

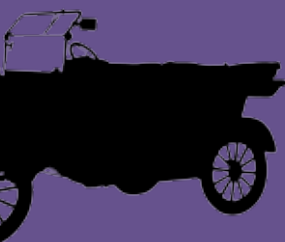
SCIENCE
MUSEUM



Try



This...



This book belongs to:

How to use this book

Hello!

This book has been designed especially for **you**, to try new things. There are lots of different activities. Some might spark your curiosity and get you to **ask questions** about how things work or **find out more**. For others you might have to use your creativity and **think a bit differently to solve problems**. You can do these activities **in a team** with others or on your own, but make sure you **share your ideas** and what you find with friends and family.

This book is all yours. You can choose anywhere to begin: at the back, in the middle or flick through the pages and get someone to shout 'That one!'

Happy experimenting!

from the Science Museum

TRY THIS... ID



Name

School

Class

Height

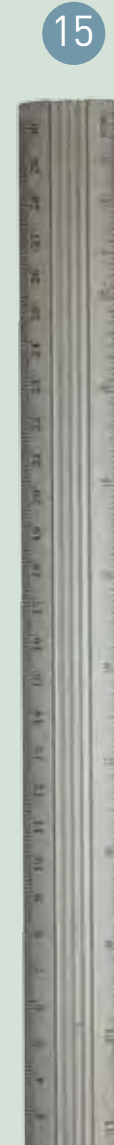
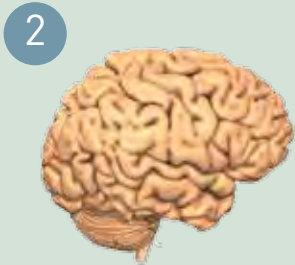
Top tip: for help finding out, go to 'Measure up' on pages 44 and 45.

Finish this statement: I like...

Fingerprint

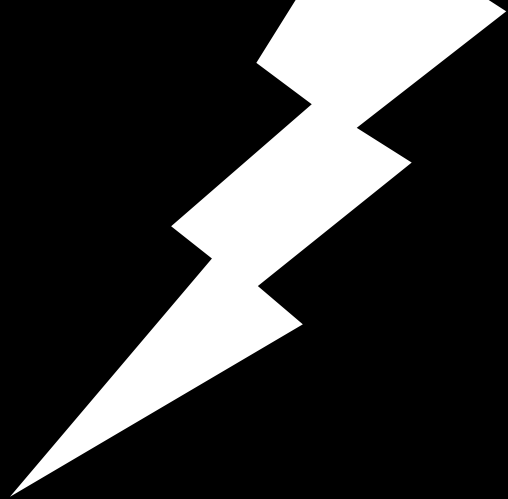
Top tip: use a felt-tip pen or ink to colour in your finger, then press it on the space above.

Things you might need...



- 1 Internet
- 2 Brain
- 3 Milk
- 4 Computer
- 5 Old or unwanted electrical items
- 6 TV
- 7 White colour pencil
- 8 Pen
- 9 Coat
- 10 Mobile phone
- 11 Scissors
- 12 Banana
- 13 Apple
- 14 Glue stick
- 15 Ruler

Danger, High Voltage!



We use electricity every day – making toast, playing computer games, switching on lights... But the energy sources we use, such as coal and oil, are running out.

Could you use less electricity and save energy every day?

Every year there's a 'World Earth Hour' where people everywhere, including in the Science Museum, turn off all their lights to save electricity and energy.



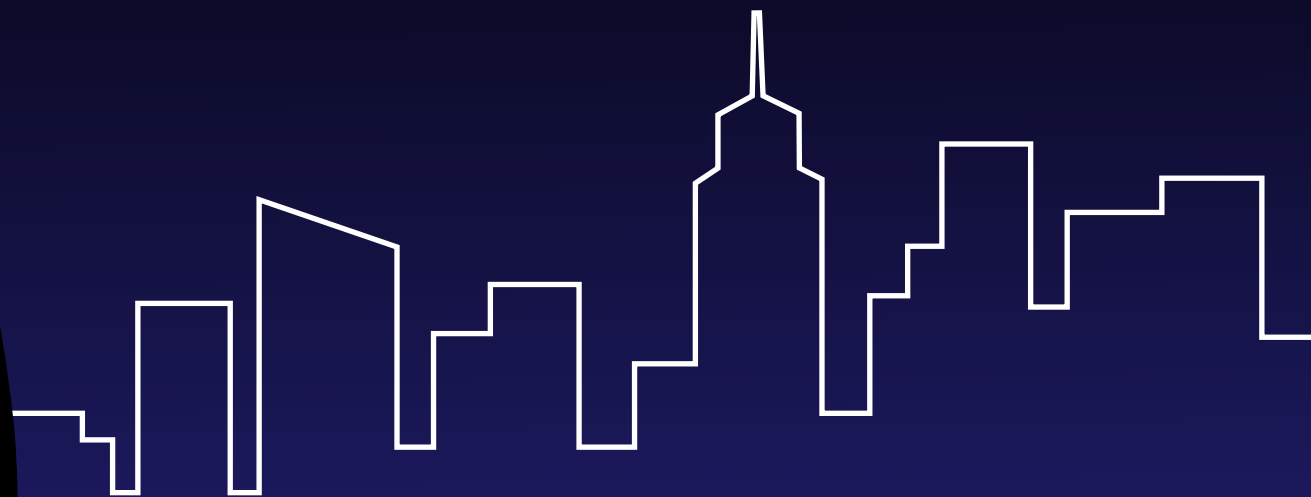
This year is 20.....

