



FOOD CHAINS & FOOD MILES

Notes for parents and carers:

These home learning packs have been compiled by Better Planet Education to support you whilst your children are at home during the Covid-19 lockdown.

Each week, we will include suggestions for activities you can do alongside your children, as well as those that they can do independently, whilst you are working from home.

We will attempt to suggest activities which require no special materials other than those you may find around the house. It may be possible to pick up some resources during your occasional shop for essentials but please do not aim to shop specifically for listed supplies! We will also attempt to minimise the need to print out any materials.

In your pack each week:

- * Open ended project ideas and research topics
- * Activities to explore independently or together
- * Games to play
- * Ideas for science experiments
- * Art and craft ideas
- * Links to other learning resources
- * A use each week for toilet roll tubes...



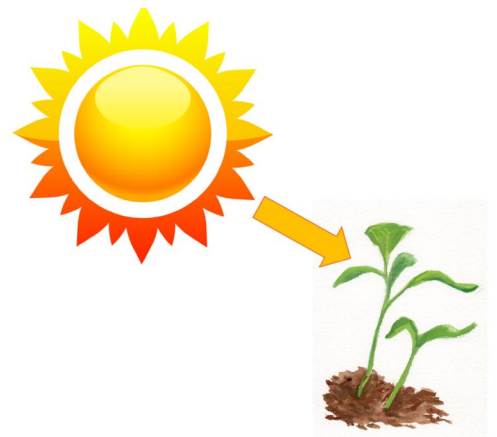
ACTIVITY IDEAS

Where does our food come from? We need energy so that we can move our bodies and stay fit and healthy. Did you know that, to start with, all the energy in our food came from the sun?! How does that work? How far has the food you will eat today travelled to reach you and where did it start off? Does it matter whereabouts in the world our food grows? Think about some of these questions by exploring the activities in this pack!

Food chains:

All of the energy in our food came first from the sun. Plants are able to absorb light from the sun and turn it into food, via a process called photosynthesis. Find out how that happens here (Youtube clip, supervision recommended):

<https://www.youtube.com/watch?v=UPBMG5EYydo>



Learn about the scientist who first realised that plants get their energy from the sun here (Youtube clip, supervision recommended):

<https://www.youtube.com/watch?v=gBUjzm6w7Hs>

Animals, including humans, then eat those plants. Some animals only eat plants. Those are called herbivores (or vegetarians, if they are humans!) Some animals eat other animals. These are called carnivores. In this way, the energy that came from the sun, is transferred into plants, then into the animals that eat the plants, and further into animals that eat those animals! This is called a food chain and you can find out a bit more about how they work in this BBC clip:

<https://www.bbc.co.uk/bitesize/topics/zbnnb9q/articles/zwbtxsg>

Who's eating who?:

This game is designed to help children understand the way that energy is passed along a food chain. The playing cards, scoring sheet and tips need printing out and then players work in a pair or a group to see who can build the longest food chain! Designed for use in school, it works well at home, as long as you have a printer (though you could draw your own cards if not). Felix and Dylan in Devon



tested it and thought it was fun... It's a bit upsetting if another player takes your hawk card... but, later, you might be able to take one of theirs!

<https://mysteryscience.com/ecosystems/mystery-1/food-chains-predators-herbivores-carnivores/93?>

Healthy plates:

What sorts of foods do we need to eat if we are going to be healthy and have plenty of energy? Learn about different food groups here: <https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/>

Using the blank template plate here (scroll to 4th page): <https://www.farmafrica.org/downloads/2016-ghtb/science-ks2-nutrition-2017.pdf>

draw pictures of a meal that your child enjoys, or sort food cards available to download here: <https://www.stem.org.uk/resources/elibrary/resource/35091/what-eatwell-plate>

