

BE PLASTIC SMART

A DIRT FOR GOOD PROJECT



SCRAPBOOK

LET'S GET SMART ON PLASTICS

Plastic waste is a serious subject - but learning about it doesn't have to be boring! We've created a selection of creative, hands-on activities you can do with your family to help you discover more. Together, you'll look at different ways you can reduce your family's plastic footprint *and* be kinder to the planet. Check out all the activities in this scrapbook!

To make things easier for you to navigate, we've created some handy icons you can look out for:



TURN OLD PLASTIC INTO SOMETHING FANTASTIC



SOME HANDY DANDY INFO

INSTEAD OF JUST BINNING - OR RECYCLING - OUR OLD PLASTIC ITEMS, LET'S GET CREATIVE AND USE OUR DESIGN SKILLS TO TURN THEM INTO COOL NEW STUFF!

we'll learn about...

DESIGN & TECHNOLOGY

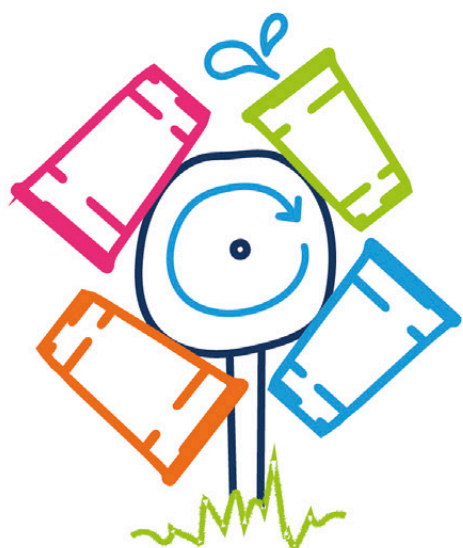
by looking at uses and properties of different materials, and choosing the best ones to use

ART

by using our imaginations, presenting our ideas and making models

did you know?

Making plastic and throwing it away, even when it's recycled, can cause pollution all over the world. So as well as reducing the amount of single-use plastic we use, the next-best thing we can do is re-use the plastic waste we have at home. For example, you could try to use shops that allow you to refill your old containers with their products. Or use old packaging to make cool new stuff - which is what we'll do next!



LET'S GET STARTED!

make a splash

EXAMPLE

See how the flow of water creates energy by building your own water wheel

www.ltl.org.uk/resources/water-wheel-investigation

ready, steady, grow

EXAMPLE

Design and make your own recycled planter from old plastic containers. Sow your seeds and watch them grow!

www.ltl.org.uk/resources/recycled-planters

bloomin' lovely

EXAMPLE

Use hard-to-recycle bottle tops to make some funky flower mosaics

www.ltl.org.uk/resources/bottle-cap-mosaics



WHAT'S YOUR **BIG** IDEA?

Draw a picture of your sustainable, second-life plastic design, labelling which materials you would use and why. Then have a go at making it and save some more plastic waste!

WHAT A LOAD OF RUBBISH!

HOW MANY PLASTIC FOOD WRAPPERS DO WE GET THROUGH IN A DAY? ENOUGH TO COVER THE KITCHEN TABLE - MAYBE EVEN YOUR BEDROOM FLOOR?

AND HOW CAN WE REDUCE THE AMOUNT OF PLASTIC WASTE WE THROW AWAY? THERE'S ONLY ONE WAY TO FIND OUT...

BE PLASTIC SMART
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1hr
minimum 1 hour

mid level prep

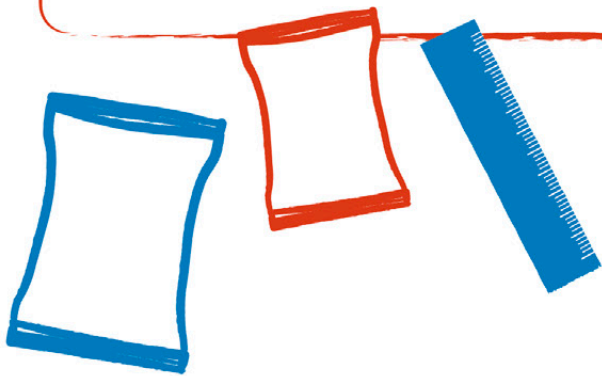
parent supervision

hands on maths

we'll learn about...