World Earth Hour
starts at 20.30 on

..... March

TRY THIS...

- Find out the next date when World Earth Hour happens and write it in the calendar opposite so you remember to join in.
- Switch off TVs, games consoles and lights when you're not using them.
- Unplug gadgets when you've finished charging them.
- Wear your socks for two days to cut down on washing (maybe not).



Wreck your tech



Inside technology that you use every day you'll find many different parts. Each part has been carefully designed and engineered to make sure your technology works. This might be your toaster, mobile phone, radio or bicycle.

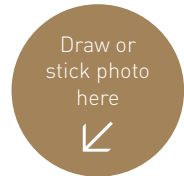
Opposite is a picture of all the pieces found inside an alarm clock.

Have you ever wondered what's inside your technology?

For all the leftover bits, find your nearest recycling centre here: recyclenow.com

TRY THIS...

- Ask an adult if there's something you can take apart to look inside, but be very careful as the item you choose could contain small parts or sharp things. Try a wristwatch, a pen, some old headphones or maybe a TV remote you don't need any more.
- How many pieces do you think will be inside? How many did you see – were there more or fewer than you thought?
- Record what you find by drawing a picture, taking a photo or sticking down the pieces you collect.



News and views

Research scientists experiment and investigate things that might help us in the future – from renewable energy sources to cures for disease and vaccines that could change our everyday lives.

Science news stories can make you excited, curious or laugh out loud. What's going on in your world right now?



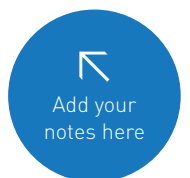
TRY THIS...

- Visit bbc.co.uk/tomorrowsworld
- Read a post or watch a video and share what you find with a friend or family member
- On the opposite page are some things you might want to share:



This is the *Tomorrow's World* gallery at the Science Museum. It explores surprising science news stories and the biggest breakthroughs.

- The most interesting thing you found out
- One thing that made you say 'Whaaaaat?'
- Something you're curious to find out more about
- How this news story might become famous history or change your life
- A way this news story might lead to plants taking over the world (or not)



The next big thing

At the Science Museum we have people called curators whose job it is to get together and decide what things we should keep and display. We've got the weird and wonderful, from space rockets to a seven-toed cat, but we're always looking for new and exciting things. Have you got the next big thing?

TRY THIS...

Find something you think should be in the Science Museum, then write to us to explain why. Things you could tell us include:

- What does it do?
- Why is it important?
- Is it the only one like it?
- What does it make you think about?

And send us a picture too!

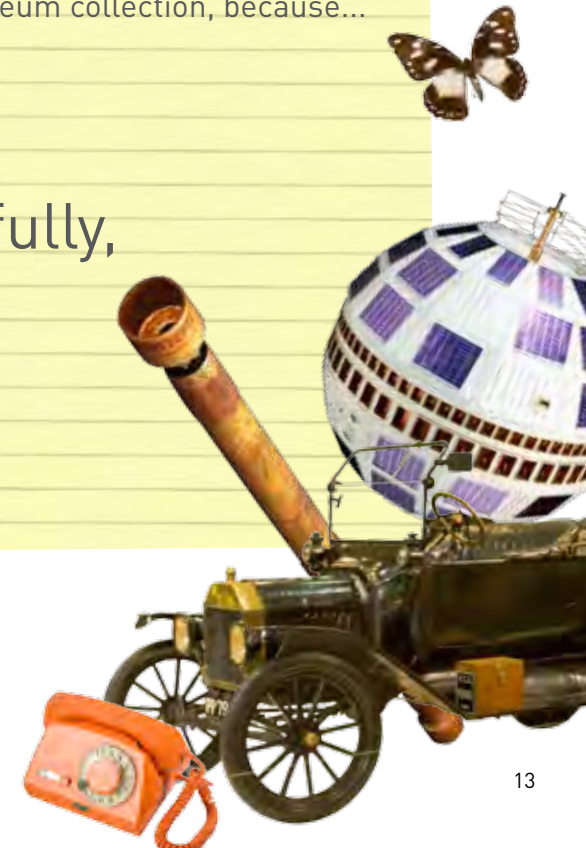
Learning Resources
Science Museum
Exhibition Road
South Kensington
London SW7 2DD, UK
Planet Earth

Dear Science Museum,

I think my amazing object, the...

should be in your museum collection, because...