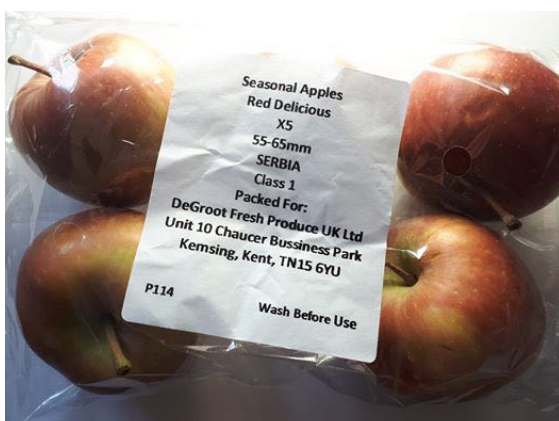
on to the correct places on the plate.

This activity helps children understand about the different food groups and is useful for those who are starting to plan their own meals and choose which types of foods to include. You could combine this activity with the collage idea later in this pack!



Where does our food come from?

The food that we eat in the UK is grown all around the world. Some of the foods that we enjoy eating, such as bananas, or the beans that make chocolate, only grow in very warm climates. A long time ago, most people only ate food that they could grow locally. Nowadays, because of our global transport systems, it's common for people to eat food that has travelled many thousands of miles before reaching their homes.



Where was your food grown?

Have a look at some of the food in your house, especially the fruit and vegetables. If this has come in a packet, there will be a label telling you where the food was grown! There might also be a sticker on the piece of fruit itself that tells you this information.

Where in the world?

Here are some foods that were bought in supermarkets in the UK recently. Can you recognise each of the foods? Can you see on the labels where they were grown? Use a globe, or the map here (you can zoom on countries to see them in more detail): <https://geology.com/world/world-map.shtml> to see if you can find out where these countries are.



See if you can find out whether any of these fruits and vegetables are grown anywhere in the UK.

What are food miles?

Growing food on a large scale doesn't just require energy from the sun. Farmers have to water their crops and they often use fertilisers in the soil and pesticides to maximise the amount they can produce. These can harm the soil and water causing harm to many living organisms.

When food is transported a long way, it uses a lot of fuel for the lorries, ships and planes that carry it. Burning this fuel produces harmful gases, such as carbon dioxide (CO₂), which leads to climate change. The further your food travels to reach you, the more fuel it uses to get to you.

Find out more about food miles here (Youtube link, supervision recommended):
<https://www.youtube.com/watch?v=b7rn5hH5XN8>

You'll also notice that the foods pictured above, all come in plastic packaging. The further food has to travel, the more likely it is that it will be packed in plastic to protect it on its journey or so that gas can be sprayed in the bags at the last minute to ripen the food just before it goes to the shops. Find out more about the effects of plastic food packaging on the environment here:

<https://ypte.org.uk/lesson-plans/food-packaging-and-recycling>

Miles in a menu:

Think about one of your favourite meals and make a list of some of its main ingredients. For example, you might enjoy spaghetti Bolognese, so you might like to find out about the wheat used to make the pasta, the tomatoes in the sauce and the beef (or alternative!) You could even look at something as simple as a cheese and tomato sandwich.



Find out where each ingredient has travelled from and use this food miles calculator (in the right hand side bar) to work out how far the meal had travelled before arriving on your plate! <https://www.foodmiles.com>

toyohara



Growing food at home:

You might be lucky and have either a big garden, or an allotment. If so, you can grow lots of foods very close to your home, so there will be no food miles at all! You will also be able to wait for the food to ripen naturally, instead of picking it early ready for a long journey and before it has all of its nutrients.



You don't need lots of space. These tomato plants are growing in Alice's front garden in London. She was able to make all this tomato chutney with left over tomatoes one year!



You can also grow food in pots on a window sill! The following food plants grow very well in small containers:

- tomatoes
- peppers and chilis
- herbs
- lettuce
- radishes
- aubergines
- spinach

From this picture of white aubergine growing, it's easy to see why they are also known as 'eggplants'!

