

Starters for STEM



Starters for STEM are 10 activities that parents can use at home to help children develop their science, technology, engineering and maths skills. These activities are easy to resource and provide children with the stimulus to talk about the world around them. If you see a link you can explore how to extend these activities, you will need to sign up, for free, to access these materials. Don't forget to share your work on social media

#ScienceFromHome

Make some butter

You will need some full fat milk and a clean jar with a lid. Shake the milk in the jar. You'll need to do this for quite a long time. After a while you should feel there is a solid forming. This is butter. What does it taste like?

The world's largest steel structure

The Bird's Nest is the world's largest steel structure and was built in China for the 2008 Olympic Games. It is made out of 26 miles of steel.

Use strips of paper, card or wool to create your own birds nest style building. You might like to search for photos of the 'Birds nest' to help you with your design.

Mission X – Astro agility course

Complete an agility course to improve movement skills, co-ordination, and speed. Record your speed and see if you can get faster with practise.
<https://bit.ly/2z4AQLZ>

Snail inheritance

After it has been raining have a look in the garden or out on the local paths. Can you see any snails? Have a look at the patterns on their shells? What do you notice? Are there any with similar patterns? Snail shell patterns are inherited from their parents. Can you find a potential family of snails? How many different shell patterns can you spot?
<https://www.stem.org.uk/rx33o6>

Rose Mitchtom and Margarette Steife

Over 120 years ago two women came up with the idea to make a teddy bear. Collect all your teddy bears. Are they all the same? What do you think makes a good teddy bear? If you were going to invent a new teddy bear what would it look like?

Design a sports kit

Design a sports kit suitable for a sport you choose. Think about the type of material you will use and why you have used it.

<https://explorify.wellcome.ac.uk/en/activities/problem-solvers/design-a-sports-kit>

I'm Alive!

You're alive! How do you know? What are the features of being alive? Are these the same in other living things, such as a plant? Look around your home. What things can you find that are alive, were once alive and were never alive?

<https://www.stem.org.uk/rx33gh>

Mirror writing

Put a piece of paper in front of a mirror. Without looking at the paper, look into the mirror and try to write your name on the paper. Is it difficult? Why do you think this is?

Silly shapes

Find or make some playdough. How many different shapes can you make by squashing, bending, twisting and stretching your dough?

What the Ladybird Heard

In the storybook 'What the Ladybird Heard', the Ladybird helped the farm animals by carefully listening to the sounds she heard in the farmyard. In the story the two thieves have a map of the farm with all the animals on it and they work out where they are by listening to the sounds the animals make.

Can you make a map of your house or garden and add all the sounds you hear? If you had to direct someone round your map what sounds would you tell them to listen out for?

Occupations in Design Technology

Learning Objective: Recognise the role of people in design and technologies occupations

Design technology is the **study, design, development, application, implementation, support and management** of computer and non-computer based technologies. Jobs in Design Technology play an important role in helping a society to function efficiently and productively. People in these occupations design products, services and environments to meet their community's needs. They play an important role in helping to research and create sustainable alternatives to products and services we have today.

Occupations

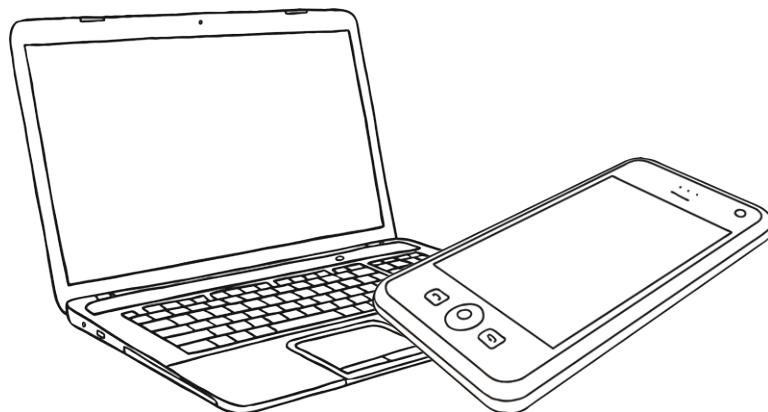
There are a number of different engineering roles that are involved in the design and creation of new technologies.

A civil engineer designs and creates bridges, dams, roads and buildings. They construct transport systems and are also involved in the planning of the community's sewerage, water and gas needs. Civil engineers also help with planning, designing and testing of the structure of buildings, new and old.

An agricultural engineer works on developing technology to improve existing farming systems and develop new ones. The priority of an agricultural engineer is to look at ways to improve current farming systems, improve safety and ensure farming processes are environmentally friendly for the farmers, their land and livestock.

A person who develops and creates computer hardware and applications for technology devices such as smartphones and computers is called a software engineer. The apps they develop can help to streamline organisational processes and gives people access to new and important information.

Biological engineers are involved in the research and design process of devices that help to support human life, help people with physical disabilities and assist in medical procedures. Biological engineers also help to improve patient care, this helps with maintaining and improving the health and wellbeing of the entire population.



An electrical engineer designs, implements, maintains, and improves electrical instruments, equipment, facilities and products. Electrical engineers also create electrical systems to be used in industry, businesses and in the home.

A chemical engineer designs products from raw materials. They research how raw materials can be changed or adapted to make something new. Chemical engineers design and make things such as plastics, petrol, paints, paper, ceramics, minerals, metals and even food. They also help to design and operate chemical plants.

Occupation	What do they do?	Who do they help?
biomedical engineer		
agricultural engineer		
software engineer		
civil engineer		
chemical engineer		
electrical engineer		

What does sustainability mean?

Leaf Baskets

What you will need:

- Collect together a quantity of leaves (dry, supple leaves of medium size are best)
- Plastic bowl
- Glue
- Petroleum jelly

The Activity:

- Turn the bowl upside down.
- Cover the bowl with a thin coat of petroleum jelly.
- Make a layer of leaves inside the bowl and cover with glue, as you would with papier-mache.
- Add a number of layers.
- Leave the basket to dry.
- When the leaves are completely dry, remove the bowl.

You could also decorate the basket with other natural objects, e.g. small seeds.

Disclaimer

We hope the information on our website and resources is useful. It is your responsibility to note that some ingredients and/or materials used might cause allergic reactions or health problems and to ensure that you are fully aware of the allergies and health conditions of those taking part. If you have any concerns about your own or somebody else's health or wellbeing, always speak to a qualified health professional. Remember, activities listed within the resource should always be supervised by an appropriate adult.

Simple Bird Feeder

You will need:

- Empty cardboard tube
- Peanut butter
- Butter knife
- Wild birdseed
- Tray
- String (optional)



Instructions

1. Using the butter knife, carefully spread a thick layer of peanut butter all over the cardboard tube.
2. Pour the birdseed into the tray.
3. Roll the peanut butter-covered cardboard tube in the birdseed. Press down carefully to make sure the birdseed has stuck to the peanut butter.
4. Gently, shake off the excess birdseed over the tray.
5. Slide the birdfeeder onto the branch of a tree. Alternatively, you could thread some string through the tube and tie it in a knot at the top to make a loop.
6. Sit back and count how many different birds visit your feeder to enjoy a treat!

