Mission:Explore

WATER

First published in Great Britain in 2013

Published by Explorer HQ
28 Kenwood Park Road
Sheffield
S7 1NF

www.missionexplore.net

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Produced in association with Thames Water, Environment Agency and the RBC Blue Water project
Design by Helen Steer

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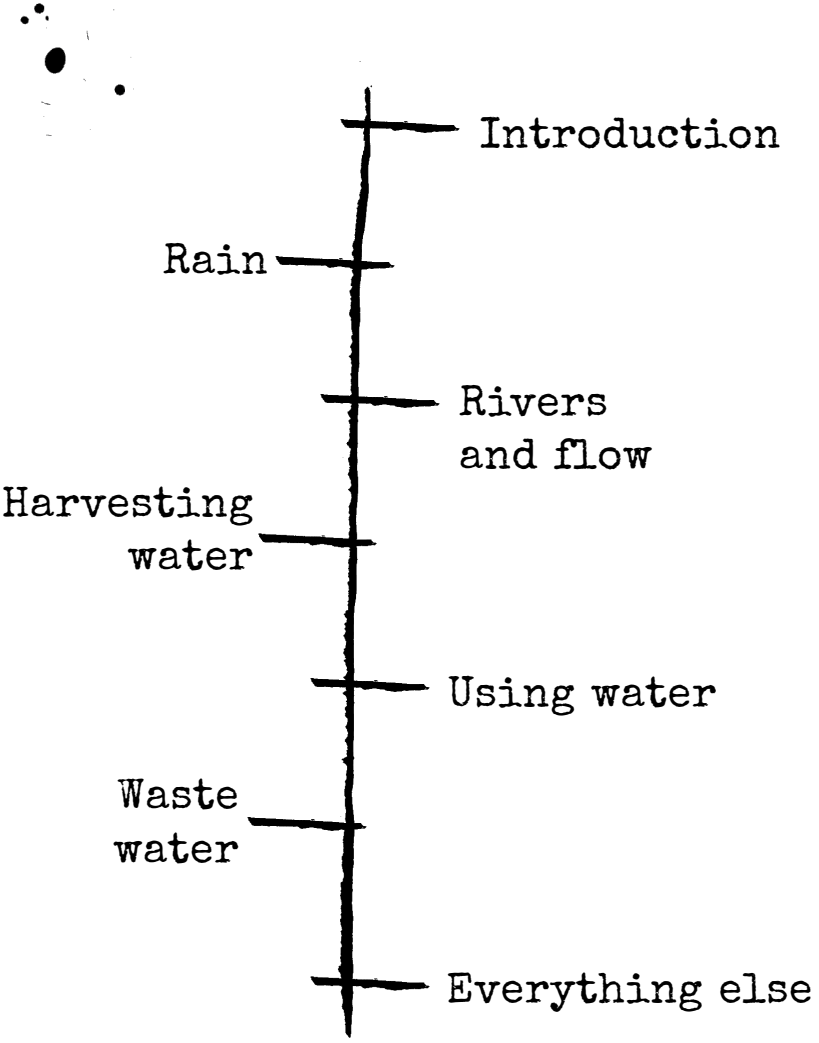
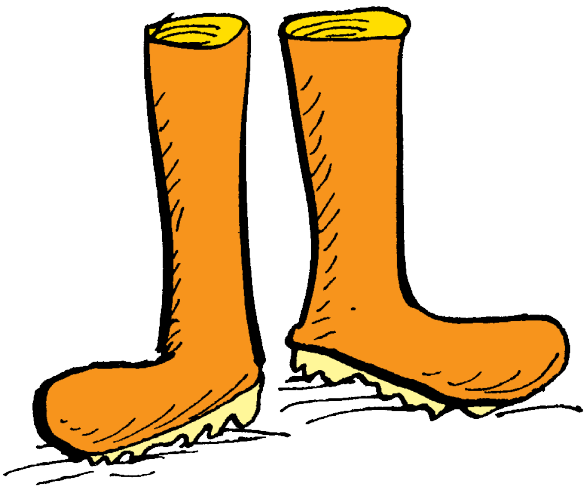
A catalogue record for this book is available from the British Library.

ISBN: 978-0-9576158-6-1

What's in this book?





WATER

Dear Explorer,

This book will change the way you think about water forever. Do not go any further if you are afraid of going on adventures or trying new things. There is also a 99.999% certainty that you will get wet.

Inside Mission:Explore Water you will find 51 water-related missions. Your challenge is to complete and record each of them as best you can. On the Mission:Explore website you can collect badges for doing your missions too.

By the time you have completed your unique copy of Mission:Explore Water you will be an extreme explorer, guerrilla geographer and about 60% water.

Before you accept any missions in this book complete our Explorer Basic Training (from page 68) and make sure you have permission to carry out your plans.

It's time to explore.

Mission:Explore

Rain

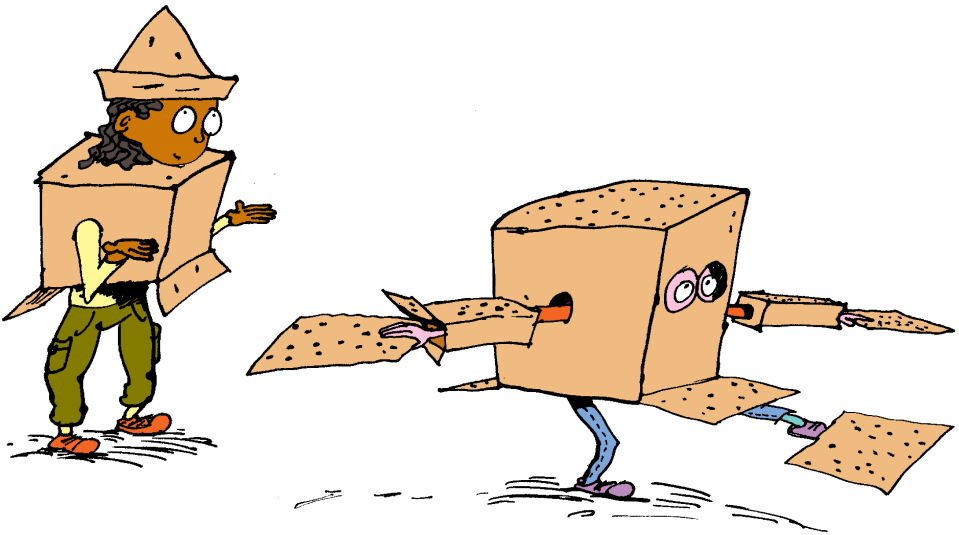
Rain has shaped the planet that we inhabit. It has carved through rocks, defined where animals can survive, where plants can grow and influenced where you live. As an explorer you can live for weeks without eating a meal but you can only survive a few days without water.

While many dry parts of the planet are dependent on rivers to bring them life, rain clouds are the most effective way of getting water around Earth. A single cloud might produce 25,000,000,000,000 droplets or 25,000,000,000 litres of water. When this water pours down on the land below it can allow wildlife to drink, farmers to produce food and you to wash. Unlike water pipes, canals and trucks clouds are 100% free.

Knowing what rain is, why it forms and how to make the most of it is important. Complete the missions in this chapter to learn more about this vital liquid.

⌗ MEW001
Rain games

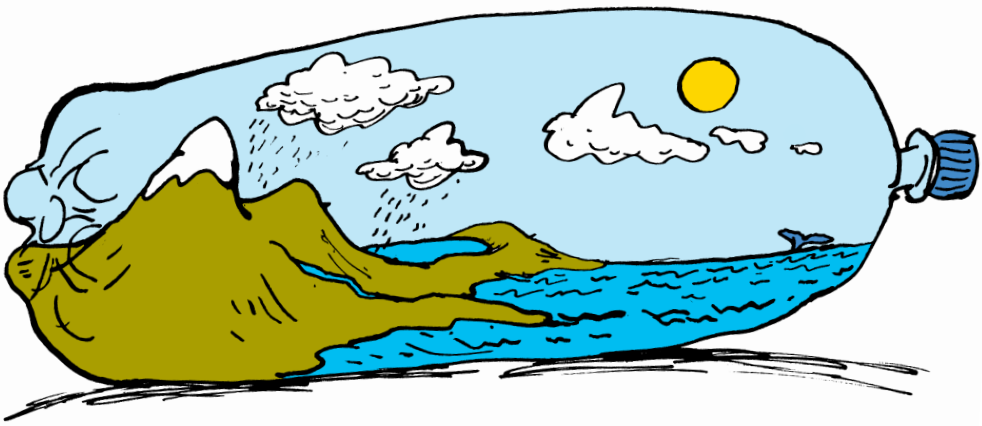
Design a device below that catches the most rain, least rain, biggest drop, smallest drop, gets hit most often or least often. Now go make it!



MEW002

Make it rain

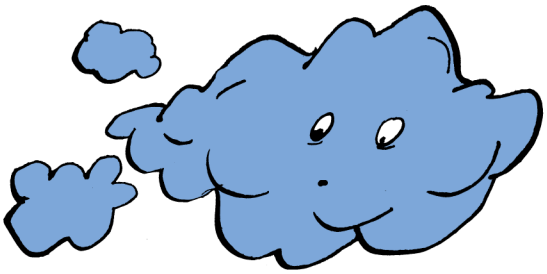
Create a water cycle inside a bottle.

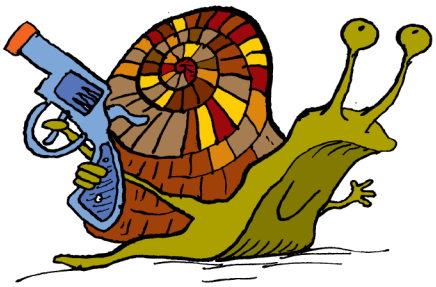


MEW003

Race the rain

Wait for a rainy day and have a raindrop race. Award prizes for the fastest, slowest and most artistic drops of rain. Use the space below to draw the paths your raindrops take.

