



## SNEAK PEEK PRIMARY ACTIVITY PACK

Innovating for the future  
5-14 March 2021  
[britishscienceweek.org](http://britishscienceweek.org)

A range of activities and  
ideas to be run with students  
up to the age of 14

Delivered by



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# Innovating for the future



This activity pack is your 'one-stop-shop' for supporting you during British Science Week, but it can be used at any time. This pack is a sneak-peek of the full version, which will be available in January. Feel free to adapt or extend the activities to suit your pupils' needs and the curriculum you are delivering.

In addition to the activities in this pack, there are lots of other ways to enthuse and engage your pupils throughout British Science Week.

In developing this pack, we have looked for activities which break down the stereotypes surrounding science, technology, engineering and maths (STEM) and promote cross-curricular learning. We encourage you to use British Science Week as an opportunity to link STEM to other curriculum subjects and to your pupils' own backgrounds, lives and interests.

We understand that this academic year is going to be quite different for schools and we've adapted this pack to best support you for British Science Week 2021.

This year, we've got some activities to complete in school, plus some which are specifically designed for pupils to take part in at home with their families.

Please feel free to further adapt activities within the pack to suit to your setting taking into consideration any quarantine of resources, working in bubbles and social distancing needed.

We have also added in some suggestions on remote engagement if you are unable to accommodate visitors within your school.

## Find an activity near you:

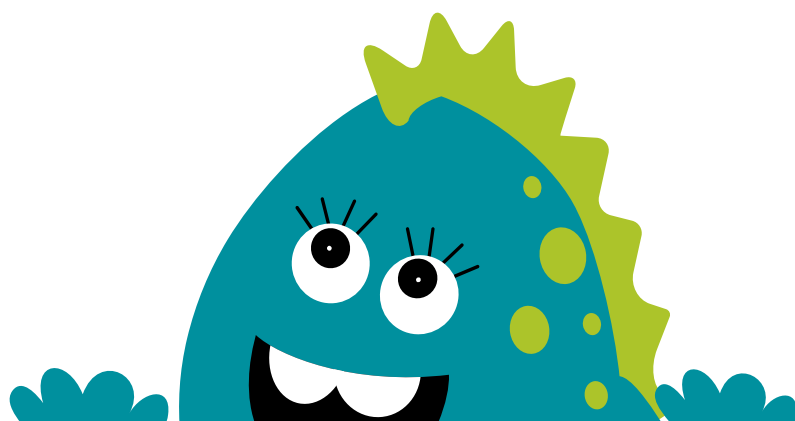
You can either create your own activity in your class or setting, or see what activities are happening near you. Last year we reached more than 180,000 people. Help us make British Science Week 2021 even bigger and better! Visit [sciencelive.net](https://www.sciencelive.net)



## Enter our competition:

Some of the activities in this pack could be followed up by designing a poster; simply look out for the paintbrush symbol shown to the right. The theme for this year's poster competition is 'Innovating for the future'. For more information on the competition and how to enter, read on further in the activity pack or visit [britishscienceweek.org](https://www.britishscienceweek.org).

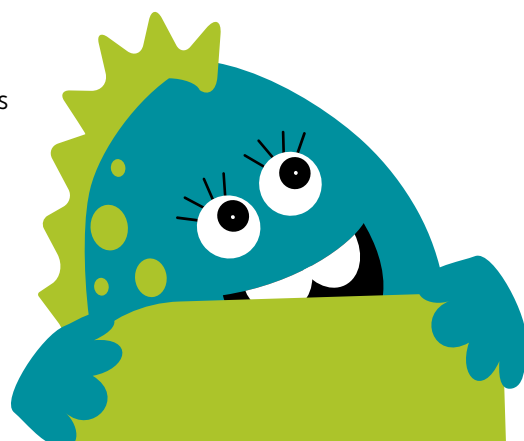
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## Introducing the theme