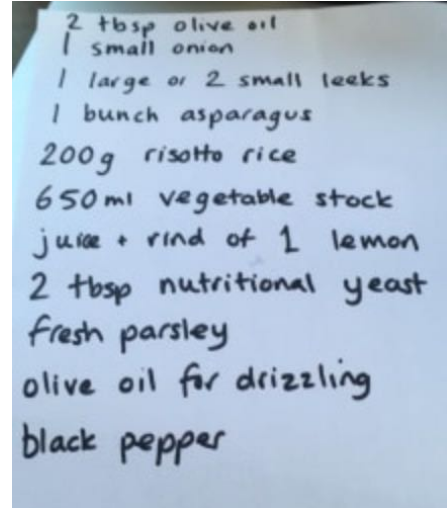


Recipes from seasonal food:

One of the reasons that some of our food travels so far to reach us is that we have got very used to being able to eat whatever kind of food we like, all year round. Some food doesn't grow in the UK all year, so we import

it from other countries. Some foods never grow in the UK at all. See if you can research which foods are growing near where you live at this time of year. Could you think of a recipe to cook, using local ingredients?

Seren in Bristol gets her vegetables from a local veg box delivery company who guarantee that the vegetables have all been grown within 20 miles of her city. She has designed this tasty recipe using some food that grows in the UK (the onions, leeks and asparagus)



First, finely chop the onion and wash and chop the leek. Make sure you are confident with using a sharp knife - ask someone to teach you how to do it safely.

Gently fry the onion.



Meanwhile, make up the stock in a separate pan.

Add the rice to the pan with the onion and stir, to coat it in oil. Fry it for 2 - 3 minutes.



Next, add the leeks.



Begin to add the stock, one ladle at a time, stirring until the liquid is absorbed by the rice.

Prepare the asparagus, by chopping the stalks and setting the tips aside to add later. Discard the woolly ends of the stalks into your compost.



Keep adding stock a ladle at a time.

When half the stock has been absorbed by the rice, add the asparagus stalks. Keep adding the rest of the stock, a ladle full at a time.



Add the asparagus tips with the last of the stock. Cook and stir for a few more minutes.

Chop the parsley and grate the lemon zest.



Stir the juice of half the lemon plus the parsley and lemon zest.

Turn off the heat and add the nutritional yeast flakes.

Serve drizzled with olive oil and sprinkled with black pepper.





Avoiding food waste:

Even after our food has travelled so far to reach us, a lot of it just gets thrown away! Did you know that, in the UK alone, **1.9 million tonnes** of food gets thrown away every single year?

What could you do with your food scraps instead?

Make compost:

You can make rich compost using your food waste scraps and then use this on your garden to help other plants grow. The BBC Good Food guide explains the two main types of food waste composting here:

<https://www.bbcgoodfood.com/howto/guide/how-compost-food-home>



Dorothy

Regrow some vegetables from their offcuts:

It's really easy to regrow certain vegetables from kitchen scraps. In many cases, leaves and roots will sprout again if you put the rooted end into a shallow bowl of water and change the water regularly. Lettuce can be kept on the windowsill and new leaves picked straight from the plant.

Other veg can be moved on into a pot of soil, once roots start to emerge.



Li Tsin Soon

Try re-sprouting:

- *lettuce
- *spring onions
- *celery
- *leeks
- *sweet potato

This is a handy 'how to' guide for re-growing 20 vegetables from kitchen scraps:

<https://www.ruralsprout.com/regrow-vegetables/>

Make syrup from lemon peels:



Lemon rinds are full of essential oils that can be used for a range of purposes. Lemon peels can be used to make lots of natural cleaning products, for starters, but for a really tasty way to save the peels you might otherwise throw away after juicing, why not make a delicious syrup, ideal for adding to cakes, drinks or ice-cream?

All you will need is:

The rinds from some juiced lemons

Approximately the same weight again in sugar

A potato masher or ricer

A jar or bottle to store the syrup

Place your juiced lemon rinds into a bowl or jug and cover them with sugar.



Leave aside until the sugar has drawn the juice and oil from the rinds. Leaving over night is ideal.



Use a potato masher or ricer to press out the very last drops of syrup from the rinds, into a pan or bowl.



Add the syrup to a bottle or jar and use it in your recipes!

Thank you to Alice in London for making this syrup.

RESEARCH IDEAS

Supermarket Pros and Cons



Buying food from a supermarket can be very convenient. There is a lot of choice and, because supermarkets are very big companies, they can buy in big quantities, which can keep the prices lower. We didn't always used to shop in this way and it has had an effect on farming, local shops and the types of food available to buy.

Some questions to consider:



- Which food shops are there to buy groceries from in your area?
- How long have those shops been there? Where did people buy their food long ago?
- Would you be willing to only eat food that it was possible to grow locally? Which foods would you miss?
- How much of the food in being sold in the supermarket comes with plastic packaging?
- Where does that go?
- Could shops reduce the amount of packaging that gets thrown away?
- Lots of the food that is grown in developing countries is flown out for sale in supermarkets in richer places.
- Do you think this is fair?
- How can supermarkets make sure they are fair to the people who grown the food they sell?

MATHS CHALLENGES



Lolly

Tilly bought a lolly. It cost 6p
She paid for it exactly (no change).
Which coins did she use? Show all the possible ways.
What if the lolly was 7p?

Rows of coins



Take five coins: 1p, 2p, 5p, 10p, 20p.
Put them in a row using these clues.
The total of the first three coins is 27p.
The total of the last three coins is 31p.
The last coin is double the value of the first coin.

Take six coins: two 1p, two 2p and two 5p.
Put them in a row using these clues.
Between the two 1p coins there is one coin. Between the two 2p coins there are
two coins. Between the two 5p coins there are three coins.

What if you take two 10p coins as well, and between them are four coins?

Money bags

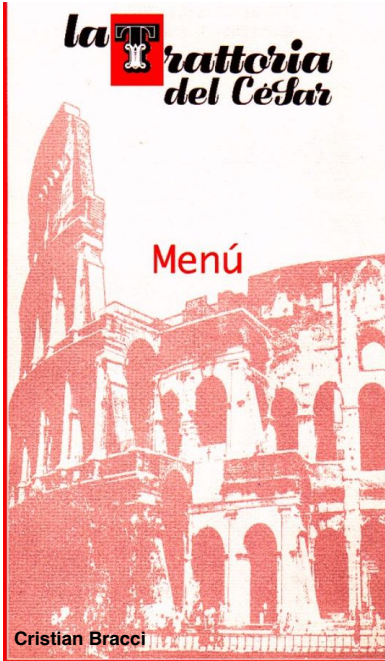
Kita divided 15 pennies among four small bags.
She could then pay any sum of money from 1p to 15p, without
opening any bag.
How many pennies did Kita put in each bag?



**Questions adapted from *Mathematical Challenges for Able Pupils*,
DFE, 2000.**

Solutions at end of the pack!

WORD CHALLENGES



Design a menu:

Restaurants (remember those...?) often have very fanciful descriptions of the food that they serve. A fresh fillet of sumptuously seared salmon, reclining in a nest of tender asparagus stems, perhaps?! Explore some menus from fancy restaurants online, then design your own tasty sounding descriptions!

Market Poster:

Do you have a local market that sells produce grown nearby? Make a poster to advertise it and explain that the food grown locally will have travelled fewer food miles!



Plastic Prevention:



If you are worried about the amount of plastic packaging that is being produced by supermarkets, write a letter to the manager of your nearest one to ask if they will try to reduce the amount of plastic that they use. 10 million tonnes of plastic ends up in the sea every year. That's equivalent to over 46000 pieces in every square mile!