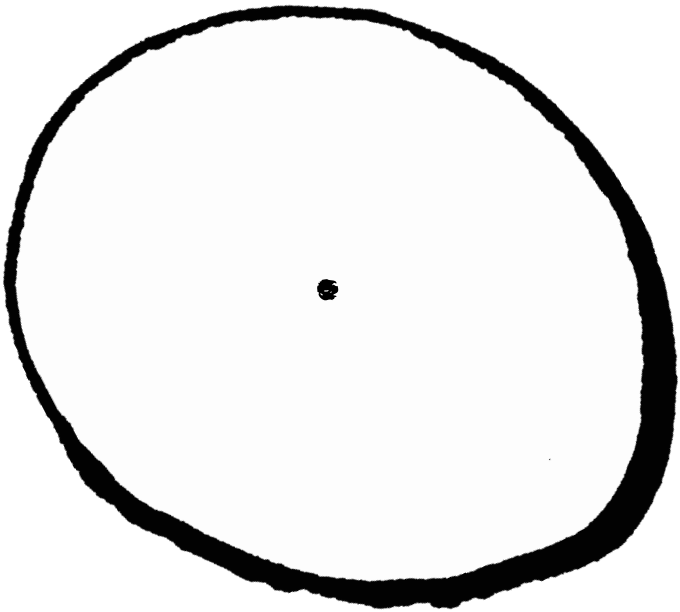




MEW004

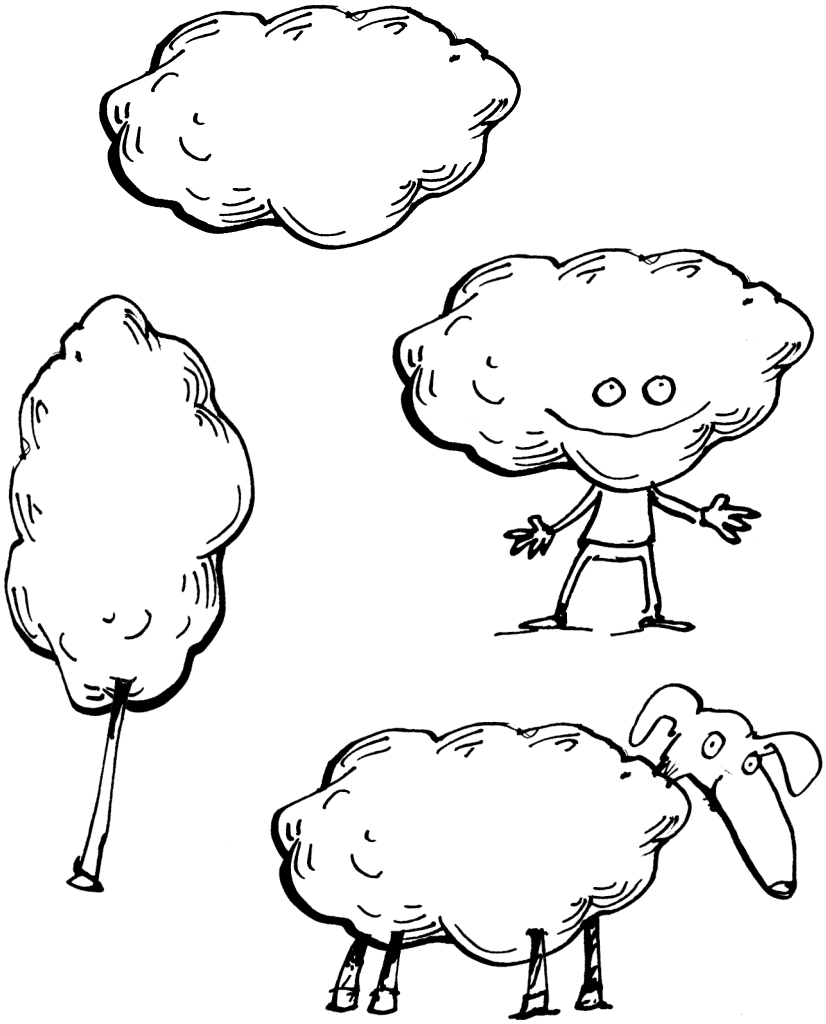
Forecast the future ...

... predict the exact time it will rain. Complete the clock face below with your prediction.



⌗ MEW005
Collect clouds

How many different types of clouds can you spot?



Draw the types of clouds in the space below.

Cumulonimbus

Stratus

Cumulus

Cirrus

⌗ MEW006

Wash up in the rain

Be a human dishwasher next time it rains.

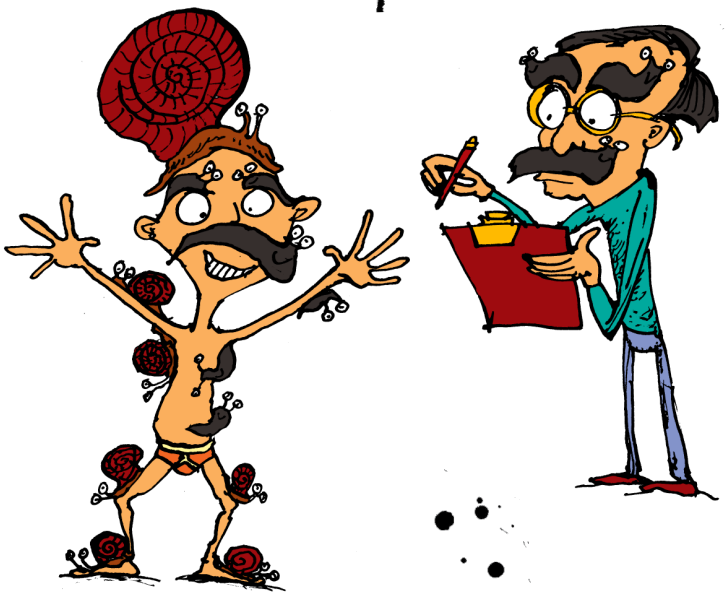
Don't use washing-up liquid that will poison the soil and make sure you have a suitable drain for your waste sludge. This mission works best when you've had a salad or sandwiches not sloppy food.

MEW007

Slug vs. Snail

Do a slug and snail census. Keep a tally here.

Slugs	Snails

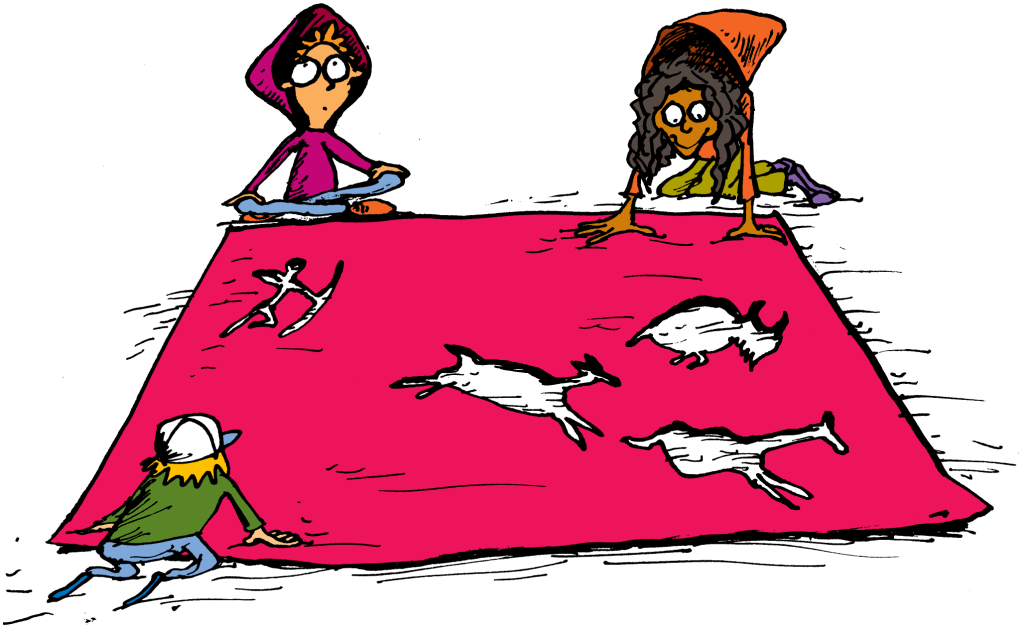


Slugs and snails like to come out after it has been raining.

⌗ MEW008

Create rain graffiti...

... by making dry patches. Design your stencil here.



⌗ MEW009

Capture water

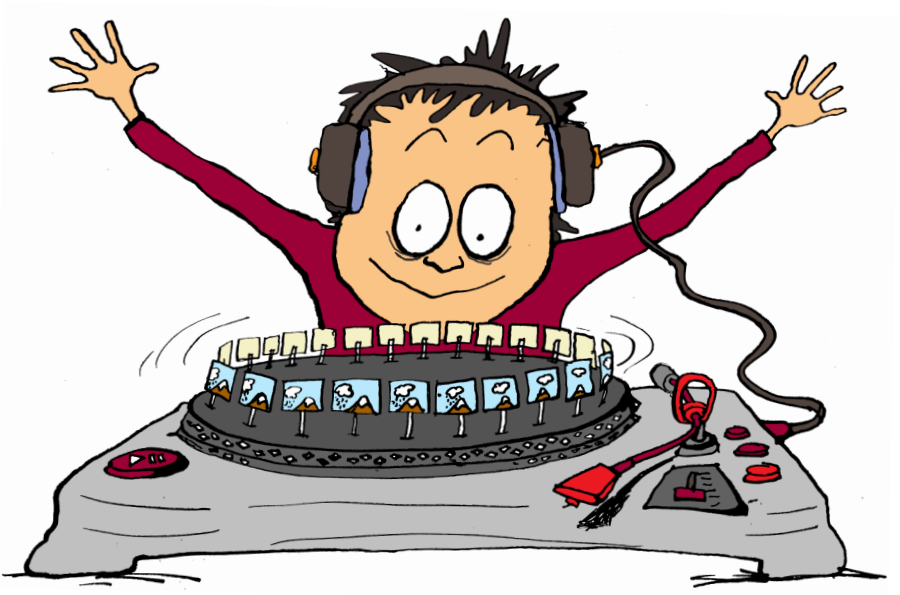
Photograph or sketch everything you can find that is part of the water cycle.