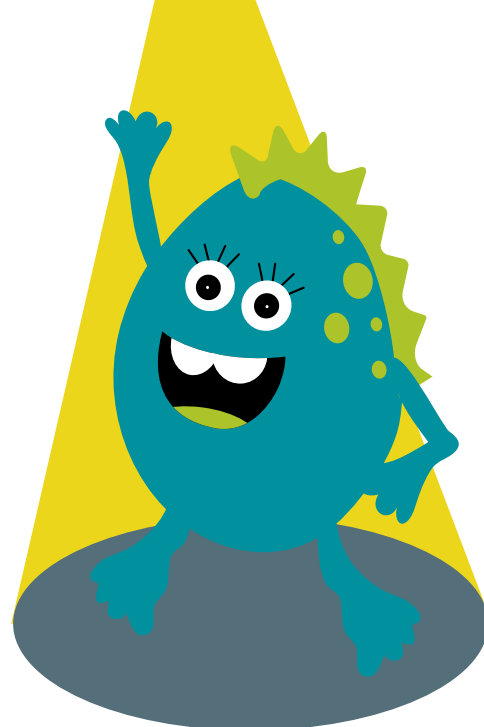
Why not start British Science Week off with a bang, by introducing parents and pupils to the theme 'Innovating for the future' in a fun way to get them excited about the Week ahead?

- ✓ Post your brilliant activity ideas or share images online tagging the British Science Association on Twitter - [@ScienceWeekUK](#) - and using the hashtag [#BSW21](#)
- ✓ Kick start the week with a simple but impressive demo. Try a game, an audio-visual presentation, a mystery or special object, an inventor's box or a pop-up display which communicates the theme 'Innovating for the future.'
- ✓ [Here is a video](#) featuring the Rube Goldberg machine which you can show the pupils. Anything that inspires their inquisitive minds is an epic start.
- ✓ Get the pupils thinking through their imaginative hats and allow them to experience *innovation* by asking them to come up with machines they would like to invent from readily available scrap or craft materials in the classroom or setting.
- ✓ Encourage the pupils to come up with an acrostic poem for **INNOVATION** by asking them what comes to mind when they hear it. You can even turn their acrostic poem into a jingle which you can sing with them throughout the week to remember their own ideas about innovation.
- ✓ Engage pupils into sharing how innovation is a part of people, materials, animals, nature or anything else in their everyday lives.
- ✓ Invite a special guest or someone from the school community to engage the pupils with their experience of an innovation. They could highlight a special tool that they use in their job and demonstrate how it makes their work more efficient, or they could feature their favourite innovation. [See Page 5](#) for information on how to get volunteers.



**Here are some other ideas to start the week:**

- ✓ Tell the pupils about the plan for British Science Week and give them a challenge related to the theme. If you are sending home a family experiment, maybe you could introduce / demo it at your setting first.
- ✓ Innovation is around us. Where has the topic of innovation been in the news or your local area? Can you give an example of innovation? Is there any way you can encourage conversations with pupils about this?
- ✓ Launch the poster competition and let parents know about this ([see Page 14 of this pack](#)).



## Making the most of volunteers

Opportunities for face-to-face engagement with external visitors may be limited this year, but there are opportunities for getting volunteers and presenters to engage your pupils online.

STEM Ambassadors offer their time and enthusiasm to help bring science and technology subjects to life and demonstrate the value of them in life and careers.

The STEM Ambassador website has recently been updated to enable teachers to request online STEM Ambassador support. Any activity created has an 'online' check box as well as a place to enter a link to a video conferencing call if required and STEM Ambassadors from across the UK can respond to any online activity request. Find out more and make a request here: [www.stem.org.uk](http://www.stem.org.uk)

You can also look for presenters and volunteers via Science Live: [sciencelive.net](http://sciencelive.net) or ask parents if they work in STEM related jobs to describe what they do in more detail.

Things that work well are to:

- 1 Kick off British Science Week with a career talk/demo from one of these inspiring volunteers to engage the pupils for the rest of the week. The volunteer can highlight a useful tool or innovation which they use in their jobs and how it makes their job easier. Or, the volunteer can highlight their favorite innovation to share what and why that is.
- 2 Schedule two or three different guests for a career talk throughout the week if you can. This will keep children excited and anticipating who the next guest will be, and what they do. Opportunities like this will likely inspire them about what they want to be in the future. Remember, they are never too young to explore their career options.
- 3 Where available, choose volunteers/ambassadors who challenge stereotypes the pupils might have and promote positive attitudes towards science -

e.g. female engineers. Let the volunteers/ambassadors share in a simplified talk how their job is making a difference in the world (or an anecdote of what science activity they loved to do as a child).

- 4 Book your visitors early (many speakers get booked up during Science Week), have a clear idea of what you want them to do and communicate this with them ahead of time.

Volunteers come from a range of careers and experiences, from engineers, designers and architects to scientists and technicians, so get children excited about inspirational career talks, broaden their choices and develop their interest in these careers!

Visit Inspiring the Future's website [inspiringthefuture.org](http://inspiringthefuture.org) for some helpful ideas for using volunteers, some of which may be transferable when using remote engagement.

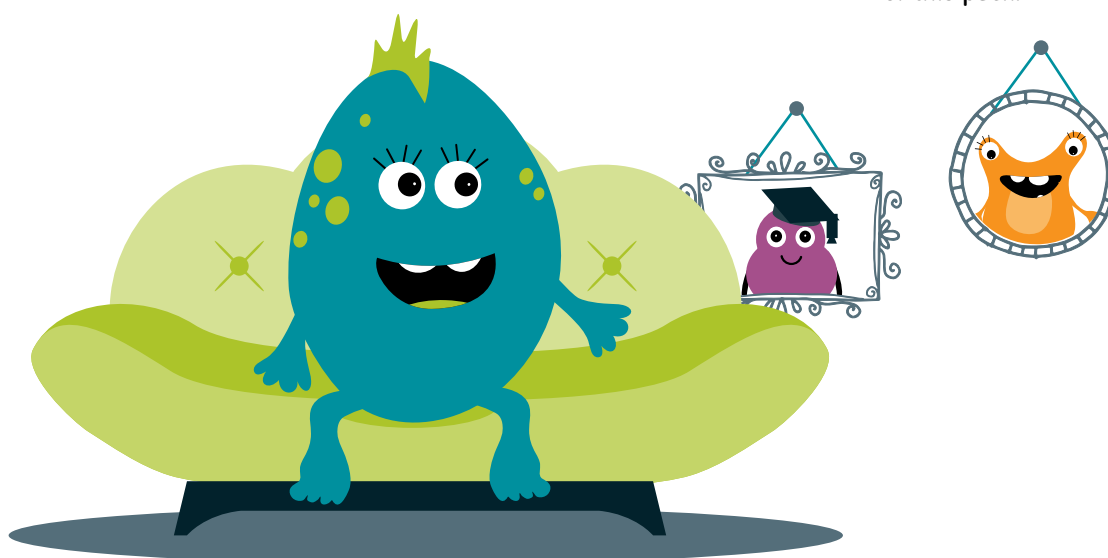
## British Science Week at home

Want the pupils to get involved in British Science Week at home, but not sure how? Here are our top tips for engaging parents and carers in the Week:

- 1 Make the most of your parent newsletters, the Parent-Teacher Association (PTA), chat group and text messaging services if you have them. Let all the parents know in advance of the Week (at least a month) what you have planned, and how you'd like them to be involved. They might be able to collect/donate materials and store them for use during the Week; and if you want them to get involved in any experiments at home, they may need time to plan and collect materials themselves. The PTA may be able to support you financially to run the Week or help drum up parent volunteers.
- 2 Get parents thinking about how their own jobs might link to STEM subjects and encourage them to chat with their children about this. You could do this via a newsletter or send pupils home with activities they can do with their parents, which may then lead onto further conversations. (See Page 12 for a great take-home activity.)
- 3 Encourage exploring outdoors, in the community or in local cultural spots. This could be anything from going on a nature walk around local parks to spotting STEM in action on the streets around pupils' houses. Why not try out some of the CREST Award activities which are quick and easy to do as fun, outdoor challenges too: [library.crestawards.org](http://library.crestawards.org)
- 4 Send an experiment idea home during the Week which might spark mealtime discussions around STEM.
- 5 Try and make it as low-resource as possible. It can help if it's something the pupils have tried or seen at school first so that they feel like the 'experts' when they do it at home with family, allowing them to lead the learning.

Crafty rafts from the CREST SuperStar resources is ideal for this: [primarylibrary.crestawards.org](http://primarylibrary.crestawards.org).

Why not try these fun science-based activities from the CREST at home collection ([collectionslibrary.crestawards.org](http://collectionslibrary.crestawards.org)) which can be completed at home with few resources? You could also use the 'Super spinners' activity on Page 12 of this pack.



## Gathering resources for your classroom or home

- ✓ If you can, try to collect materials all year round that can be cleaned and stored for use during the British Science Week.
- ✓ Alternatively, check to see whether there is a scrap shop/store/club open in your local area. These shops are often membership based and can provide a brilliant, inexpensive or free resource for card, plastic, bits of material – all sorts. These things can be turned into forests, cars or model people; you name it, the kids will think of it!
- ✓ Take photographs when out and about and share these with the pupils to foster discussion and raise their level of understanding about innovation – machines, materials, building structures, etc. The more colorful, the better. You can also use these photos for an innovation version of the guessing game 'I spy' where you can describe what the innovation is used for and the pupils will attempt to guess it.
- ✓ Collect story books and reference books ahead of time leading to the theme 'Innovating for the future' to create a themed library. You can even organise a read-aloud session of a related story book for circle or carpet time.

Look at [childrensscrapstore.co.uk](http://childrensscrapstore.co.uk) to find a UK directory of scrap stores.







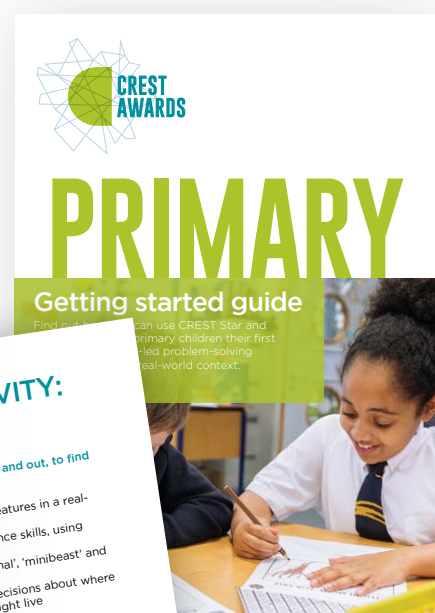
## Beyond the Week

Once British Science Week is over, this doesn't mean the exploration and curiosity have to stop!

Some ideas for doing this include:

- ✓ Pupils could take part in a CREST Award. CREST is a scheme that encourages young people to think and behave like scientists and engineers. Pupils can complete eight activities to achieve a Star or SuperStar Award which includes a certificate and badge.
- ✓ If there are older children at your school or in a school nearby they could earn a higher level of CREST too. For more information, take a look at the different CREST levels available: [crestawards.org/which-level](http://crestawards.org/which-level)
- ✓ Consider sharing your British Science Week learnings by running a CPD session for other teachers in your school or, where relevant, academy chain. Think about incorporating the Science Capital teaching approach into your methods: [ucl.ac.uk](http://ucl.ac.uk)

- ✓ If you have the opportunity, then you could consider running a STEM Club or curiosity lab within science class or school. Find supporting resources at [www.stem.org.uk](http://www.stem.org.uk).





## Unlocking skills

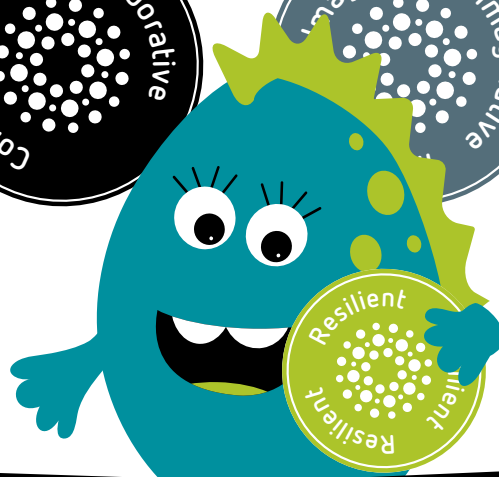
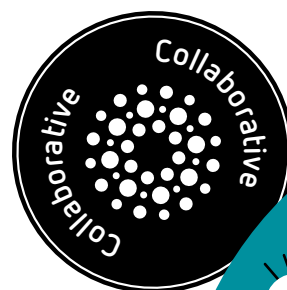
A fantastic way to encourage STEM interest in pupils is to introduce transferable skills used by those working in STEM jobs. These skills will strengthen positive attitudes towards STEM and reduce their stereotypes of those working in the field.

You could engage the pupils in this STEM Person of the Week activity from NUSTEM at Northumbria University ([nustem.uk](http://nustem.uk)).

Ask the pupils to identify what attributes people working in STEM need. It might include being observant, creative, patient, a good communicator, or curious.

See the table below for the complete list developed by NUSTEM.

As an alternative and a little bit of motivation, why not award each of the pupils with a sticker or certificate for a STEM skill which they identify with very well during the Week?

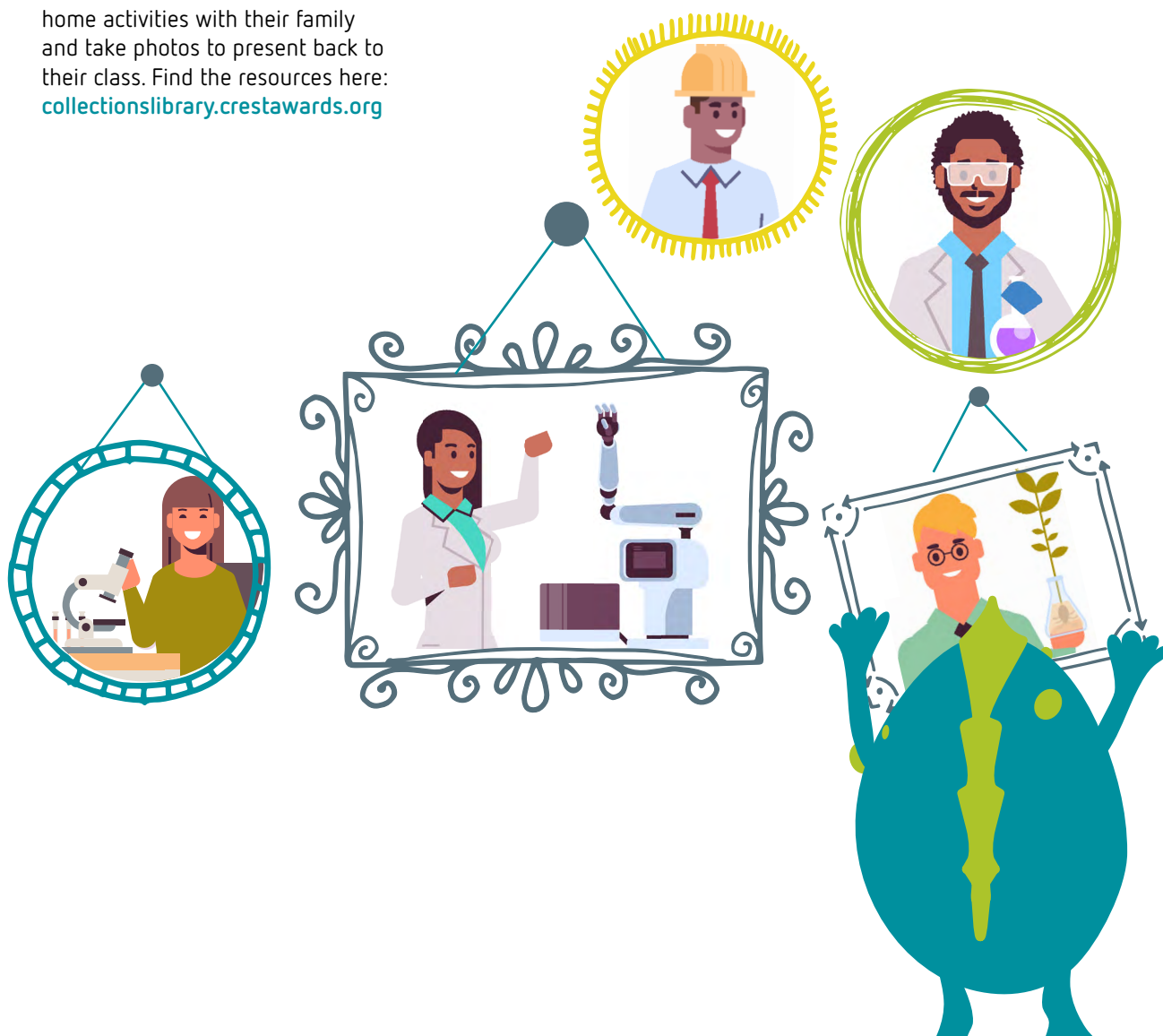


Observant	Open-minded	Committed	Tenacious
Creative	Imaginative	Patient	Collaborative
Resilient	Communicator	Passionate	Organised
Curious	Self-motivated	Hard-working	Logical

## Get children leading the way

A great way to encourage STEM interest in pupils is by letting them lead the way. Here's how you can help them along:

- ✓ Encourage pupils to run their own activities during British Science Week. They could either run activities for other members of the class or run some CREST at home activities with their family and take photos to present back to their class. Find the resources here: [collectionslibrary.crestawards.org](https://collectionslibrary.crestawards.org)
- ✓ Get pupils running their own CREST projects and share what they've done through posters or show and tell.
- ✓ Ask pupils to research an invention and how this influenced how we live our lives today and then write a report for the school newsletter or website.
- ✓ Encourage pupils to design and create their own display of scientists through time – a photo exhibit of scientists who changed the world with their discoveries, inventions and innovations.



## Innovating for the future

# Racing rockets

### About this activity

Get thinking about innovative rocket designs and build a rocket that can go as high as possible.

### Kit list

- ✓ Pencils
- ✓ Strips of paper or card (1/4 of an A4 sheet)
- ✓ Sellotape
- ✓ Scissors
- ✓ 1 paper straw per pupil
- ✓ Tape measure
- ✓ Blu-Tack or paperclips to add weight
- ✓ Extra card for fins

### Time

45 mins

### Instructions

- 1 Discuss whether all rockets are the same shape.
- 2 To make the basic rocket shape, roll a strip of paper or card round a pencil (not too tightly) to make a tube. Tape it in three places to keep it together, then take the pencil out. Flatten one end of the tube, fold it over and secure it with tape. Slide the tube onto a straw. Blow your rocket across the room and see how far it goes. Don't blow too hard.
- 3 Think about what they can do to improve the flight of their rocket. They may need to make several versions to compare them. Can fins help? What about the size of the rocket?
- 4 Hold the 'Racing rockets' competition. Each team needs to talk about their rocket design and then measure how far the rockets travel. Test each one three times. Give points to each rocket according to the distance travelled. You can give extra points for design.
- 5 Announce the winners of the competition.
- 6 Think about other ways to make a rocket. Find out what you can from books and the internet, then make and test some.

### Next steps

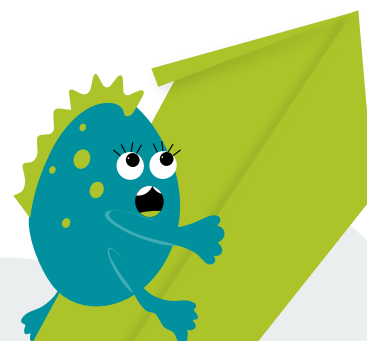
This activity can be put towards a CREST SuperStar Award and there are plenty more online activities you could try for free. For more information, follow this link: [crestawards.org](https://www.crestawards.org)

### Skills set

Imaginative, communicator, resilient

### Career options

This rocketry experience, where pupils design, test, modify and retest rockets, links to all sorts of engineering careers including those in mechanical and aerospace engineering.



### Watch out!

Remind pupils to stand behind the rockets as they are launched. Do not let pupils swap straws.

Keep a safe distance apart.

Remind pupils not to over-exert when blowing the rockets.

Take it home

# Super spinners

## About this activity

This activity will get pupils thinking about helicopter blades, and innovate on blade sizes to change the way a paper spinner falls. They can take the different spinners home with them and share their investigations with their families.

## Kit list

- ✓ A4 Paper
- ✓ 30 cm ruler
- ✓ Paperclips or Blu-Tack
- ✓ Safety scissors
- ✓ Large and small templates for spinners (optional)
- ✓ Stopwatches or a timer
- ✓ Other types of paper and card

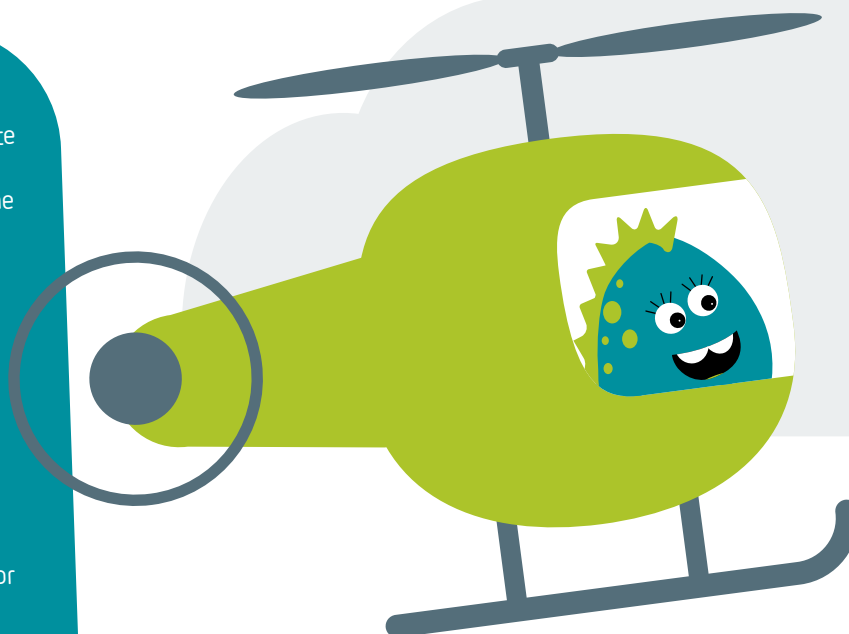
## Time

45 mins

## Watch out!

It can be useful to drop the spinners from a height greater than a pupil's height. However, pupils should not stand on chairs or tables to launch their spinners unless very closely supervised. A library stool or kitchen steps are better.

