how we see the Moon and why it seems to change shape. You'll be *over-the-Moon* with our activities, puzzles, quizzes and challenges!

Moons are natural objects that orbit, or circle, planets. The Moon is the fifth largest in our solar system - that's right, lots of other planets also have moons.

The Moon has mountains and valleys and the surface is covered with a layer of dust. There are also millions of craters where asteroids have crashed into the surface.

We don't know exactly how the Moon itself was made, but the best current theory is that the Moon formed from debris after a huge crash between the Earth and a rocky object called Theia.

Moon Mysteries

Can you find the lunar words hidden in the grid?

K	D	A	R	K	S	I	D	E
D	U	S	T	M	M	Y	A	C
A	T	T	V	T	O	M	D	L
E	P	R	O	C	K	O	Q	I
B	H	O	R	B	I	T	N	P
S	A	N	L	L	H	V	W	S
Y	S	A	O	L	X	I	P	E
U	E	U	C	B	O	C	H	F
T	S	T	C	R	A	T	E	R

ASTRONAUT
DARKSIDE
ECLIPSE
CRATER
APOLLO
PHASES
ORBIT
DUST
MOON
ROCK

Spinning around

The Earth and Moon's Orbits

We are always on the move!
Everything in our solar system is constantly moving. The Earth is spinning, and takes 24 hours to turn once – that's where we get the length of a day from. The Earth is also traveling around the Sun. That takes 365 days (or one year). As the Earth obits the Sun, the Moon is traveling around the Earth. It takes 29.5 days for the Moon to go around (or orbit) the Earth once.

Spinning around

A Sun, Earth and Moon orbit model

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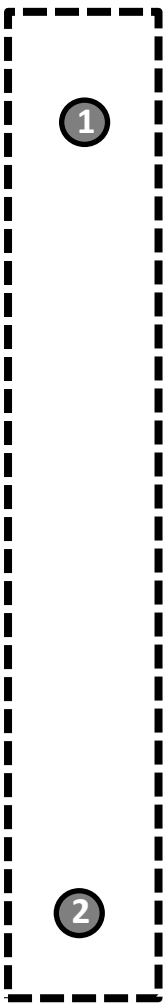
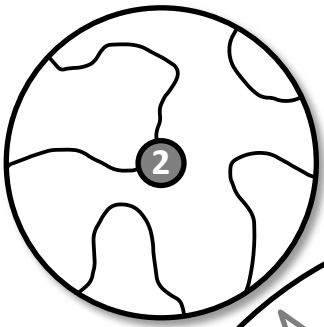
What you'll need

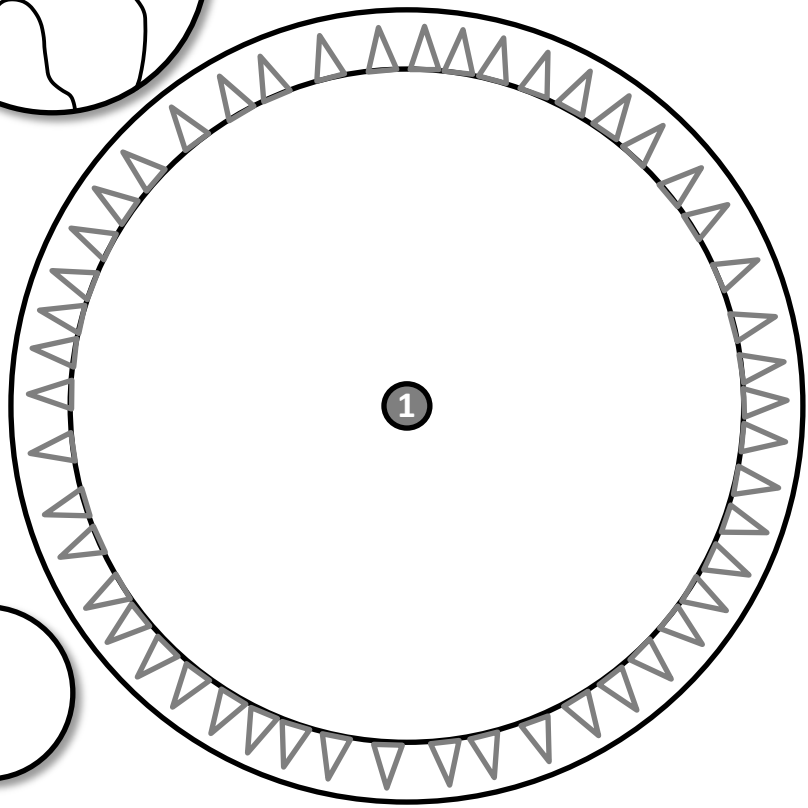
- Templates (below)
- 2 split pins
- A glue stick
- Scissors
- Coloured pens

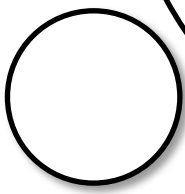
What to do

- Cut out all the templates and colour in the Sun, Earth and Moon.
- Glue the Moon to the end of the small rectangle (glue).
- With a split pin, join the Sun to one end of the long rectangle (1).
- With another split pin, join the Earth to the small rectangle and to the other end of the large rectangle (2).