MEWOlO

Animate the water cycle

Make an animation that shows all or part of the water cycle. You could use a spinning umbrella, bicycle wheel, flip book, computer or even a record player. Have a look at this link:

www.tinyurl.com/animatewater

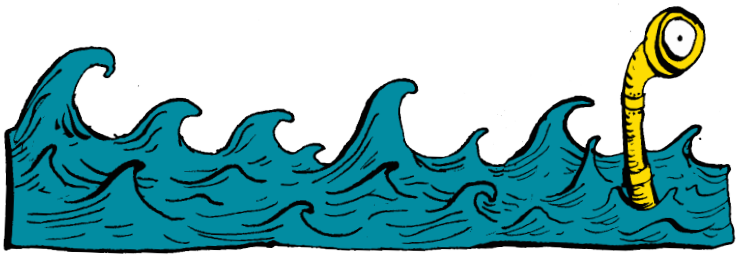


#MEWOll

Sing in the rain

Compose a song about the way we use water, then make a recording of your performance in the rain.

Rivers and flow



When rain hits the ground it pools into puddles, seeps through the ground, flows into streams, travels through rivers and flows into lakes, reservoirs and out into the sea (these water bodies are collectively referred to as wetlands).

Throughout its journey through these wetlands the rain water is absorbed, stored, slowed and filtered. It is also used by wildlife and people to get around in, have water fights, drink and wash.

Humans have altered the natural water cycle by creating surfaces like roads and roofs that stop water soaking into the ground and using pipes to move the water around. These changes have had some interesting (and not always good) results.

Complete the missions in this chapter to discover how water gets from A to B and the effects it has in between.

⌗ MEW012

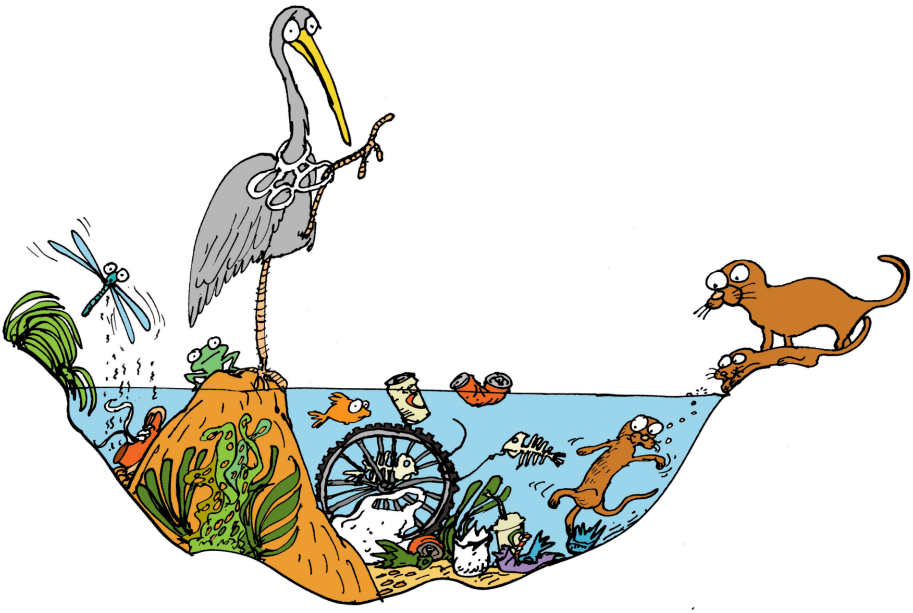
Find the source

Explore from the source to mouth of a local stream or river. What can you spot that is dependent on the river? Make a working model river basin of what you've found, including human and physical process. Plan your model here.

MEW013
Animal:garbage ratio

Explore a local stream, river or lake looking for rubbish and animals. How many birds, mammals, fish or reptiles do you find for each bit of trash?

Keep a tally, then work out the ratio.



MEW014

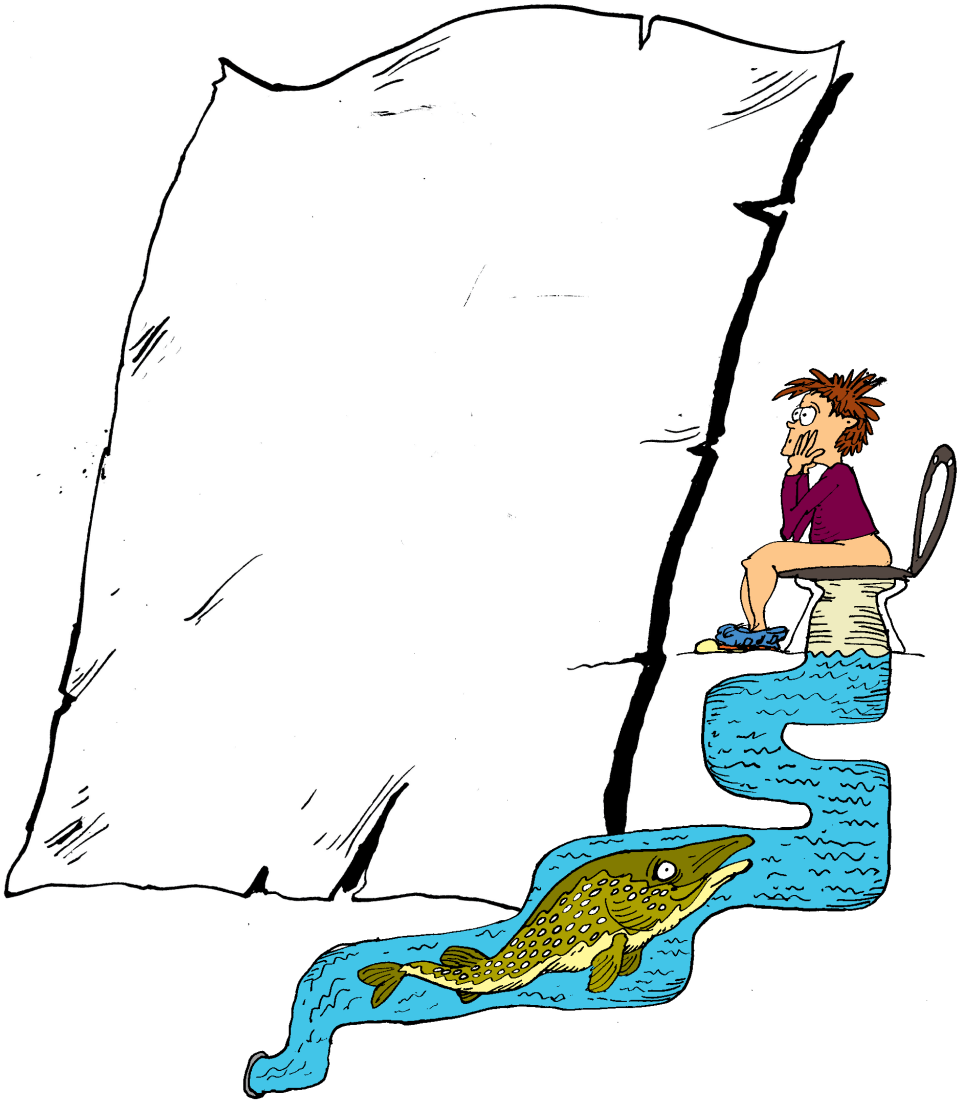
Walk on water

How far can you get by jumping between puddles?

MEW015

Draw a map for a fish

Make a map that would help a fish explore your local area.



MEW016

Explore the high tide mark

When the tide of the Thames is out, explore the high tide mark. What can you discover? Find something...