Pupils need to handle and carry scissors in a safe manner.



## Instructions

- 1 Prepare a spinner and templates if you think they might be needed.
- 2 Show the pupils a spinner falling. Give them time to explore flat and screwed up paper.
- 3 Encourage the pupils to make their own large and small spinners. Some may need help to work out how to cut and fold the spinners.
- 4 Now let pupils try the different spinners to see what happens. They can make observations about how fast they spin and work in pairs to time them as they fall to the ground. Remind them about safety, particularly about not climbing to drop the spinners.
- 5 Using their observations and results, ask the pupils if they can make any other modifications to make the spinners go faster or slower. Does the spinner act differently if you change its shape?

What if you make spinners from different kinds of paper? What about changing the position of the blades? Remember they need to change one thing at a time and note their results.

- 6 The pupils can continue their investigations at home, and / or share and compare their findings with their class.

## Next steps

This activity can be put towards a CREST SuperStar Award and there are plenty more online activities you could try for free. For more information, follow this link: [crestawards.org](https://www.crestawards.org)

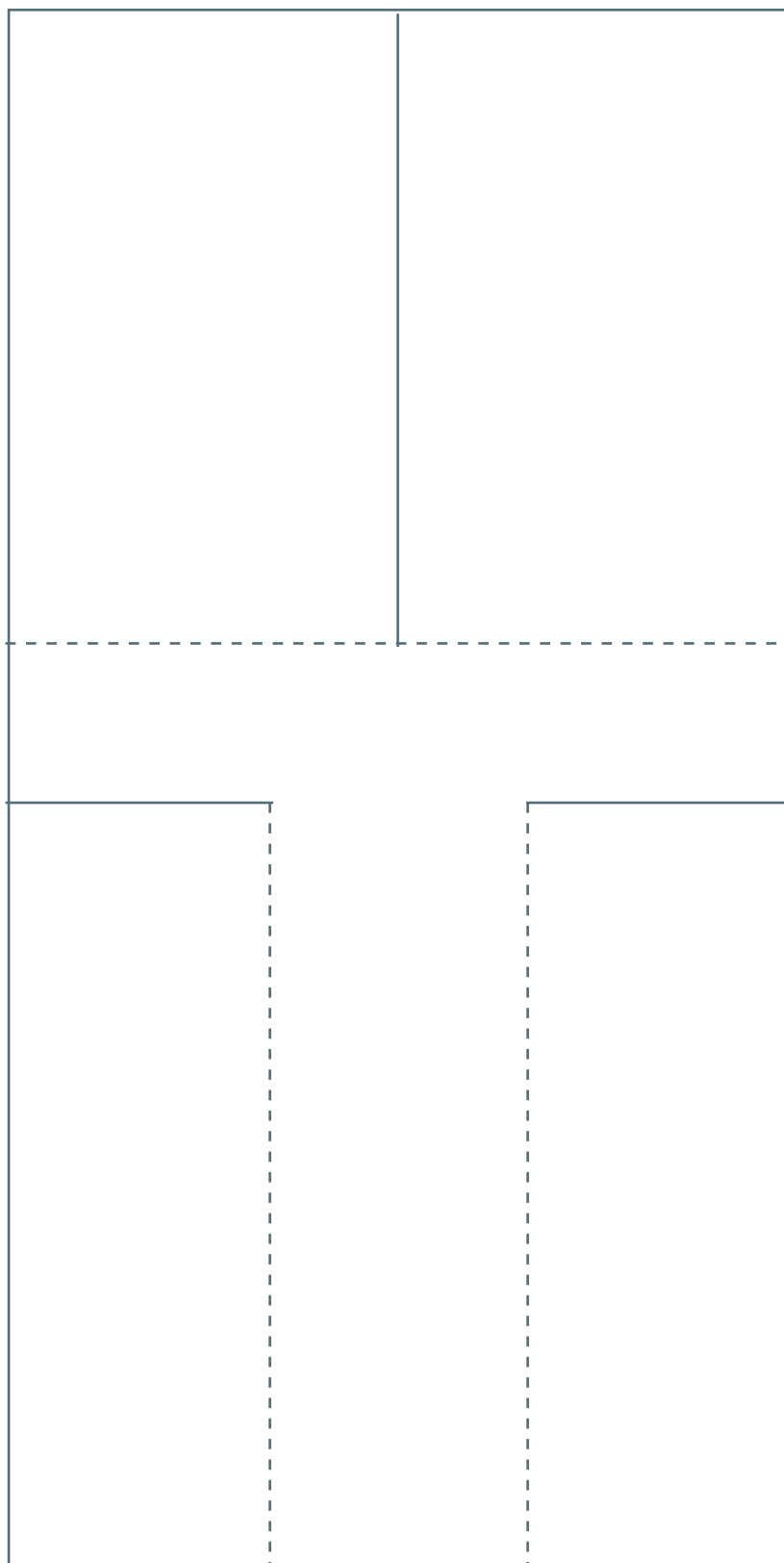
## Skills set

Logical, observant, curious

## Career options

This activity introduces the principle of aerodynamics commonly used by structural and manufacturing engineers and aircraft pilots.

# Super spinners



## Innovating for the future

# Poster competition

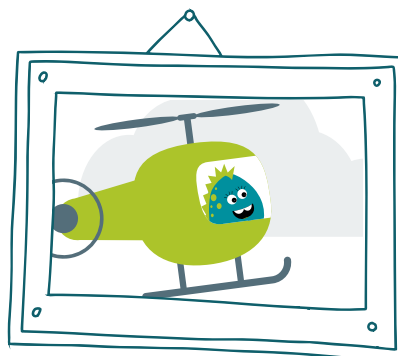
### About this activity

Get creative and enter the British Science Association's annual poster competition. You can make your poster about whatever version of 'Innovating for the future' you like and enter our UK-wide competition with the chance to win an array of prizes. The activities found in this pack could be entered into the poster competition, simply look for the paintbrush symbol. Or you can use them to serve as a source of inspiration to get you started.