ART AND CRAFT

Collage a plate of food:

Use a paper plate and found items from around the house to collage a plate of realistic looking food! For this 'fish finger and chips' platter, you will need:

- * A paper plate
- * A kitchen sponge
- * scissors
- * Orange paint, or colours to mix it
- * Green paper (tissue works well)
- * Glue to stick it all down

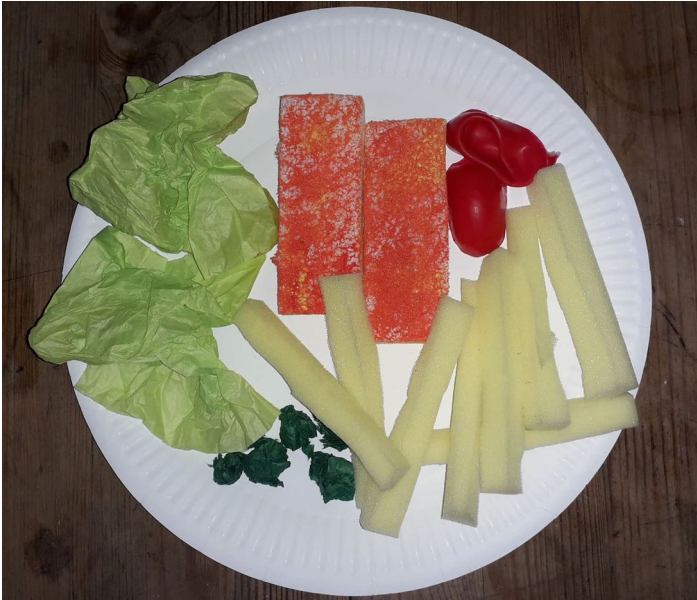


First, use the scissors, with help if necessary, to cut the top part of the kitchen sponge off. This is the scratchy scouring surface. Cut that into two pieces. Chop the remaining bit of sponge into long, thin, cuboids.

Paint the two top sections of the sponge with orange paint. Any kind of paint will do. You can brush it on, or just dab the sponge into the paint then leave it to dry.



Scrunch up the paper into salad leaves, and roll little balls of paper to make peas.



Finally, arrange all of the 'food' on to your plate. You might want to add some tomato sauce. I've used the wax from a cheese, but you could also use red paint.

What sorts of food can you create? We'd love to see your collages! Share them with us and use the tag **#yptelearning**.

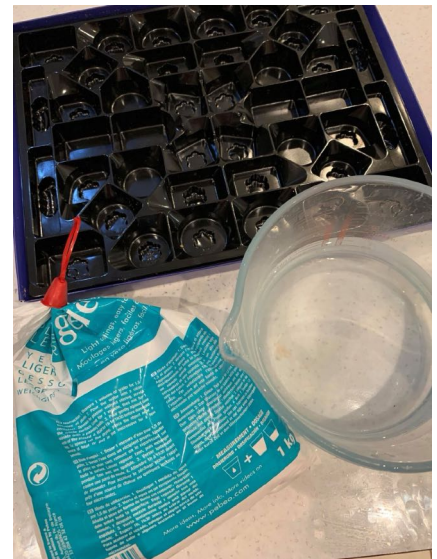
Make pretend sweets:

The best part about this activity is that you will need to eat a whole tray of chocolates before you do it!

You will need:

- Plaster of Paris
- A tray from a box of chocolates
- Paints
- Varnish if wanted

These toy sweets are ideal for using in a pretend shop or party and, if you varnish them after painting (including the bottoms) they should last a long time. Do explain to younger children that the sweets they make aren't edible like the real chocolates!



First, mix up the plaster of Paris, following the instructions on the packet.

WARNING: plaster of Paris in large quantities gets very hot as it sets and can cause severe burns. Used properly, it is quite safe. Adult supervision required!

Pour it into the tray and leave to set. tap the tray gently round the sides after pouring in the plaster, to knock out any air bubbles.



Turn the 'sweets' out of the tray and rub off any rough edges, being sure not to inhale any of the plaster dust.