>> exotic

>> large

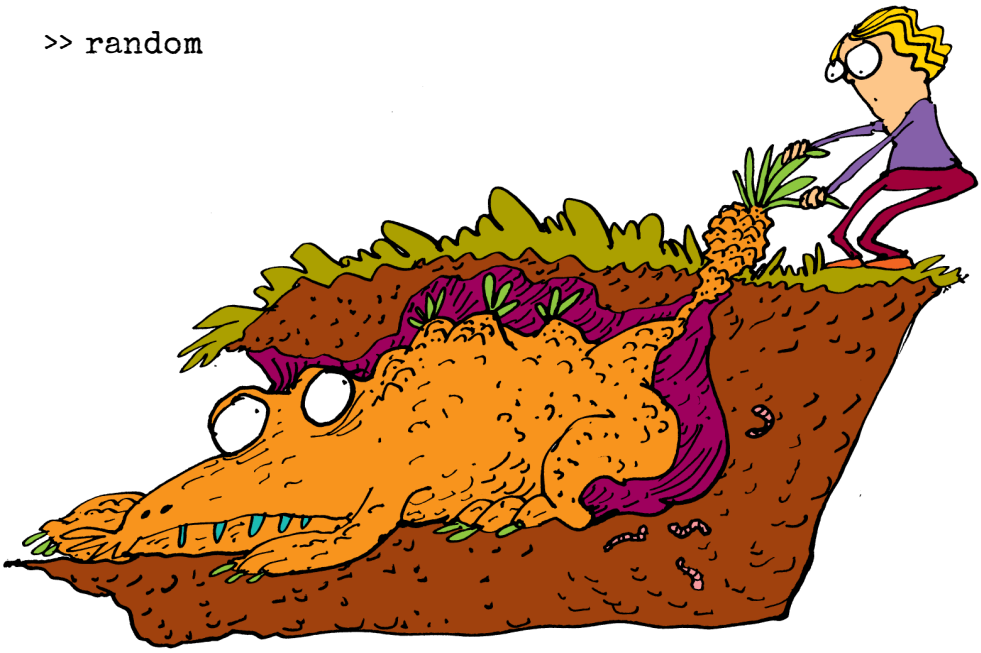
>> fluffy

>> grim

>> poignant

>> living

>> random

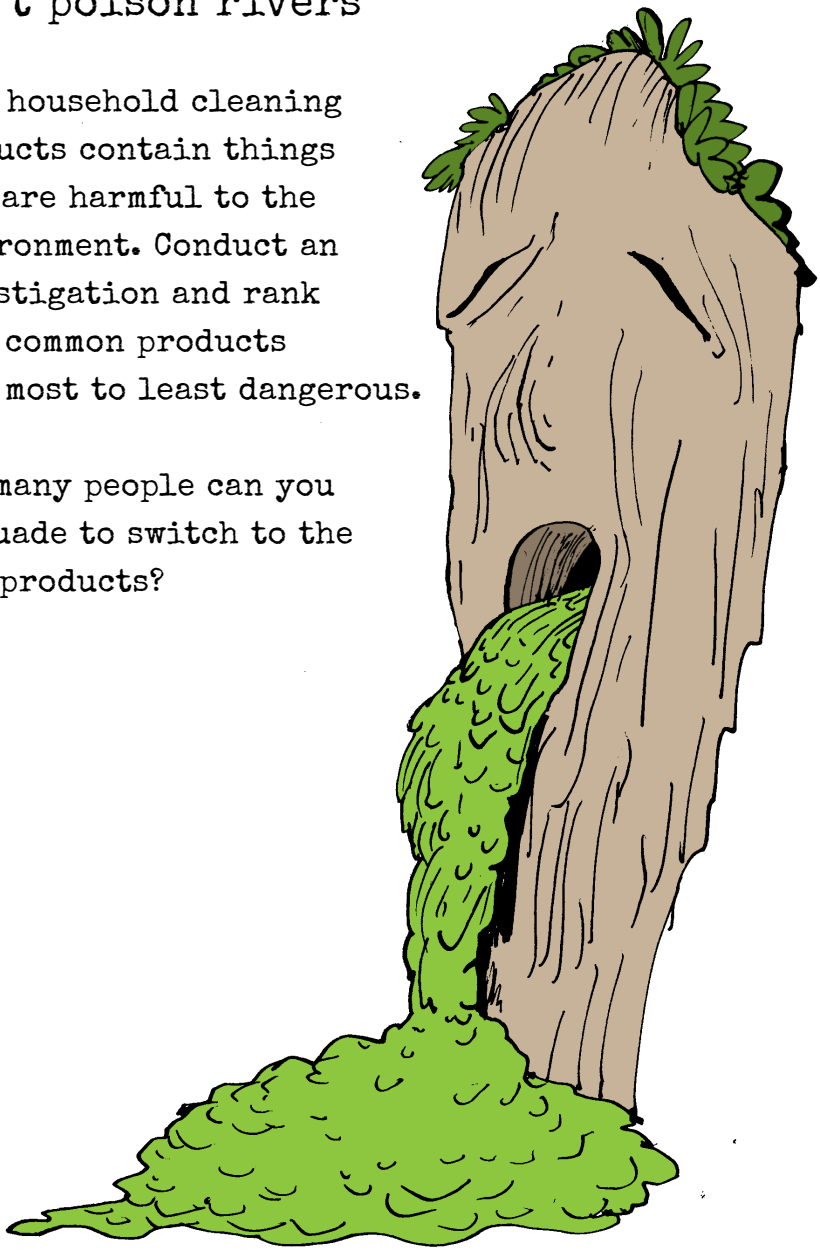


MEW017

Don't poison rivers

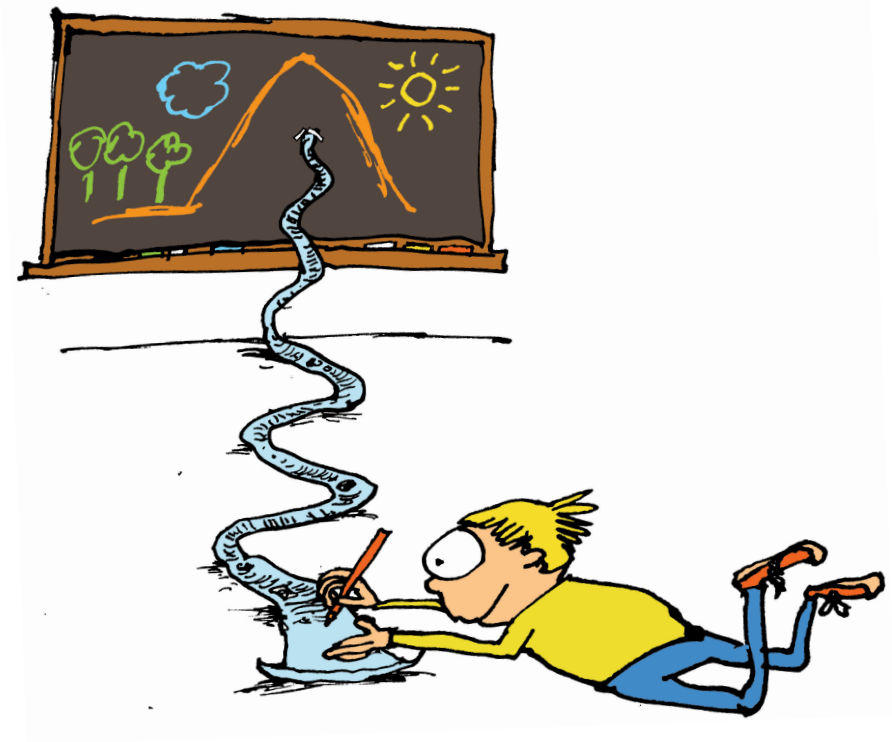
Some household cleaning products contain things that are harmful to the environment. Conduct an investigation and rank some common products from most to least dangerous.

How many people can you persuade to switch to the best products?



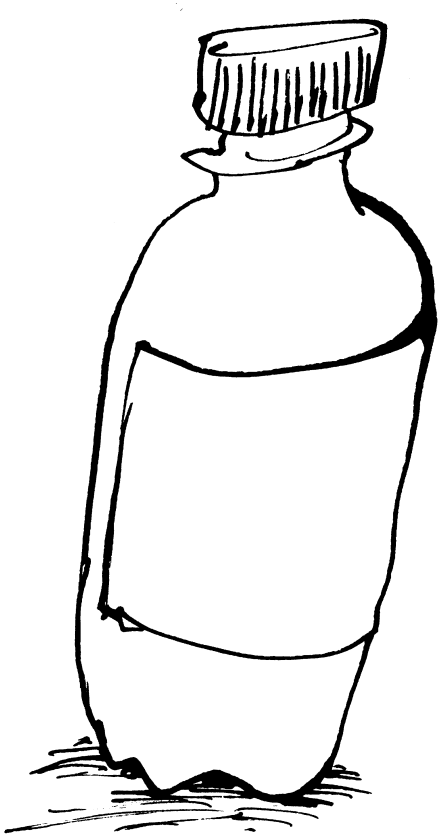
⌗ MEW018
Create a river story

Write a story about a real or imagined journey going from the source of a river to its mouth. Use extraordinarily long paper and use the words to form the shape of the river and the surrounding places.



MEW019
Eat local

Only eat food that has been grown and processed in your local water catchment area. Using the blank bottle below, design a label to reveal which these foods are. Can you persuade your local shop to use your label?



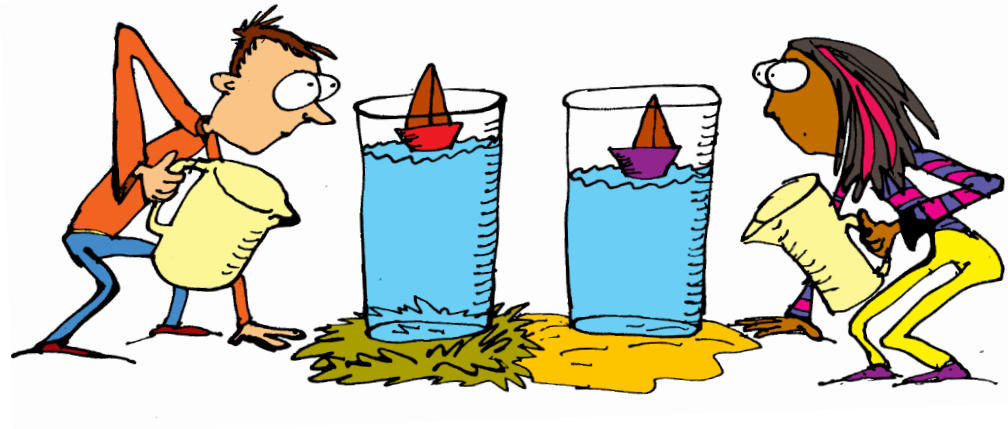
MEW020

Design the best use for your gutters

#MEW021

How hard is your school?

Design a game of battleships using hard/soft/permeable/grassy/paved ground. Write your rules here.



Harvesting water

From extreme explorers drinking their own wee to vampire bats drinking water from the blood of extreme explorers drinking their own wee and mosquitoes drinking the blood of vampire bats drinking water from the blood of extreme explorers drinking their own wee being able to gather water effectively is crucial to our ability not only to survive, but build build thriving civilizations. If you had to walk several miles each day to collect water you would have less time to hang out. Having water delivered to our taps makes it easier for us to get our water, but it makes some of us far more wasteful too.