MATHS & NUMERACY

by measuring the size of different food wrappers and working out their area - and by estimating areas covered by the collected wrappers



you'll need:

- a collection of all the plastic wrappers you use in a day
(maybe try guessing how many will be collected in total)
- rulers or tape measures
- pencils
- calculator

LET'S GET STARTED!

hint

The easiest way to work out the area of a rectangular object is to measure its width and length and multiply them together. The answer is the area in cm^2 !

Once you've spent a day collecting sweet wrappers, crisp packets, fizzy drink labels etc, you're ready to go. First, lay out all the wrappers on the floor – don't leave any gaps between them! Then, work out the area covered by all the wrappers together.

Once you have the final number, multiply by 365 to work out the area covered by all the plastic wrappers you use in a year. Dividing by 10,000 will change your answer from cm^2 to m^2 .

Is it bigger than $7,140 \text{ m}^2$? That's the size of a football field!



did you know?

The average room size in UK homes is about 15 m^2 . The biggest room in Buckingham Palace is a whopping **658 m^2** – that's almost **45 times as big**. You'd need a lot of plastic wrappers to cover that much space! (The Queen probably wouldn't be very happy about it either)

TIME TO MEASURE UP

Talk about the size of the area the wrappers cover. What household objects do you think they might cover? Check your ideas by covering them to see! You can use your ruler or tape measure to work out the areas of the objects covered and record them on your worksheet

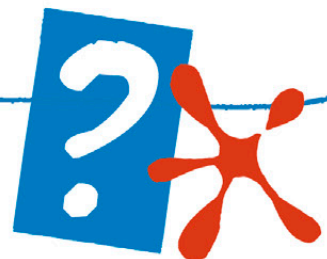
food for thought

How do you feel about the area covered by the wrappers after just one day? Was it more or less than you expected?

What size area would the wrappers cover after one week – or one month?

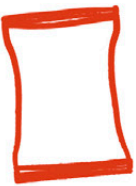
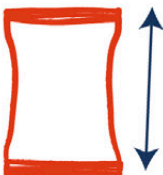

What's the problem with plastic wrappers?

And how can you reduce the amount you use?



WRAP STARS

Use this worksheet to record your measurements and how you think your family might cut down on plastic waste

plastic wrapper	length (L)	width (W)	area (LxW)	how could you reduce how many of these you use?
 CRISP PACKET	 15CM	 12CM	15×12 $=$ <u>180</u> cm ²	MAYBE WE COULD BUY ONE BIG PACKET AND DIVIDE THE CRISPS UP INTO SNACK BOXES

PLASTIC: HERO OR VILLAIN?

TAKE THIS 20-MINUTE QUIZ AND TOGETHER WE'LL DISCOVER SOME INTERESTING (AND SOMETIMES SCARY) FACTS ABOUT PLASTIC. AND WE'LL HAVE A THINK ABOUT HOW WE CAN ALL REDUCE THE AMOUNT WE USE AT HOME.



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around 30 mins low level prep can be child-led interactive quiz

we'll learn about...

ENGLISH

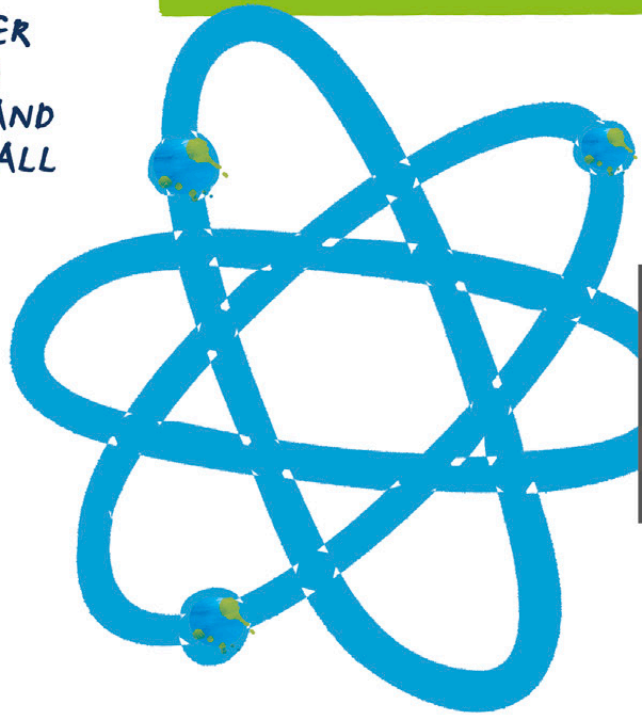
by explaining and understanding new information

SCIENCE

by understanding more about plastics and their different properties

CITIZENSHIP

by making positive changes at home and in the community



LET'S GET STARTED!