Now the fun part!
Decorate your sweets with paints. You might want realistic looking chocolates, or you could be as inventive as you like!



Add a layer of varnish once the paint has dried, for longer lasting play sweets.

Thank you so much to Dylan, Lily, Callie and Kitty in Rochdale for making these amazing sweets!



Andy Warhol:

Find out about the pop art work of Andy Warhol, which included using images of packaging, such as these Campbell's soup cans.



Have a look at some of the food labels in your own cupboards and use these as inspiration for your own 'pop art' using paint or collage!

This week's use for a toilet roll tube:

Make "tins" of food

Use paints, pens and pencil crayons to decorate the tubes so that they look like the tins of food in your cupboards - or invent your own foods!

These great 'tins' were made by Annie in Cambridge.



GAME

Travelling Tomatoes:

This game helps children to understand that transporting a tomato over a long distance requires lots of energy! You will need a ball to represent the tomato. We've used a green one to show that, for most of its journey, the long distance tomato may not be ripe yet.



First, you'll need to find out where your tomato has been grown. You might have some that you can look at to find a label, or you might want to look up some countries that grow tomatoes. You may even have some tomatoes growing in your own garden or allotment!



Next, use the food miles calculator to work out how far the tomato has traveled to reach you <https://www.foodmiles.com>.

Choose a space in your garden or house suitable for running up and down and decide what distance this will represent. The tomatoes above have travelled from Spain. That means that they have travelled approximately 1600 kilometres to reach the UK, so you might choose that two lengths will represent 100 metres. Each tomato will need to be carried that distance 16 times.

(You could also decide that you'd like to use more energy intensive movements such as star jumps or hops to represent different methods of transport!)

The first player takes a green tomato and travels the required distance to bring it over to the UK. On arrival, a second player can 'ripen' the tomato by gassing it with ethylene (a common practice to ensure that the produce will be ripe only when it is headed to the shop for sale) before running the distance from the port to wherever you live.



You could then make a comparison to see what the difference would be if you were to transport a tomato from your nearest local supplier, allotment or garden! In this case, start with the tomato already red, as there would have been no need to pick it before it was ripe.

LEARNING LINKS

There are a large number of resources available for online learning at this time. We'd always recommend that you support your child with this and only follow links from reputable names. **Any links provided here have been checked for suitability.**

Crash Course provide great coverage of an enormous range of topics for children. This video explains the idea of how animals get energy by eating plants and each other! (Youtube link, supervision recommended):

<https://www.youtube.com/watch?v=CZhE2p46vJk>

For a more in depth look at issues around food miles, there's sequence of lessons, together with a series of linked slides and activities here:

<https://ypte.org.uk/lesson-plans/food-food-miles>

What might we be eating in the future? With increasing populations and issues with intensive farming methods, how might our diets adapting the future, if everyone's needs are to be met? This factsheet on Future Foods has some suggestions!

<https://ypte.org.uk/factsheets/food-of-the-future/introduction>

Answers to Maths Challenges:

Lolly:

Five different ways to pay 6p:

$5p + 1p$

$2p + 2p + 2p$

$2p + 2p + 1p + 1p$

$2p + 1p + 1p + 1p + 1p$

$1p + 1p + 1p + 1p + 1p + 1p$

Six different ways to pay 7p:

$5p + 2p$

$5p + 1p + 1p$

$2p + 2p + 2p + 1p$

$2p + 2p + 1p + 1p + 1p$

$2p + 1p + 1p + 1p + 1p + 1p$

$1p + 1p + 1p + 1p + 1p + 1p + 1p$

Rows of coins:

1. 5p, 2p, 20p, 1p, 10p

2. 2p, 5p, 1p, 2p, 1p, 5p, or its reverse

When two 10p coins are also used: 2p, 5p, 10p, 2p, 1p, 5p, 1p, 10p, or its reverse

Money bags:

Kita put 1p, 2p, 4p and 8p in the four bags.

Any sum from 1p to 15p can be made with these amounts.