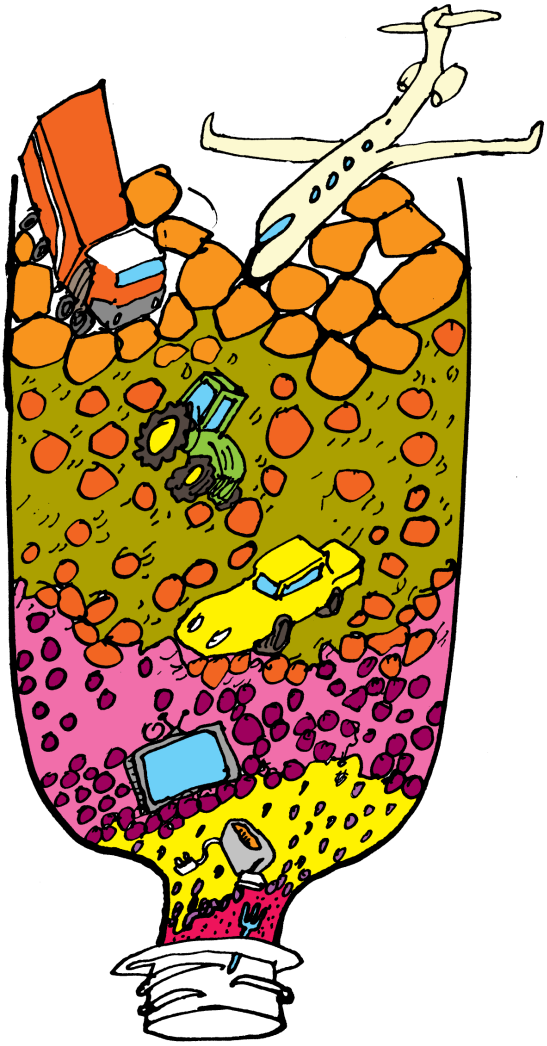
Complete the missions in this chapter to think of new ways to harvest water.

MEW022

Make a water filter

Can you filter these things out of some water?

- [x] sheep
- [ ] seaweed
- [x] stones
- [ ] sand
- [x] silt
- [ ] salt



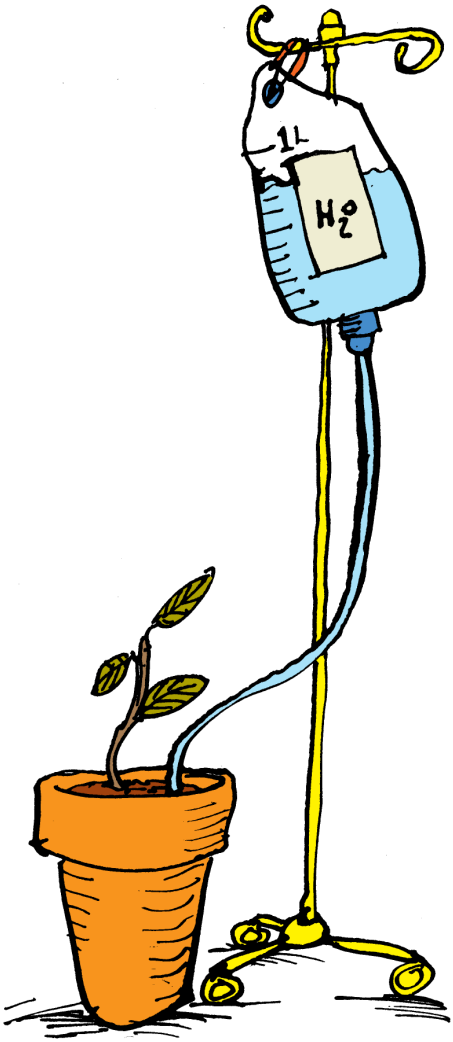
MEW023
Green the city

Design and build a green building for a ...

⌗ MEW024

One litre garden

What can you grow with just one litre of water?

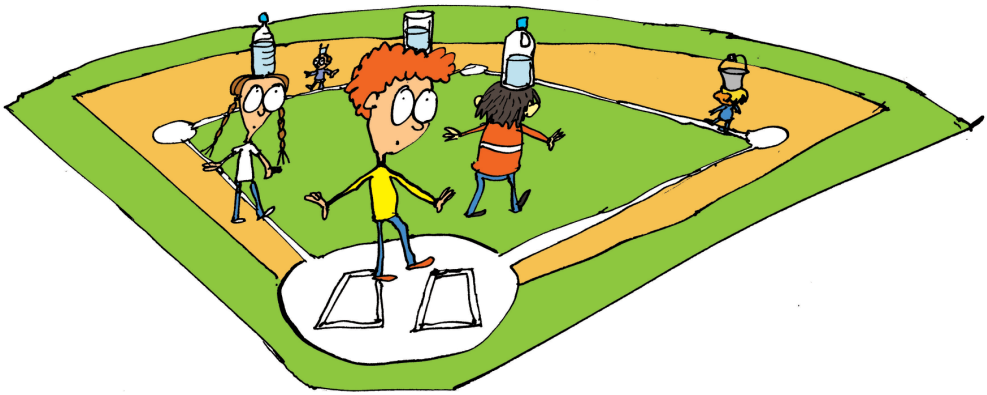


MEW025

Walk for your life

Imagine you had no pipes leading to your house. How far would you have to walk to reach your nearest source of fresh water? For the rest of the day only use water you have carried the equivalent distance.

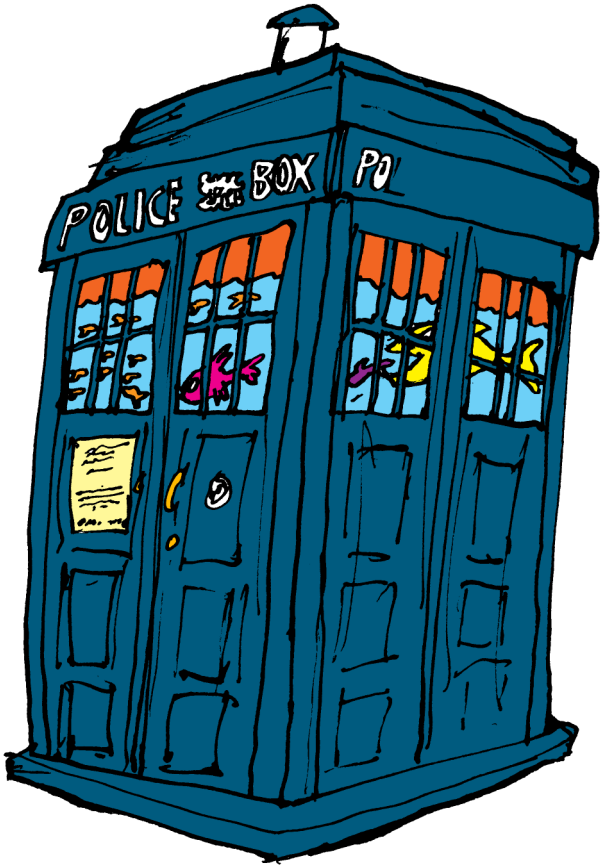
Record how many times you make the journey here.



⌗ MEW026

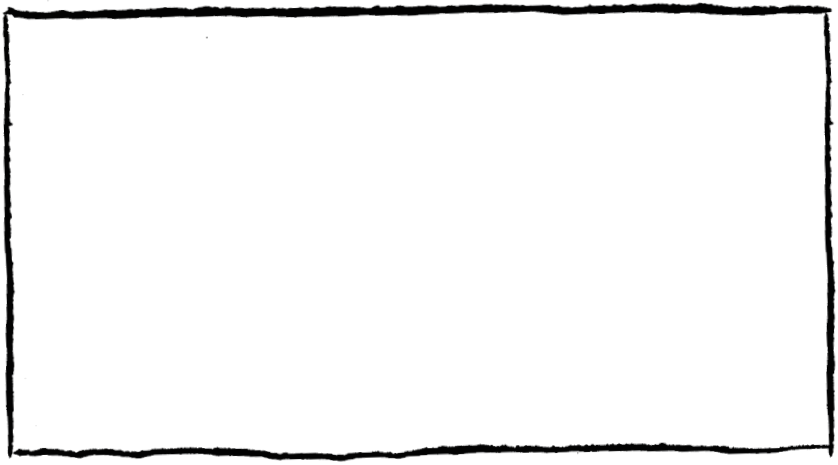
Free water

Liberate some water that has been trapped in time and space. Who can find the 'oldest' water from the most 'distant' source?

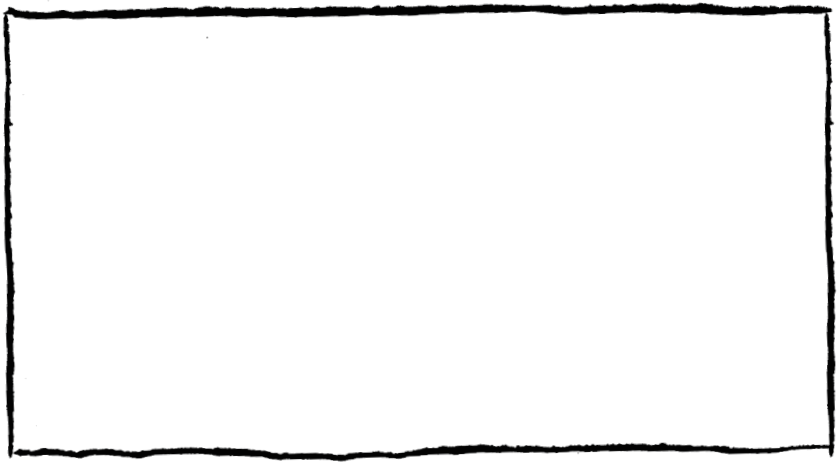


#MEW027
Design a pond

Draw up plans for a pond that filters out waste, supports wildlife and helps protect your house from flooding. Sketch the top view here.