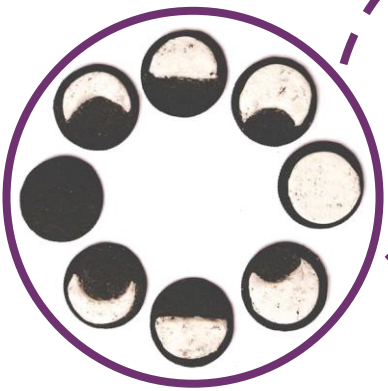






Make the moon

Have fun making and eating these phase of the moon biscuits



What you'll need

- Round chocolate, cream sandwich biscuits
- Images of the moon phases (next page)
- Teaspoon

What to do

1. Carefully separate the two halves of 8 chocolate cream sandwich biscuits - try to keep the cream on one half of the biscuit.
2. Have a close look at the phases of the moon images (on the next page)
3. Start with the new moon (use the biscuit half with no cream!)
4. Using the teaspoon, gently scrape off the cream from the other biscuits (you can eat the extra cream!)
5. Arrange the biscuits in order of the moon phases.
6. Take a photo of your finished moon cycle and send to OpenUpScience@cambridgesciencecentre.org
7. Now you can eat your Moon cycle. Enjoy!

Did you know…?

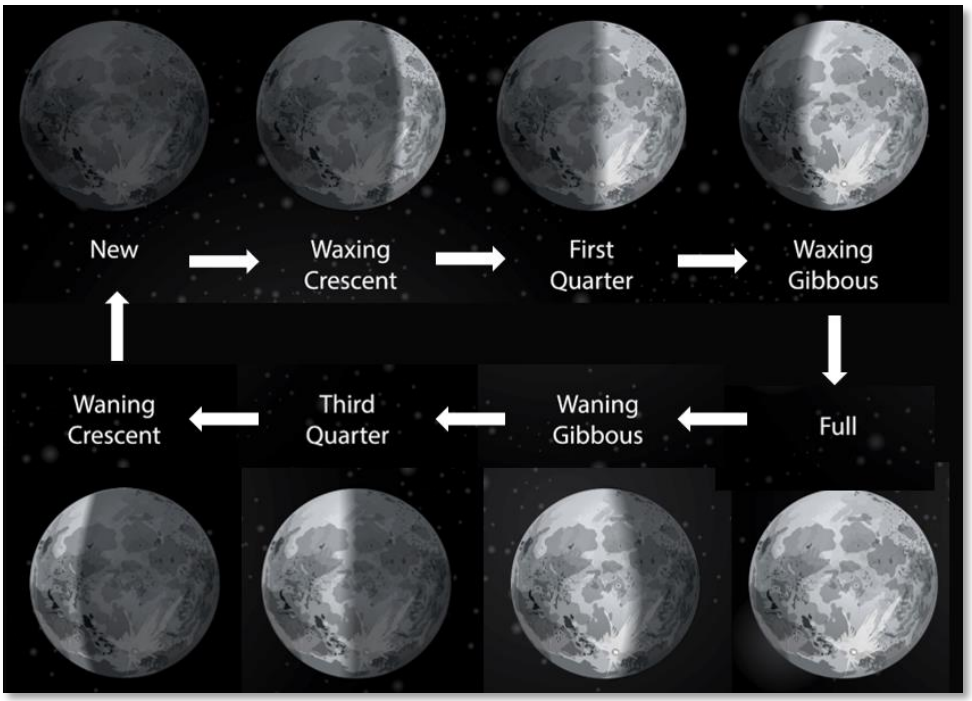
Only 12 people have ever walked on the Moon. The first person to walk on the Moon was American astronaut Neil Armstrong in 1969

Q. What does the Moon like to read?

A. Comet Books

Make the moon

You might have noticed that the Moon doesn't always appear to be the same shape. The Moon doesn't actually change shape, but we can only see the bit the Sun shines on! A Full moon is when the Sun is shining on all the bits of the Moon facing us on Earth. A New Moon is when no light shines on the bits facing us. The other shapes are all of the other angles the Sun can be shining from. We call the different shapes we see the Phases of the Moon.



This Week's Challenge

The Moon is covered in craters, which are caused by asteroids crashing into it. But, what do different asteroids do? Can you investigate how the size, weight and speed of an object will impact the size and shape of the crater? (Hint: you could use some sand or powdery materials). We'd love to see your results. Send them to OpenUpScience@cambridgesciencecentre.org

Moon Anagram

Extra tricky puzzle this week!
Unscramble the letters to find the words. Then rearrange the circled letters to find the hidden word

troib	_____
tdus	____
srnetcec	_____
tteoar	_____
wnngai	_____
ixgawn	_____
itelletsa	_____
itomnuna	_____

Hidden word (circled letters)

Moon Quiz

(Answers on back page.)

1. Who was the first person to walk on the Moon?
   - A. Neil Armstrong
   - B. Buzz Aldrin
   - C. Buzz Lightyear
   - D. Tim Peake

2. What was the object that likely hit the Earth to form the Moon?
   - A. Halley's comet
   - B. Ganymede
   - C. Theia
   - D. The Sun

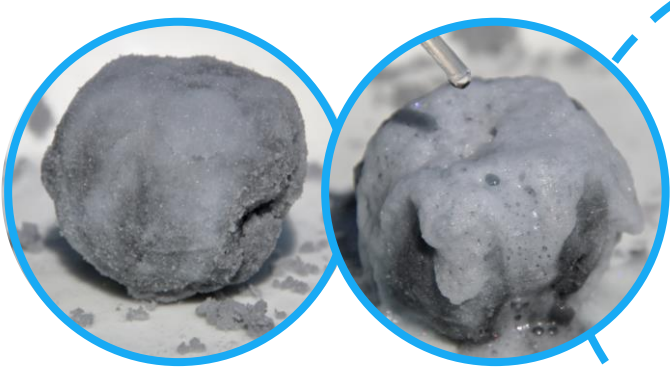
3. What causes the Moon to shine?
   - A. Electricity
   - B. Its dusty surface
   - C. Its atmosphere
   - D. The Sun

4. Which planet has the largest moon?
   - A. Venus
   - B. Earth
   - C. Jupiter
   - D. Neptune

Fizzy Moon Rocks

Make a moon rock and then watch it fizz!

Real moon rock is mostly an igneous rock called anorthosite, or a rock called basalt.



What you'll need

- Two small bowls
- Water
- Bicarbonate of soda
- Teaspoon
- Black, blue or purple food colouring
- Glitter (optional)
- Shallow dish or plate
- Vinegar
- Pipette or squeezy bottle

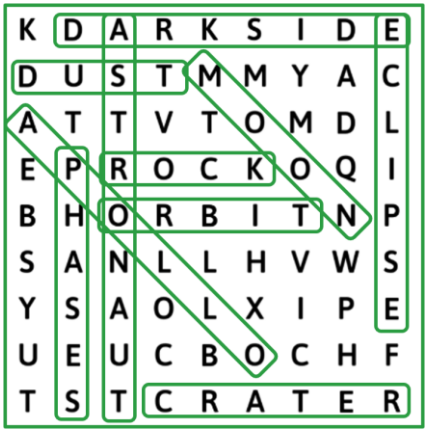
Bicarbonate of soda is a base and vinegar is an acid - remember our pH from Issue 1? When you combine the two, you produce a gas called carbon dioxide. That's the fizzy chemical reaction that you see.

What to do

1. Add some bicarbonate of soda to one of the bowls (about 3 tablespoons for each moon rock).
2. In the other bowl, colour the water as desired. We chose black and blue colouring.
3. Slowly add the coloured water to the bicarbonate of soda a little bit at a time. Add some glitter if you like. Aim for a crumbly mixture that can be packed together into a ball.
4. Shape your mixture into moon rocks. They can be any size or shape you want.
5. Put the moon rocks into a shallow dish and pour some vinegar into a bowl. Using a pipette, or squeezy bottle, or a teaspoon, squirt your moon rocks with vinegar and watch them fizz!

Puzzle Solutions

Moon Mysteries



Moon Anagram

troib	orbit
tdus	dust
srnetcec	crescent
tteoar	rotate
wnngai	waning
ixgawn	waxing
itelletsa	satellite
itomnuna	mountain

Hidden word

c	r	a	t	e	r	s

Next Issue: The Oceans

Delve into the deep seas and the fascinating creatures that live there.

Send us your work! OpenUpScience@cambridgesciencecentre.org

Send us your questions! Look out for the answers on:
Science@6 - YouTube, Monday, 6pm

Help us improve OpenUpScience! Let us know what you think: /link.cambridgesciencecentre.org/feedbackissue5

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Quiz Answers: Q1 – A, Q2 – C, Q3 – D, Q4 – C