Yours faithfully,

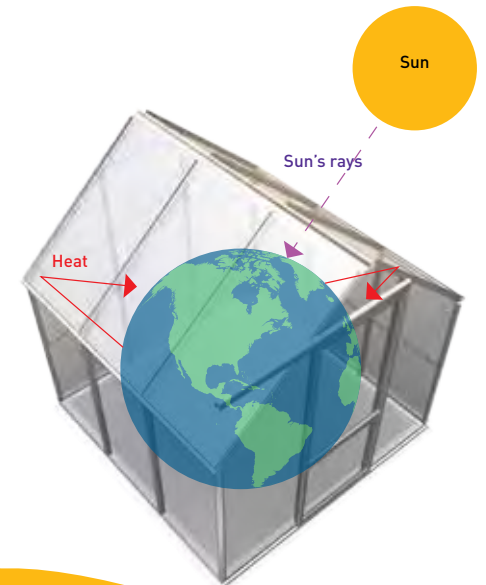




Trapped gas



One of the causes of climate change is greenhouse gases, such as methane, which are released into the air and act like the roof of a greenhouse, trapping heat and warming the Earth. Some of the ways methane gas is produced include burning fossil fuels, decomposing rubbish in landfills and human flatulence!



TRY THIS...

How much methane do you produce?

Count the number of burps and farts your body makes today. Record the number somewhere on this page.



Kitchen science

Science doesn't have to be done in a laboratory. There are lots of fun activities you can experiment with at home. You also don't need a white coat... but maybe an apron, as things are going to get messy!

TRY THIS...

You will need:

- 1 pint of whole milk
- Food colouring (red, yellow, blue and green)
- Washing-up liquid
- Cotton buds
- A container (an oven dish or plate will do)

MAGIC MILK

Create your own rainbow patterns!

- Pour the milk into your container.
- Put a few drops of each food colouring into the milk in different places.
- Dip a cotton bud in washing-up liquid.
- Now dip the cotton bud in the centre of the milk and watch the colours swirl!

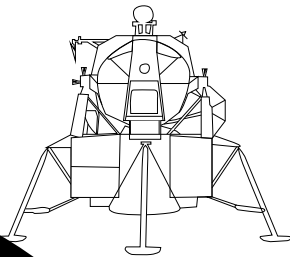
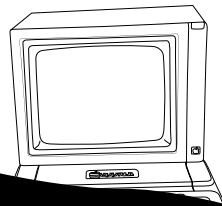
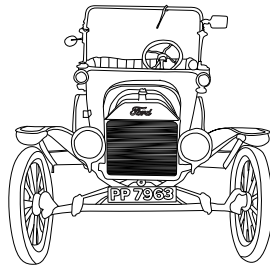
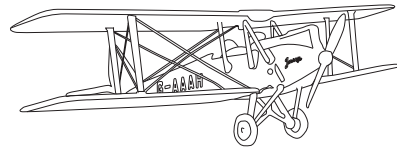
Check out more fun experiments in the **Kitchen Science** book, which you can find here: sciencemuseum.org.uk/kitchenscience

WHAT'S HAPPENING?

The washing-up liquid lowers the surface tension of the milk so the food colouring is free to flow. At the same time the washing-up liquid also makes the fats and proteins in the milk spread out. This causes the liquid to swirl.

Adopt an object

The Science Museum has over 5 million objects. This is your chance to choose one and make your very own pop-up 3D version!



TRY THIS...

- Cut out the Apple 2 template on the opposite page.

Go to this website:

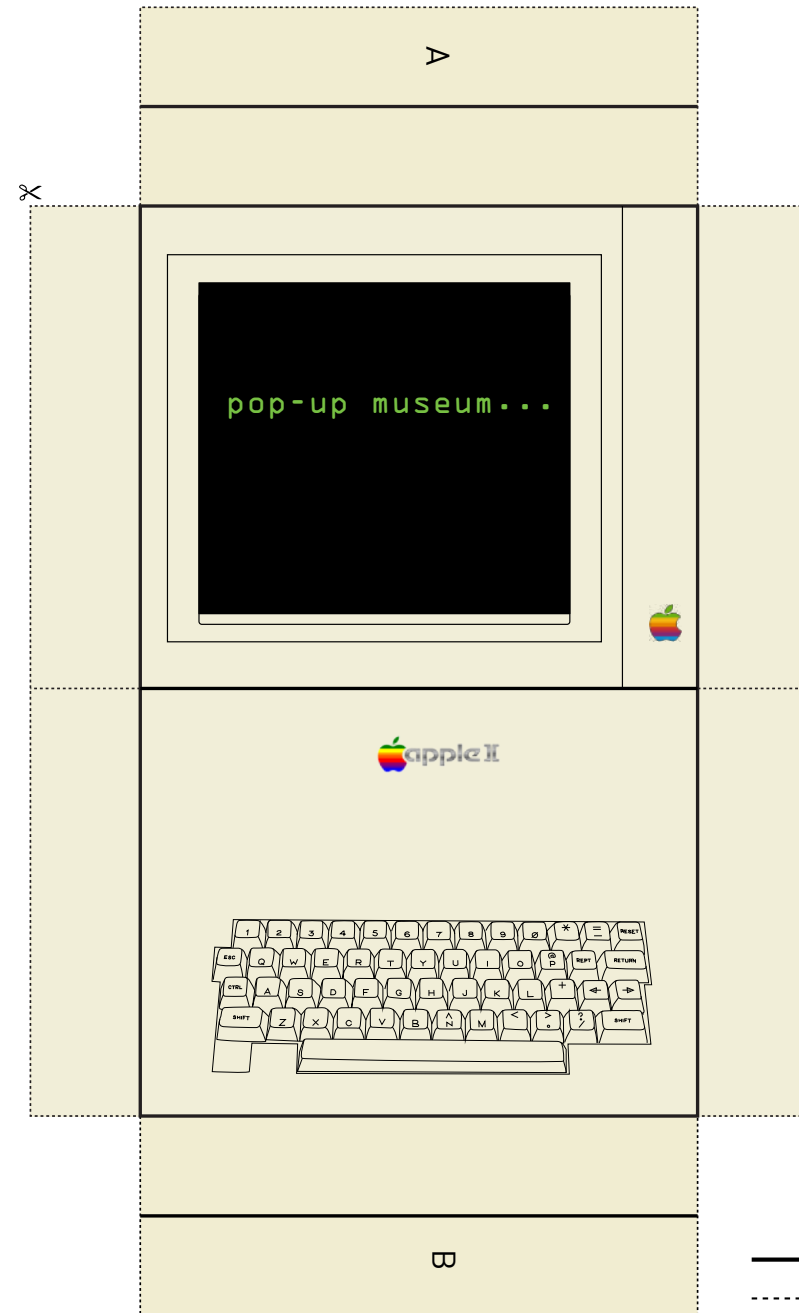
sciencemuseum.org.uk/trythis

- Click 'Adopt an Object'.
- Choose 'Apple 2' and click 'Download'.
- Print the 'instructions' (you'll find the 'base' already in this book on the next page).
- Follow the instructions to find out how to make your 3D pop-up Apple 2 computer.

Now you've made a computer, why not have a go at the peacock or the Ford Model T car?

Top tip: for best results, print the 'template' and 'base' on thick paper or card.

Apple 2 template

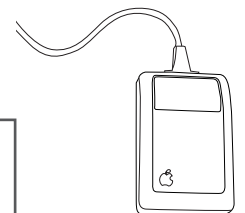


————— Fold
- - - - - Cut



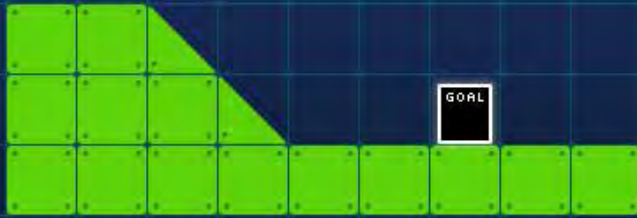
Apple 2 base

Scale



- Launched in 1977, the Apple 2 was one of the first computers to have colour graphics, which is why the first Apple logo was replaced by a rainbow-coloured apple shape.

Games



The Science Museum website has lots of fun games to play. But have you ever wanted to design your own?



TRY THIS...

Go to this website:
sciencemuseum.org.uk/trythis

- Click 'Games'.
- Click 'Launchball' to open the game.
- Click 'Play the levels'.
- Click 'Create and share' to have a go at making your own computer game level.

Go back to the 'Games' section to make your own Thingdom monster or save the planet in Futurecade!



Sketch your level here



Gogglebox

The Simpsons is famous for sneaking science into its episodes. Can you spot the science in your favourite TV show?



DID YOU SEE SOMEONE...?

- Working with animals
- Making something
- Taking something apart
- Using electricity
- Using numbers
- Time travelling
- Fixing something
- Making food
- Visiting the doctor or a hospital
- What other science can you spot?

TRY THIS...

Watch something on TV! Find a comfy spot, maybe with your friends or family, and check off the things on the list opposite if you see them.

Extra time

In 1916 a chap called William Willett noticed that the clear bright light of early mornings during spring and summer months was being 'wasted' as people slept. He proposed changing the clocks so that the short period of leisure at our disposal could be spent in daylight.



This year is 20.....

Clocks go forward on
..... March

This year is 20.....

Clocks go back on
..... October

TRY THIS...

In the UK the clocks go forward 1 hour at 01.00 on the last Sunday in March, and back 1 hour at 02.00 on the last Sunday in October. Find out the dates when this happens this year and write them into the calendar...

What would you do with an extra hour of time?

Invent

Inventing doesn't always mean coming up with a brand-new idea. It could be an idea that makes something else work even better.

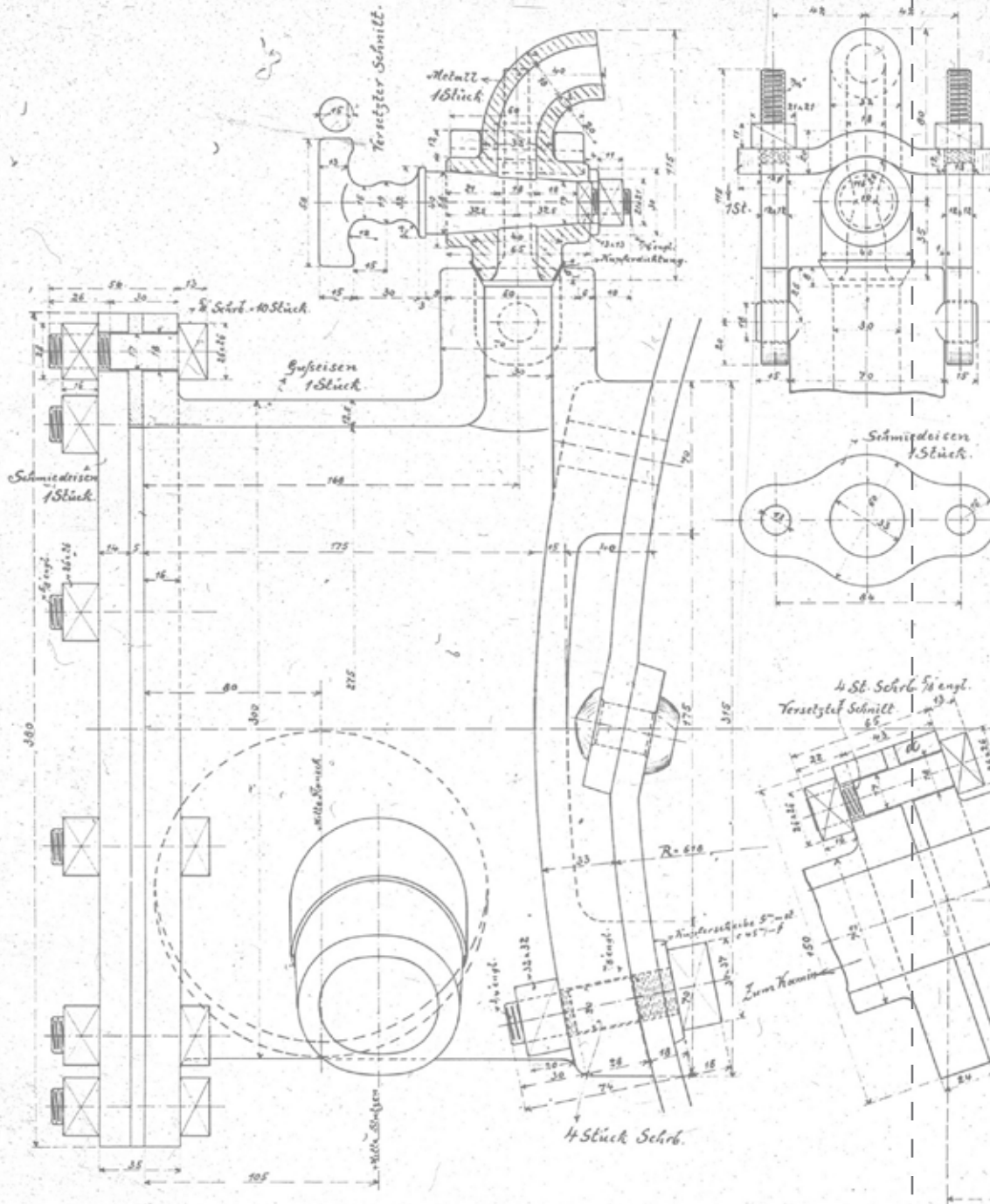
Cut out these arrows and use them to point at parts of your invention to explain how it might work. Draw your invention on the next page.