Sketch the cross section here.



⌗ MEW028

Draw an ugly water creature

MEW029

Water inside out

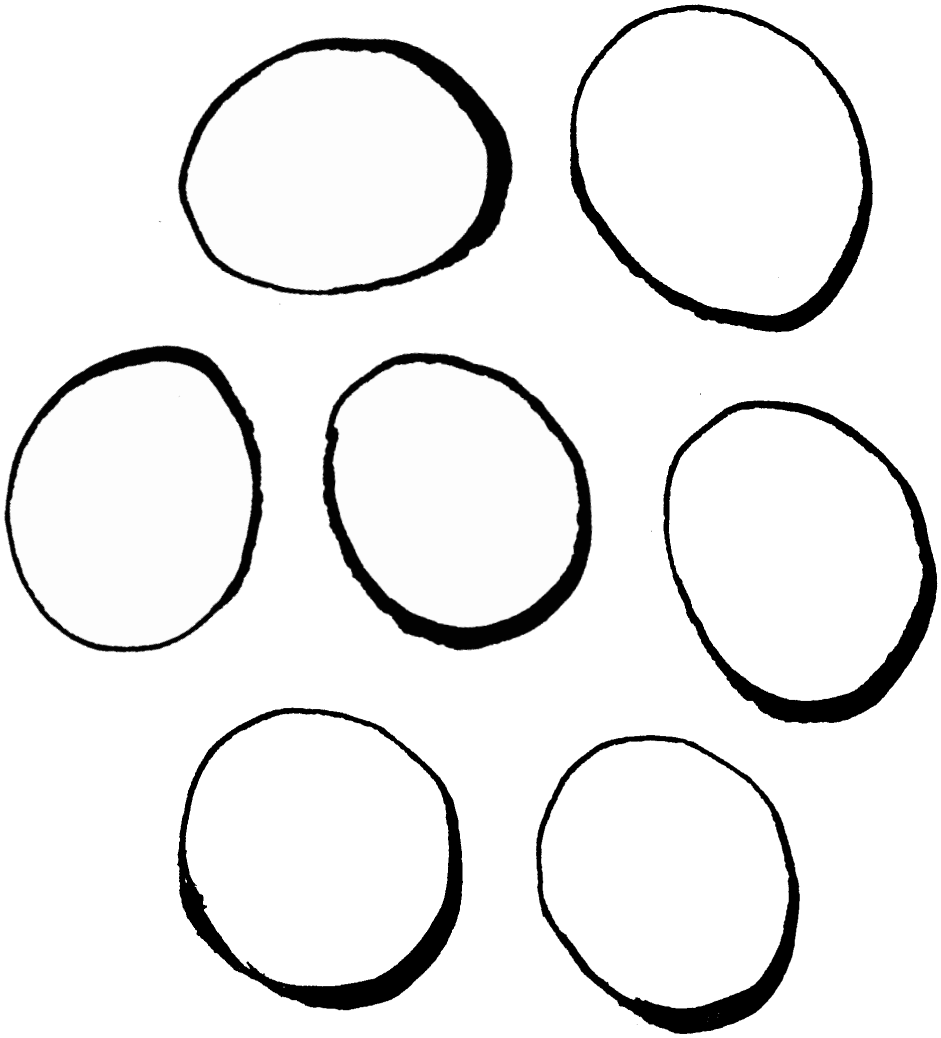
Take your indoor plants outside when it rains to give them a drink.

You can also bring the rain indoors by catching rain in a pot then using it to water your thirsty plants.

⌗ MEW030

Spot the difference ...

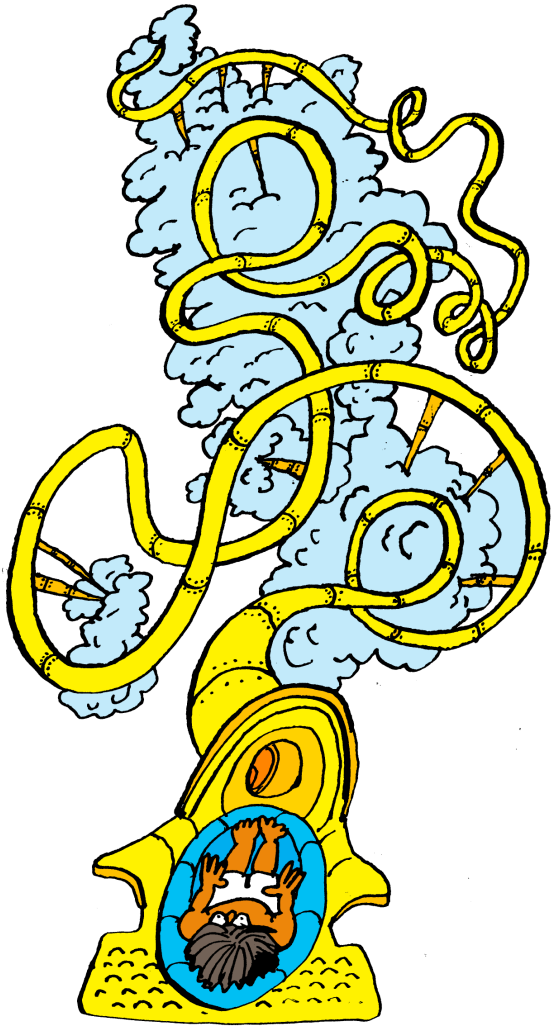
... between soil, dirt, dust and mud. Find then smear and annotate samples on this page.



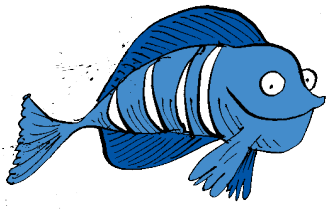
MEW031

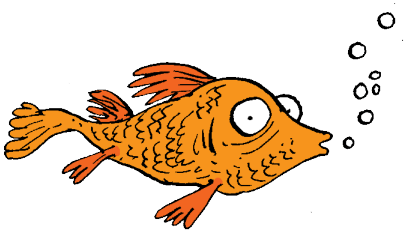
Create the least leaky pipe

Get water to travel as far as possible using whatever materials you can find.



Using water





We all use water. Some of us wash less than others, smell more but are better for the environment as a result. Using a lot of water can be expensive not only to your family or school, but the environment too as it has to be treated and transported before it gets to your tap. We do not only use water for drinking and washing with, but for the things we eat and make. It takes 24,000 litres of water to make 1kg of chocolate, 880 pints of water to produce 1 pint of milk or 10 litres of water to produce a sheet of paper.

Do the missions in this chapter to discover how you really use water.

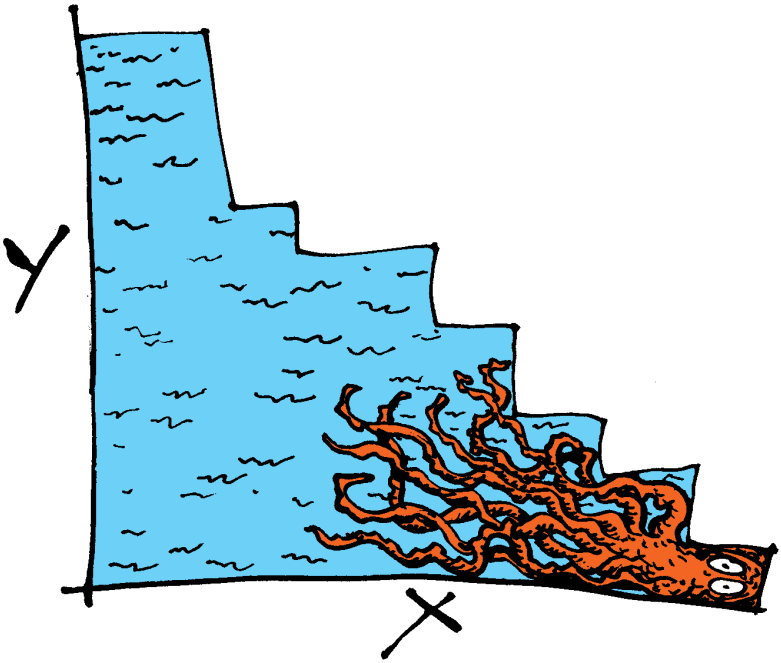
⌗ MEW032

Play water limbo

How low can you go? Each week use less than the previous week. Do the maths to work out how.

	Water used	Water saved
Week one:		
Week two:		
Week three:		
Week four:		

Total:



MEW033

Make a flood disaster movie

Use toy people and lots of photographs to make a stop motion animation.

⌗ MEW034

Explore like a frog

Go swimming. Move through the water like a fish, a crab, a frog, a whale and a squid. Which is best for being ...

Silent:

Caught:

Happy:

Funny:

Scary:

Hunted:

MEW035

Present a dirtiest car award ...

... to the teacher with the dirtiest car.

Unless it is winter and you are getting rid of salt, a huge bird has poohed on your car, or you are about to sell it, cars don't need to be really clean – as long as you can see out of the windows!

MEW036

Find water dwellers

How many of these animals can you find?