### Kit list

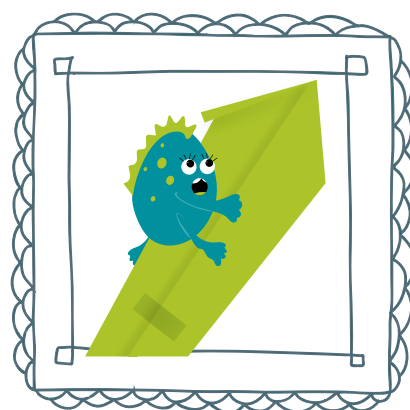
- ✓ Paper (A4 or A3)
- ✓ Creative materials, e.g. pens, pencils, scissors, glue, watercolours, paint, colouring crayons, pipe cleaners, felt, thread, wool, foil, clay, string, beads, stamps, foam, pompoms



### Research your poster

Investigate and imagine 'Innovating for the future' and everything that makes it special. Here are some topic ideas to get you started:

- 1 Think about your own innovation – from inventing your own toy that you want to share with your friends to a useful machine that will help your family or the whole world! How will it change the ways of play, sports and leisure, entertainment, communications, work, or even school?
- 2 Feeling futuristic and global? Why not think about an innovation – new ideas, inventions, products or services we have never heard before that would make the world a better place?
- 3 Do you know someone who is an awesome innovator? Try to showcase their innovations and reflect on how this person's innovations impacted the lives of many.
- 4 Everyday innovations can be easily overlooked. Identify common innovations that you use daily and give a thought on how your life would be without them.



### Make your poster

Once you've done your research, it's time to get creative! Your poster must be:

- ✓ A4 or A3 size and you need to be able to take a photo of it to send to us online for judging.
- ✓ You can use pop up pictures, pull out tabs or use materials such as paint, drawing pencils, crayons and paper.

### Send us your poster

Posters will be judged on creativity, how well they fit the theme, and how well the poster has been made or drawn. Once the poster is complete, scan or take a photo and complete the [online form](https://www.britishschoolscience.org) with your entry details.

### Next steps

Celebrate! For more details, along with the full set of rules and tips for educators, check out our website [britishscienceweek.org](https://www.britishschoolscience.org)