TRY THIS...

Think of something you use every day. How would you improve it?

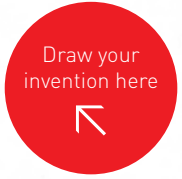
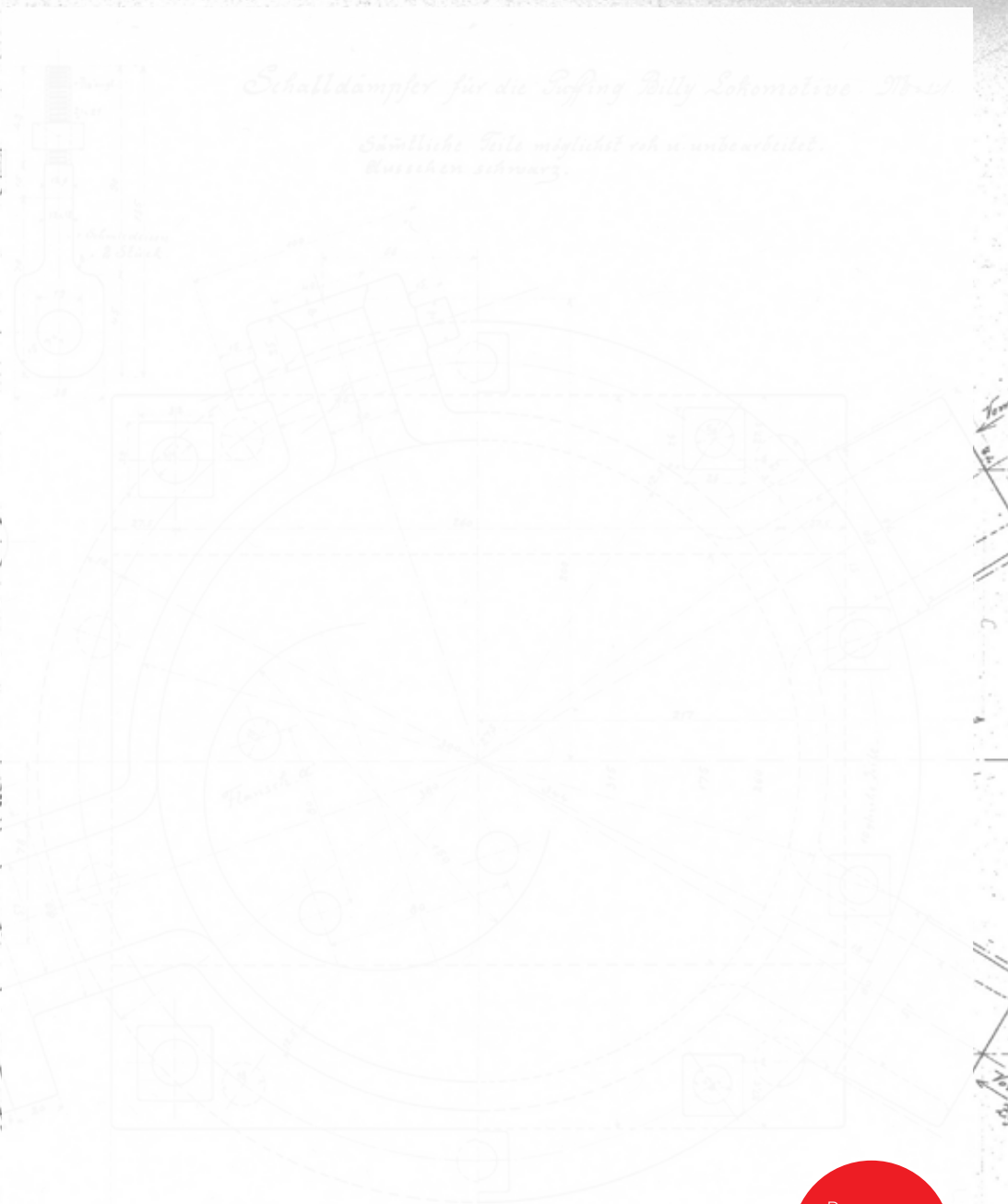
How about a TV remote you could phone so you never lose it? Come to think of it, where did I put mine...?





Schalldämpfer für die Lokomotive Billy

Einzelne Teile sind nicht eisenbeschichtet.
 Russen schwarz.



Sky at night

TRY THIS...

Be an astronomer for the night.

Go outside when it gets dark and see what you can spot (but maybe check if it's raining first).

On the opposite page are some things to start looking for...

CHECK LIST

International Space Station (ISS)

The ISS looks like a bright, fast-moving dot in the sky, because it's travelling roughly 5 miles per second. That means the astronauts see a sunrise once every 92 minutes!

The Moon

Sometimes this can look really big – then it's called a supermoon. Somewhere on the opposite page, use a white colouring pencil and draw what the Moon looks like tonight.

Satellites

Look for a dot of light moving slowly across the sky. They look a bit like aeroplanes, but the light won't flash on and off.

Stars

Can you name any constellations?

Remember me?

It's easy to think of memories as being stored away in your head until you want to look at them, like pictures on a computer. In reality, remembering things is a complex process using many different parts of the brain. Memories can be easy to recall and long-lasting, but they can also be unreliable and easily forgotten. How good is your memory?



TRY THIS...

There are loads of things on the opposite page. Stare at them for 60 seconds, close the book, wait 5 seconds, then write down all the ones you can remember.

How many did you get?

1-5: you have a goldfish memory

6-10: you probably forget your homework sometimes

11+: you're a memory master

Everyday elements

This is Dmitri Mendeleev. He had quite an amazing beard. He also decided to group together all the elements known in 1869 into what we call the periodic table. We currently know of 118 chemical elements organised by their atomic number (the number of protons in the nucleus) and we're still discovering more!



| | |
|--------------------|-----------------------|
| 1 H Hydrogen | 2 He Helium |
| 3 Li Lithium | 4 Be Beryllium |
| 11 Na Sodium | 12 Mg Magnesium |

| | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|---------------------|
| 5 B Boron | 6 C Carbon | 7 N Nitrogen | 8 O Oxygen | 9 F Flourine | 10 Ne Neon |
| 13 Al Aluminium | 14 Si Silicon | 15 P Phosphorus | 16 S Sulphur | 17 Cl Chlorine | 18 Ar Argon |
| 31 Ga Gallium | 32 Ge Germanium | 33 As Arsenic | 34 Se Selenium | 35 Br Bromine | 36 Kr Krypton |
| 49 In Indium | 50 Sn Tin | 51 Sb Antimony | 52 Te Tellurium | 53 I Iodine | 54 Xe Xenon |
| 81 Tl Thallium | 82 Pb Lead | 83 Bi Bismuth | 84 Po Polonium | 85 At Astatine | 86 Rn Radon |
| 113 Uut | 114 Fl | 115 Uup | 116 Lv | 117 Uus | 118 Uun |

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

P
Q
R
S
T
U
V
W
X
Y
Z

Nothing here either... yet

This one is empty too... for now

Nothing yet... maybe you'll discover this?!

TRY THIS...

Grab a periodic table and see if you can find an element for each letter.

Grow a tree

TRY THIS...

Next time you eat an apple (or a pear) keep the seeds.
Take them to your local park and bury them.

Visit the spot every so often to see what happens.



TRY THIS...

And the fun doesn't stop here!
The Science Museum is open 362 days of the year.

Go to [sciencemuseum.org.uk](https://www.sciencemuseum.org.uk) to check out what's on
and plan your visit.

Buried treasure

Archaeology is the study of what humans and animals were doing in the past. From dinosaurs 150 million years ago, to the Victorians 170 years ago, archaeologists dig up buried treasure from around the world.



TRY THIS...

**How much will you change in the future?
Make a time capsule for the future you.**

Things you could put in it might include:

- Something your future self might need
- Something that is important to you now
- Who your favourite band/music star is
- A current picture of yourself
- A diary of what you did today

What else would you want to see a year from now?

Places you could bury treasure:

- Inside, in a loft, basement or spare cupboard (with cobwebs in it)
- Outside, in a park or garden, somewhere with a big 'X' marks the spot'

Test your memory on the page called 'Remember me?' to find out how well you'll need to hide your time capsule.

Banana tattoo

All the fun of a real tattoo, but it's not permanent!



TRY THIS...

Design your own banana artwork.

You will need:

A banana, a safety pin, some imagination

- Design your own tattoo image or pattern – but make sure it will fit on your banana!
- Use a safety pin to carve the design in by making tiny dots on the banana skin.
- Leave it for 30 minutes and see what happens.
- Take a picture to record your banana art and stick it in.

WHAT'S HAPPENING?

Bananas contain enzymes, one of which is called polyphenol oxidase (PPO). If the banana skin is bruised or pierced the enzyme reacts with air to produce a brown colour. This reaction is known as enzymatic browning. The banana still tastes good though – it's just mushier.

Stick photo here



Measure up

Not sure how tall you are and don't own a tape measure?