- [ ] heron

date: time: location:

- [ ] water vole

date: time: location:

- [ ] kingfisher

date: time: location:

- [ ] minnow

date: time: location:

- [ ] water snail

date: time: location:

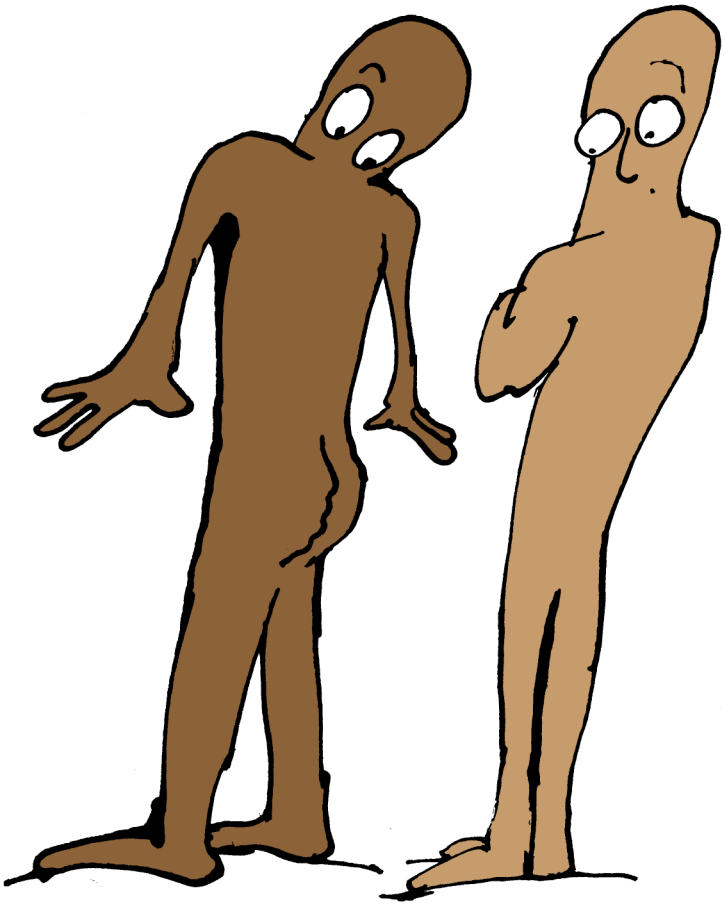
- [ ] newt

date: time: location:

MEW037

Don't crack up

Make something from clay that you have dug up yourself. Can you dry it without it cracking?



MEW038
Get swimming

Learn all of these swimming strokes.

- [ ] Front crawl
- [x] Backstroke
- [ ] Breaststroke
- [ ] Butterfly
- [ ] Dog paddle
- [ ] Dolphin crawl
- [ ] Trudgen
- [ ] Side stroke

Now create your own. Note your invention below.

MEW039

Find the culprit ...

... responsible for a dripping tap crime scene.

Location:

Time:

Water loss:

Evidence:

Suspects:

MEW040

Shower to your favourite song

Play your favourite song and jump in the shower. Can you get clean before the song ends?

Dont get too wild with your dance moves - you might slip down the drain!

MEW041
Go minimal

The UN says that four litres a day is the minimum requirement for a human being to live on. Can you get by on that? Record how much water you use and what it was for below.

⌗ MEW042

Make a five point plan ...

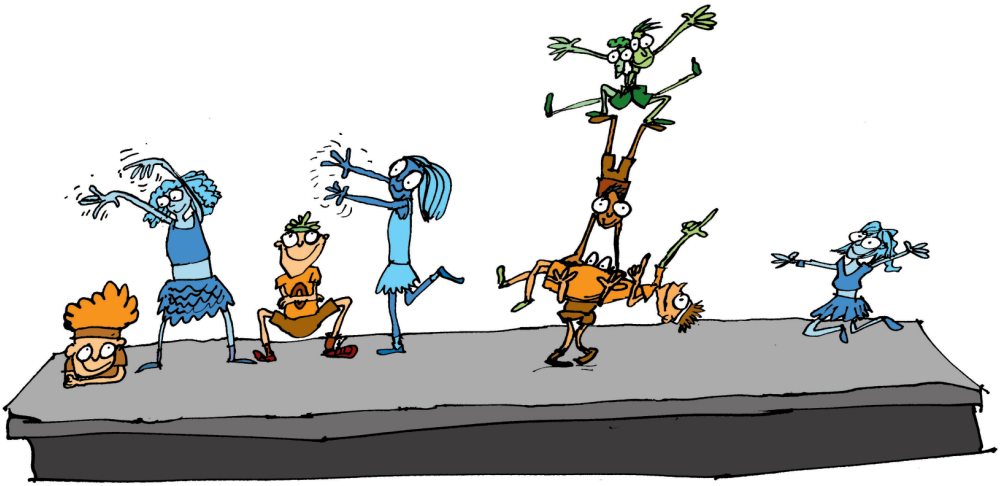
... to reduce water consumption at home.

MEW043

Flash dance!

Invent a mashed-up, cross-cultural dance routine that reveals how water is important to different people across the world.

Plan your choreography and costumes here.



⌗ MEW044

Hold a water war ...

... using naturally harvested water.

MEW045

Go water divining

Map places you can find water in your school. You could create a dowsing device to help you. In which five places are most water used? Give scores for:

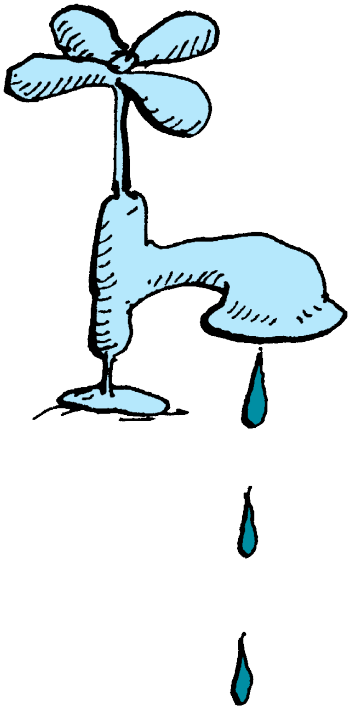
A) How much water they use

B) How much water they could save

C) How easy it would be to persuade them to use less

	A	B	C
1			
2			
3			
4			
5			

Waste water



Explorers need to know how to make the most of their water, including using recycled water, even if it means using 'dirty' water for lots of different things. At home and at school we need to start thinking more like explorers and finding ways to make the most of the water we have. A lot of water "waste" does not have to be wasted at all.

Blackwater (with poo and wee in it) needs to go into a sewer or treatment plant, but greywater (that someone has washed or washed up in) can be reused to flush toilets or for growing food. A roof can catch a lot of water and by using a gutter system you can harvest a lot of water for having a water fight.

Attempt the missions in this chapter to use your water waste in creative ways.

MEW046

Wee-hydrate yourself

Keep a record of the colours of your wee below. Drink enough water and your wee is quite clear. If you don't drink enough water your wee will be dark, yellow and smelly.

	Morning	Afternoon	Evening
Day 1			
Day 2			
Day 3			
Day 4			
Day 5			

MEW047

Investigate the ins and outs

Draw a map/diagram/picture/flow chart to show how all water gets into and out of your house/school/car/factory/park/body.

Key:

Brown water	Flowing
Grey water	Stored
Fresh water	Rain water
Black water	Tap water

Redesign this system to be more water efficient. Can you get your ideas implemented?

⌗ MEW048

Track your poo

Where does it go?

MEW049

Create a water catcher

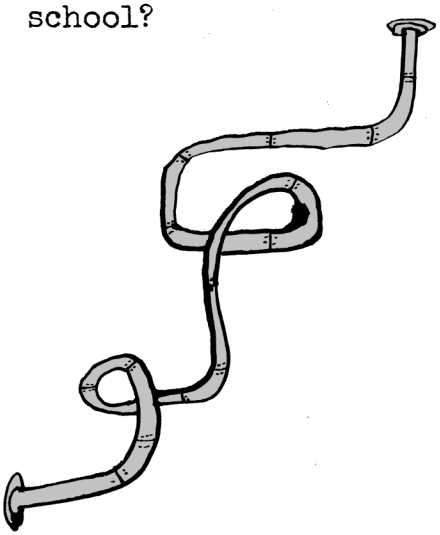
Design a device that captures water for reuse inside or outside your home. Draw blueprints for your invention.

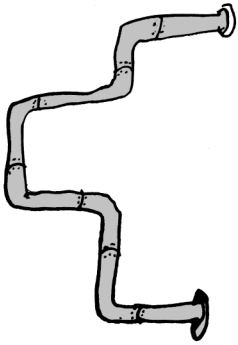
Thirsty plants will love water you use to wash veggies or yourself. Don't use pooey or chemically water and avoid using dirty water on edible plants.

MEW050

Dig deep

Investigate the underground rivers, streams and sewers of London. Do any go beneath your house, street or school? Do you cross any on your route to school?





Don't go into pooey sewers!

MEW051

Time to reflect

Hold a reflecting pool of how this project went.

Mission:Explore

BASIC TRAINING

You are a time traveller and space explorer. Like all living things on Earth, you are entirely dependent on water. This small book is your guide to helping look after water, an extraordinarily important chemical compound to which you owe your life even more than your parents. As life giving as water is, it can also be life taking. Follow these tips to increase your chances of survival.

1) Learn to swim
2) Learn first aid
3) Follow the SAFE code:

SPOT

>> Check for hazards such as tides or currents
>> Consider what could be hidden under the water
>> Be careful of unsafe banks: stay back from edge

ADVICE

>> Always read the signs
>> Only swim where there is a lifeguard
>> Wear buoyancy aids and life jackets

FRIEND

>> Swim with your friends and family
>> Friends can get help
>> Don't visit rivers and streams on your own (even if you aren't going to swim). Never swim alone.

EMERGENCY

>> Find the nearest phone and call 999 or 112
>> Shout loudly to attract attention
>> Never enter the water to save someone

Drink enough water ...

Cold or hot, very little life can survive in the world's deserts, there just is not enough water. It is vital that you drink enough water or you might become dehydrated, lose concentration, become dizzy, faint and even die. It is recommended that you drink the following amounts of water each day:
>> 1 litre for 5 to 8 year olds
>> 1.5 litres for 9 to 12 year olds
>> 2 litres for 13+ year olds

You may need more or less depending on how much water leaves your body each day.

... but not too much

Drinking too much water can actually be bad for you in extreme cases. Water poisoning is a very rare condition that happens when someone drinks too much. It can make you very sick and ultimately lead to death.

You need to be very careful around water: more than 400 British people drown each year. Worldwide the number is 388,000 - the equivalent to everyone in Coventry drowning each year. To stay out of danger, follow the SAFE code on the previous page.

Don't get sick - wash your hands

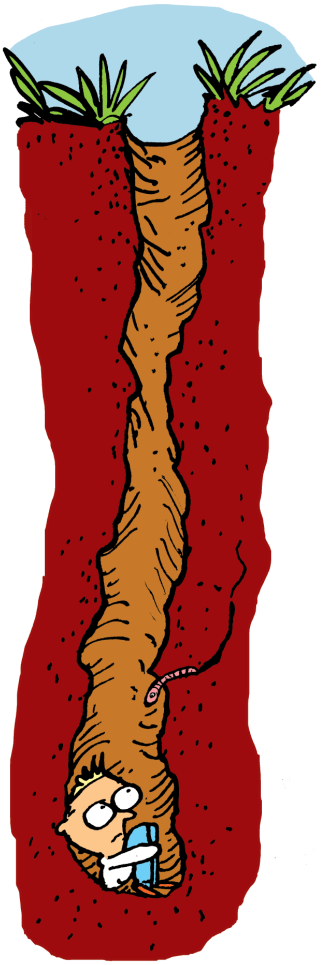
Water can not only be deadly, but it can transport deadly things too. Diarrhoea is just one of many diseases that are spread by bacterial, viral and parasitic organisms living in pooy water. Diarrhoea alone kills around 760,000 children each year - they lose water more quickly than they can replace it. This is more people than live in Bristol (620,000) or Nottingham (730,000). In the UK water companies clean our water to nearly eliminate the chances of being made sick from tap water.

Here are some survival tips for drinking water:
>> Always wash your hands with clean water before eating or putting your hands in your mouth,
>> When travelling abroad only drink or brush your teeth with treated water. Use bottled water with an intact seal if you need to.
>> If you cannot access treated or bottled water, boil it for 5 minutes to kill off any nasty things living inside it.

To help you explore nature without falling into a well, freezing/boiling yourself to death or being poisoned, complete this basic training.

Staying safe

You are going to die. This shouldn't come as a shock to you, but we'd prefer it if you died a long time from now and without making too much of a mess. To increase your chances of enjoying successful explorations we've cooked up some basic training for you. Follow these tips and you'll be more likely to come back alive.



Taking risks

Taking sensible risks is a normal part of life. Taking risks can increase your chances of being healthy, interesting and knowledgable. Do be creative, try new things and risk failing but don't be stupid. Use all your senses to see and avoid dangerous stuff.

Emergency contacts

Make sure you know who to contact in an emergency.

Emergency contact 1:

Emergency contact 2:

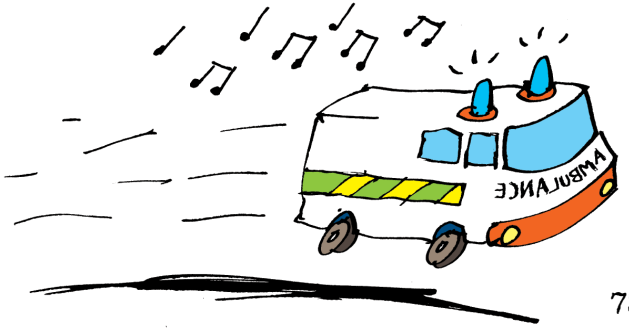
Emergency contact 3:

Emergency services: 999

Emergencies

If the mission goes pear-shaped, follow these three steps:

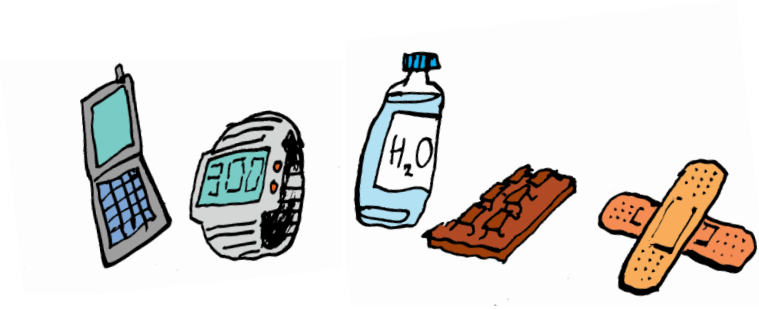
1. Don't panic!
2. Call your emergency contact, tell them what has happened, where you are, and follow their advice.
3. Stay where you are and wait for them to arrive, unless advised otherwise by a teacher or another adult who knows what they are doing.



You and your team

All the best explorers have rules that they never break. Here are some to help you keep your head on:

- Only attempt a mission if you can do it reasonably safely. Get the all clear from your parents.
- Follow the instructions on warning signs and follow any other rules that you know about.
- Look after your mates – don't be persuaded to take silly risks.
- If you get injured tell someone who knows what to do.
- Never go anywhere with a stranger.
- Don't stick anything in your mouth if you don't know what it is. You don't want to be poisoned and start puking up over everything.
- Cars are the deadliest beasts around. Avoid crossing roads, but if you have to, use a pedestrian crossing and make sure the way is clear.



People, wildlife and places

• Protect and care for all people, animals, plants and places you visit.

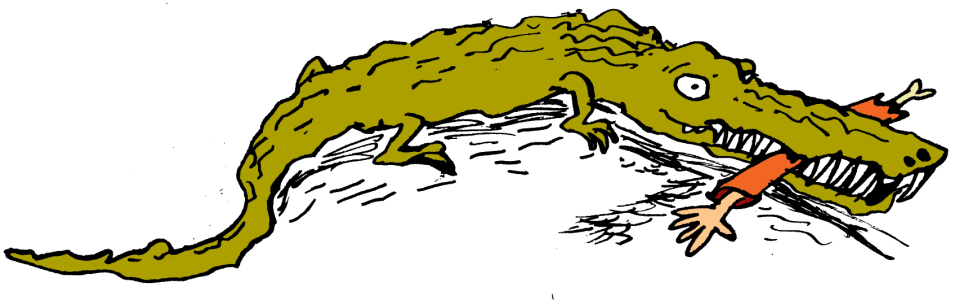
• Leave no trace of ever being in a place or completing a mission. Leave everything, from gates and hedges to ruins and parrots, as you find them.

• Dispose of rubbish appropriately or take it home with you.

• Don't touch plants or animals if you don't know them personally. They might bite, scratch, sting or poison you!

• Say hello to the people you meet. They'll like that and you'll like it when they say hello back.

• Be honest and take responsibility if things go wrong. You'll get far more respect.



This book was made in association with:

Thames Water provides an essential service to over 14 million people. Good environmental management is critical to us. We are working to protect water supplies for everyone, and for the environment.
www.thameswater.co.uk

The Wildfowl & Wetlands Trust (WWT) is one of the world's most respected wetland conservation organisations working to safeguard wetlands for wildlife and people. Our SuDS for Schools project, run in partnership with Environment Agency and Thames Water, shows how schools can reduce flooding, protect rivers and provide hands-on learning opportunities.
www.wwt.org.uk

The Environment Agency is the public body established to protect and improve the environment and to contribute to sustainable development.
www.environment-agency.gov.uk

The Royal Bank of Canada provided funds for the learning resources for SuDS for Schools as part of their Blue Water Project.
www.rbc.com/environment/bluewater

We are teachers, local authority officers, third and private sector workers, governors and others who volunteer our time to run LSSF. We want schools to become more sustainable places. Our aim is for 'Every School in London' to be sustainable by 2020.
www.londonsustainableschools.org

The RSPB is the UK's largest conservation charity, working to give nature a home. We play with water and mud on a huge scale to create places where people can discover nature. These places can protect against flooding, store water and filter waste. They run the Wildlife Action Awards: all about finding out about wildlife, doing practical things to help and telling others.
www.rspb.org.uk/youth

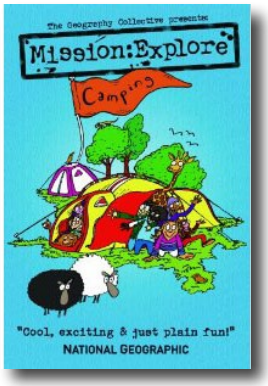
MAYOR OF LONDON

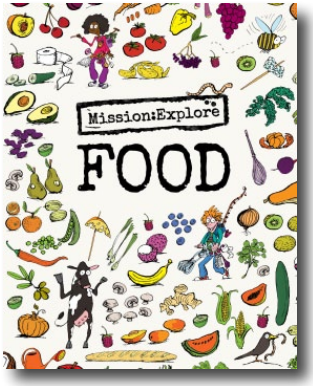
The Mayor's office has a key role in running London and sets out plans and policies for the city. The Mayor wants London to be the 'best big city in the world'.
www.london.gov.uk

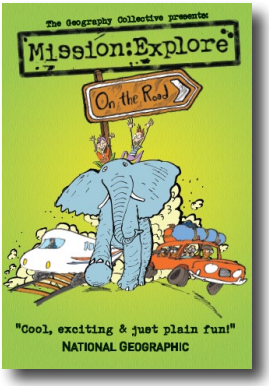
Mission:Explore

Mission:Explore is a special kind of training for guerrilla geographers, experimental explorers and crafty cooks. Discover missions through our books and website.

Visit MissionExplore.net for loads more missions, to win points and to earn badges.







About the illustrator

Tom Morgan Jones' work crops up in all manner of places like children's books, the backs of buses, the sides of milk cartons and all over satirical board games. Tom draws with a dip pen, often making an inky mess, which is why he called his website inkymess.com.