Grab some pens and scrap paper (or a tablet) to write down your answers. Or, print the scorecards on the next page!

small actions, big difference

Kids might be surprised by some of the answers – so have a chat about what small changes we can make that will have a positive impact. Question 8 will help you think about the positive actions you can all take at home.

FINAL
SCORE

NAME _____

ANSWERS

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

FINAL
SCORE

NAME _____

ANSWERS

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8



HERE'S A REALLY ROTTEN IDEA

HOW ABOUT A LITTLE DETECTIVE WORK?
BY INVESTIGATING WHAT ROTTS - AND WHAT DOESN'T, WE'LL SEE WHY PLASTIC WASTE IS SUCH A PROBLEM FOR THE PLANET. IT'S A DIRTY JOB, BUT SOMEONE'S GOTTA DO IT...

BE PLASTIC SMART
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+ 45 min intro and conclusion mid level prep parent supervision hands on scientific

we'll learn about...

SCIENCE

by doing an experiment, testing our predictions and making observations

ENGLISH

through discussions about predictions and observations

MATHS

by taking measurements

you'll need:

- 3 plastic items**
eg yogurt pot, polythene bag, drinks bottle
- 3 non-plastic items**
eg some kitchen roll, cardboard, glass bottle
- 3 bits of food waste**
eg apple core, orange peel, bread crusts
- soil**
- flower pots, buckets or other containers**
- lolly sticks and permanent ink pens to label your buried items**
- camera** (your phone will do!)
- a grown-up to help you!**





how long will it take?

45 minutes, then a 2-week wait and a further 45 minute session

LET'S GET
STARTED!

'Biodegradable' means things that will rot or break down naturally. Have a chat about it and think about which objects you've collected might rot easily

rot or not?

Using your worksheet, list the objects and make a prediction about whether they'll rot easily (or not)

DIG IT!

1

First snap a photo of each object before you bury it

2

Bury your objects - either in a series of plants pots, buckets or other containers filled with soil

3

Label each container so you know which material is in which pot

If you have the outside space, you could bury the items directly in the ground. Make sure you clearly label where you have buried them!

2 WEEKS LATER...

4

Go back to the trench and (carefully) dig out your objects. Take a photo of each and compare it with the ones you took two weeks ago.

let's discuss!

were your predictions correct?

how much of each object has rotted?

what makes the difference?

which do you think are the best options for planet-friendly packaging

ROT - OR NOT?

Use this worksheet to write down your predictions and findings

object	how much do you think it will rot in two weeks? highlight the most accurate statement			how much has it started to rot in two weeks? highlight the most accurate statement		
GLASS BOTTLE	NOT AT ALL	A LITTLE	A LOT	NOT AT ALL	A LITTLE	A LOT
	NOT AT ALL	A LITTLE	A LOT	NOT AT ALL	A LITTLE	A LOT
	NOT AT ALL	A LITTLE	A LOT	NOT AT ALL	A LITTLE	A LOT
	NOT AT ALL	A LITTLE	A LOT	NOT AT ALL	A LITTLE	A LOT
	NOT AT ALL	A LITTLE	A LOT	NOT AT ALL	A LITTLE	A LOT
	NOT AT ALL	A LITTLE	A LOT	NOT AT ALL	A LITTLE	A LOT
	NOT AT ALL	A LITTLE	A LOT	NOT AT ALL	A LITTLE	A LOT
	NOT AT ALL	A LITTLE	A LOT	NOT AT ALL	A LITTLE	A LOT
	NOT AT ALL	A LITTLE	A LOT	NOT AT ALL	A LITTLE	A LOT



THE FANTASTIC PLASTIC CHALLENGE!

TODAY WE'LL IDENTIFY DIFFERENT TYPES OF PLASTICS AROUND THE HOUSE. WE'LL DISCOVER THE GOOD, THE BAD - AND THE DOWNRIGHT NERDY - ABOUT EACH ONE. THEN WE'LL PLAY A GAME OF TOP TRUMPS TO HELP US THINK ABOUT WHAT WE CAN ALL DO TO BE MORE PLASTIC-SMART.



we'll learn about...