List some things you are taller/longer than here:



List some things you are smaller/shorter than here:

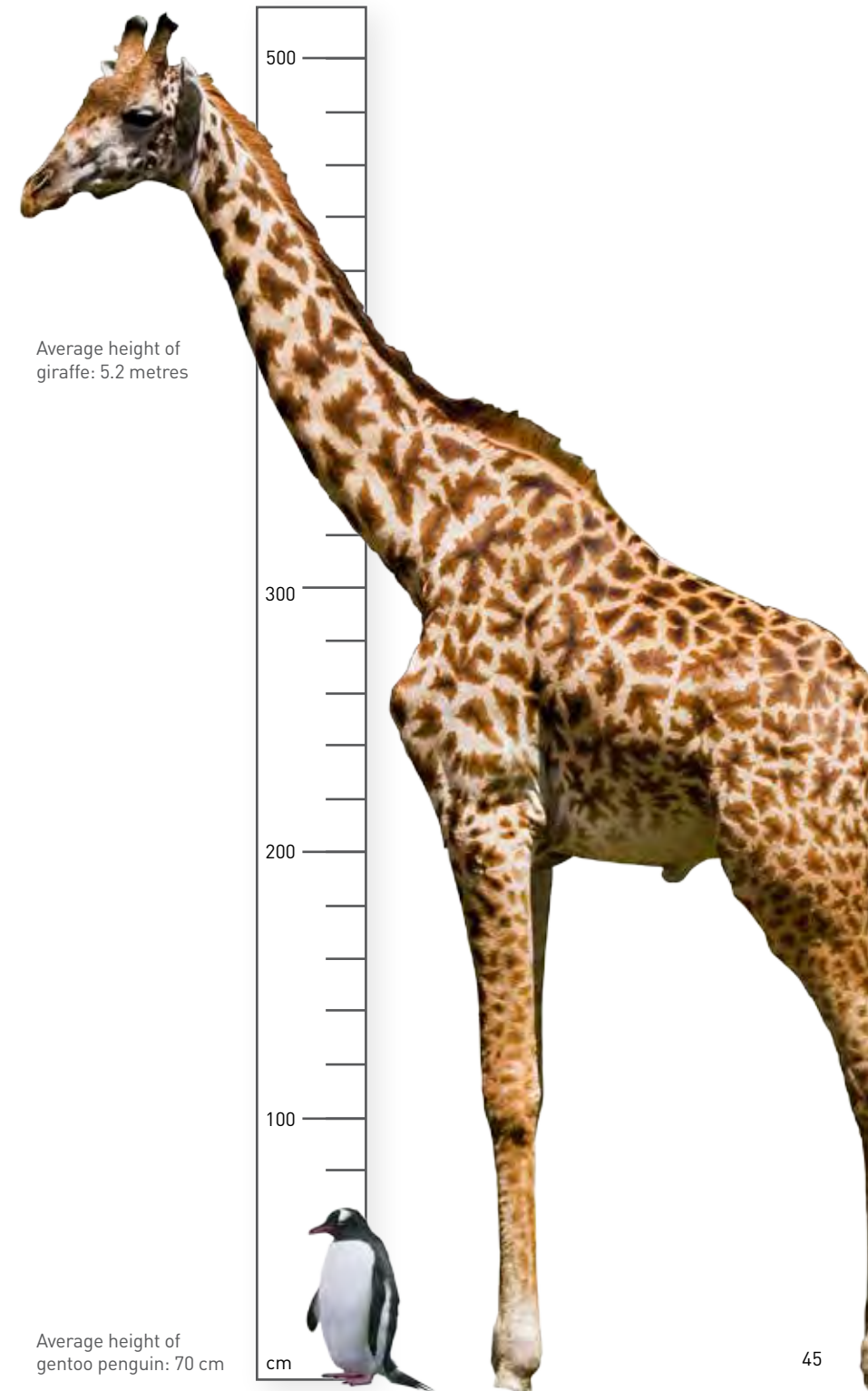


In the UK, the average height of a grown man is 1.75 metres and the average height of a grown woman is 1.62 metres.

TRY THIS...

- Lie down next to some objects.
- Stand up straight next to some objects.

Stuck for object ideas? Here are a few we tested: wardrobe, fridge-freezer, sofa, family member, pet.



Average height of giraffe: 5.2 metres

Average height of gentoo penguin: 70 cm

You've got skills!

All of the things you've tried out or tested in this book need some of the skills written on these Post-it Notes. These are skills that people such as scientists and engineers use in their jobs – and you have them too. Keep exploring, experimenting and asking questions!

Teamwork
Being a team player

Remember me?

Danger, High Voltage!

Kitchen science

Buried treasure

Measure up

Sky at night

Communication
Sharing your knowledge and ideas

Trapped gas

News and views

Adopt an object

Banana tattoo

Curiosity
Asking questions

Wreck your tech

The next big thing

Creative problem-solving
Making things work and making them work better

Grow a tree

Games

Everyday elements

Finding and using evidence
Making observations and using them to support your ideas

Gogglebox

Notes and doodles

TRY THIS...

Draw a line and match up the names of the activities with the skills you've used. We've started a few for you!