ENGLISH

by speaking, listening, reading and presenting information

SCIENCE

by finding out about the advantages and disadvantages of different materials

LET'S GET STARTED!

1

Read all about the different types of plastic in the table on the next page. Then, set off on a great plastic hunt! Find an example of each one around the house and match it to the right description.

Using the plastics that you have found, turn them into a card game adding to the existing six cards within the template provided or make your own! Decide the scores for each category by comparing the plastics with each other to give each one a score out of 100 for their: useful life; how recyclable they are and their environmental impact.

2

3 Play the game together as a family. Think about the scores of different plastic types, then chat about which you think you should try and reduce around the home.

4

Pin up your pledge sheet with our list of suggestions on the fridge door where everyone can see it. Feel free to add your own!

THERE ARE 7 DIFFERENT TYPES OF PLASTIC



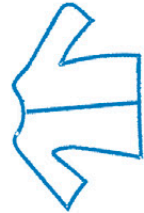
They all have their uses, but they can all cause problems for the planet too. Let's take a look at them.



A very commonly used plastic, PET can **only be used once** for food or drinks as it becomes **toxic**. **Easily recycled** into fibres called polyester to make new bottles or other things like fleece and carpets.

polyethylene terephthalate

FLEECES,
SEATBELTS,
CARPETS



WATER, JUICE
& SODA BOTTLES



FOOD TRAYS,
TRAYS & POTS



A **durable, non-toxic** plastic. It can be **readily recycled** into new items for outdoor use like bins, benches, or planters.

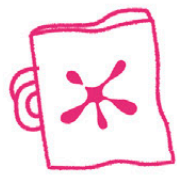
high-density polyethylene

TOYS

CONTAINERS
FOR THINGS
LIKE OIL, SHAMPOO,
& OTHER
CLEANING PRODUCTS



MILK
BOTTLES



LONG LIFE
SHOPPING BAGS

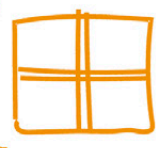


A strong, versatile, **bendable** plastic. It **cannot be recycled**, and the creation and breakdown of PVC causes the release of the **worst toxins of any plastic type**.

polyvinyl chloride



CREDIT
CARDS



WINDOWS
& DOORS



CLING
FILM

PLUMBING
PIPES

CLOTHING
& SHOES

GARDEN HOSE



SINGLE-USE CARRIER BAGS

SHRINK WRAP PACKAGING OF GOODS FOR TRANSPORTING & DELIVERY



FOOD PACKAGING BAGS (EG BREAD)

SQUEEZY BOTTLES



CRISP PACKETS



DRINKS STRAWS



DAIRY PRODUCT PACKAGING, EG YOGURT & BUTTER TUBS

BREAKFAST CEREAL INNER BAGS



NAPPIES

PLASTIC BOTTLE CAPS



BIKE HELMET

EXPANDED FOAM BLOCKS TO PROTECT GOODS DURING TRANSPORTATION



SINGLE USE FOOD & DRINK CONTAINERS SUCH AS CUPS, CARTONS & CUTLERY



FOAM CHIPS FOR PACKAGING

SIPPY CUPS



BABY BOTTLES

WATER COOLERS

CAR PARTS

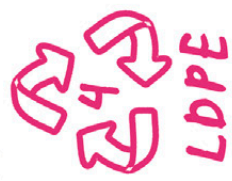
LININGS & COATINGS

INDUSTRIAL EQUIPMENT

TOILET SEATS

Generally, a thin, durable, see-through plastic film. Can be safely **reused**.

Harder to recycle but some supermarkets have LDPE bag collection schemes. Easily ends up in the **marine environment** harming animals and birds.



low-density polyethylene



polypropylene

A lightweight plastic which acts as a barrier to grease, liquids, and chemicals. PP is **not easy to recycle** but it can be **safely reused** compared to other plastics. Recycling schemes are available in some areas.



polystyrene

PS is a lightweight, stiff but weak-structured plastic which is **cheap** to make. The 'styrene' can leak out and is very **toxic**. It is expensive to recycle, and the service is not really offered anywhere. Fragments of PS in the environment **can cause a lot of harm**.



other

7 refers to all other plastic types including those made of mixed plastics, combined with other materials and 'bioplastics' which need to be sent for **commercial composting but never recycled**. 7 is a confusing category and **very hard to recycle correctly**.

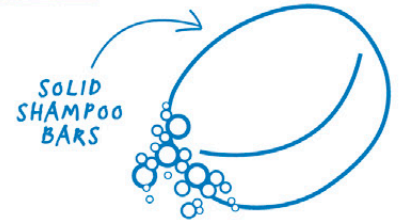
FAMILY PLEDGE IDEAS



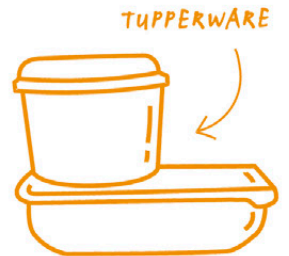
- Switch to refillable drinks bottles.
- Avoid goods packaged in PET, choosing items that can be stored in reusable tubs instead e.g. chop your own fruit or cheese cubes



- Switch to larger/refillable containers
- Donate old, good quality plastic toys
- Use solid soap and shampoo



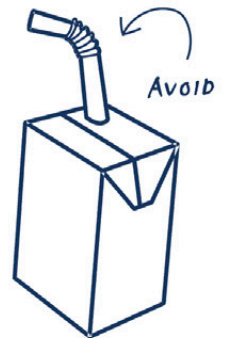
- Avoid single-use PVC products where possible
- Replace plastic food wrap with kitchen paper or reusable beeswax fabric wraps
- Store food items in reusable boxes



- Replace plastic shopping bags with fabric ones
- Buy loose items at the supermarket, rather than bagged



- Avoid any items with plastic straws - like the ones with milk cartons
- Choose larger containers instead of many small ones eg crisp packets
- Find out about local recycling opportunities



- Avoid single-use PS where possible
- Use reusable cups for hot drinks
- Return packaging to delivery services businesses



- Avoid single-use #7 plastics if you can
- Use metal, glass, bamboo, or silicone containers instead

REUSABLE HOT DRINKS CUP

after playing top trumps, these are the 3 single-use plastics we need to take action to reduce

- 1 _____
BECAUSE... _____
- 2 _____
BECAUSE... _____
- 3 _____
BECAUSE... _____

OUR PLASTIC WASTE PLEDGES

write down the 3 pledges you want to work on to reduce plastic waste here:

- 1 _____

- 2 _____


- 3 _____



MAKE YOUR OWN CARD GAME!

From what you've just learnt - first fill out the rest of our ready-started cards, then continue to make your very own. Next cut them out and play against each other!

#5 PP: DRINKS STRAW



USEFUL LIFE	1
HOW RECYCLABLE	0
IMPACT ON ENVIRONMENT	95


#2 HDPE: MILK BOTTLE

USEFUL LIFE	25
HOW RECYCLABLE	100
IMPACT ON ENVIRONMENT	30

#6 PS: BIKE HELMET

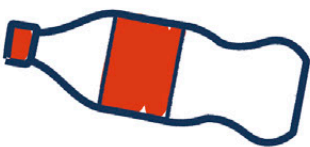
USEFUL LIFE	50
HOW RECYCLABLE	0
IMPACT ON ENVIRONMENT	30

#3 PVC: CLINGFILM WRAP



USEFUL LIFE	1
HOW RECYCLABLE	0
IMPACT ON ENVIRONMENT	100

#1 PET: SODA BOTTLE



USEFUL LIFE	10
HOW RECYCLABLE	100
IMPACT ON ENVIRONMENT	60

#4 LDPE: BREAD BAG

USEFUL LIFE	25
HOW RECYCLABLE	25
IMPACT ON ENVIRONMENT	90

THE RULES

Divide the cards evenly between the players. Take it in turn to choose a category, if you have the better score for that category, you win the card. If they have the better score, they win the card. Keep going until someone has all the cards, and is therefore the winner!

	USEFUL LIFE
	HOW RECYCLABLE
	IMPACT ON ENVIRONMENT

	USEFUL LIFE
	HOW RECYCLABLE
	IMPACT ON ENVIRONMENT

	USEFUL LIFE
	HOW RECYCLABLE
	IMPACT ON ENVIRONMENT

	USEFUL LIFE
	HOW RECYCLABLE
	IMPACT ON ENVIRONMENT

	USEFUL LIFE
	HOW RECYCLABLE
	IMPACT ON ENVIRONMENT

	USEFUL LIFE
	HOW RECYCLABLE
	IMPACT ON ENVIRONMENT

	USEFUL LIFE
	HOW RECYCLABLE
	IMPACT ON ENVIRONMENT

	USEFUL LIFE
	HOW RECYCLABLE
	IMPACT ON ENVIRONMENT

CUT ME OUT AND STICK ME TO THE FRIDGE OR PINBOARD!

SCORE BOARD

1

--	--

2

--	--

3

--	--

4

--	--

5

--	--

I-SPY SOMETHING BEGINNING WITH P!

OUR HOMES ARE FULL OF DIFFERENT TYPES OF PLASTICS. SOME GOOD, SOME BAD. SO TODAY, LET'S DO A LITTLE SURVEY JUST TO SEE HOW MANY PLASTIC OBJECTS WE CAN SPOT IN THE KITCHEN.



minimum 1 hour



low level prep



parent supervision



hands on maths

we'll learn about...

ENGLISH

by talking about our opinions and the pros and cons of plastic

MATHS

by doing a survey and using the findings to make comparisons

did you know?

A lot of the plastic we find at home is called 'single-use'. That means it can only be used once. Food wrappers or shampoo bottles are two good examples. This makes it different to other household plastics - like the TV, or remote control, which are used again and again and don't need to be replaced for a long time.

LET'S GET STARTED!



how long will it take?
just one hour!



Look at all the different types of plastic being used in your kitchen. Sort them into **(1) single-use items that will end up in landfill** (the rubbish dump), **(2) the ones you can recycle** and **(3) the ones you can reuse**. You can write down your findings on the worksheet.

here are some clues on what to look out for!

single-use plastics going to landfill

eg meat tray, yogurt po, crisp wrapper

recyclable single-use plastics

eg milk bottle, soda bottle, plastic bag

reusable plastic

eg tupperware box, drinks bottle, scales

Grab a calculator to work out what percentage of your plastic waste is recycled. Add up the total number of plastic items you put in your recycling bin in one day and divide that figure by the total number of single-use plastic waste you create in one day. Then, multiply by 100 to give you a percentage.

$$\boxed{} \div \boxed{} \times 100 = \boxed{} \%$$

total number of plastic items in your recycling bin

total number of single-use plastic waste you create

multiply by 100

your answer!

quick questions

how many of your single-use plastic items do you recycle?

how many plastic items end up in your general waste bin each day?

can you work out the percentage of household plastic you recycle and see how it compares to the rest of the UK (45%)

let's talk plastic

Once you've finished, talk about what you could do as a family to reduce - or recycle - the amount of plastic you use at home.

As a family, **are you remembering to recycle as much as you can?**

Which plastics can - and can't - be recycled where you live?

(Check out the local council rules for what will be collected.)

Are there any recycling schemes run by supermarkets or community centres? (Sometimes they will take harder to recycle items.)

Can you reduce the amount of plastic you use?

here's a few ideas to get you started!

USE CANVAS SHOPPING BAGS INSTEAD OF PLASTIC ONES

USE LARGER CONTAINERS FOR FOODS AND REFILLS RATHER THAN LOTS OF LITTLE ONES

USE STORAGE BOXES OR BEESWAX WRAP INSTEAD OF CLING FILM

I-SPY PLASTIC

Use this worksheet to complete your survey. Happy hunting!

	reusable plastic	single-use plastics	single-use plastics going to landfill
example items found in the kitchen	TUPPERWARE BOX DRINKS BOTTLE	MILK BOTTLE PLASTIC BAG SODA BOTTLE	MEAT TRAY YOGURT POT SWEET WRAPPER
how many items in total?			
length of plastic waste created in a day			
length of plastic waste created in a week			
length of plastic waste created in a year			

EXTRA STUFF TO DO! (OPTIONAL)

At the end of one day, lay out all the plastic waste items you can find next to each other and, using a ruler or tape measure, the length of space they cover.

You've probably used over 1 metre of waste (around 5-7 items). That means in just one week your waste would be higher than the world's tallest giraffe (5.8m)!

Over a year, just your kitchen will have created enough plastic waste to reach higher than the Eiffel Tower and the Shard building in London!

How long would it take for your plastic waste to overtake the world's tallest building? Use this table to find out!

leaning tower, pisa	big ben, london	pyramids, egypt	the shard, london	eiffel tower, paris	empire state, new york	burj khalifa, dubai
57m	96m	139m	320m	324m	443m	828m

notes: