CREST AWARDS | SUPERSTAR

Super Spinners

Organiser's Card

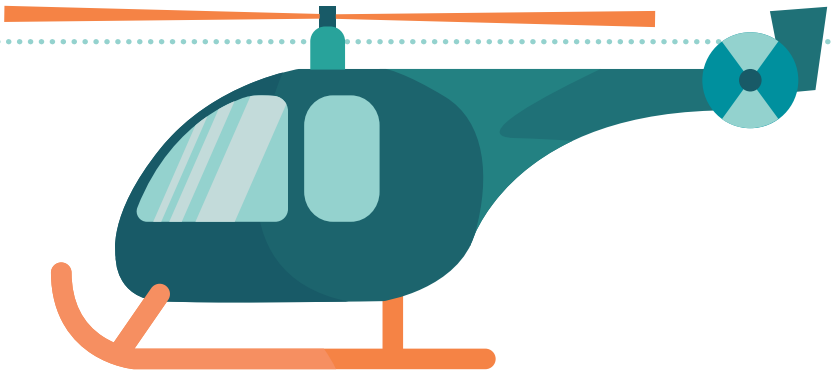
About the activity

This activity is designed to get the children thinking about helicopter blades, and how different blade sizes change the way a paper spinner falls.

Mr Sycamore arrived for work in a helicopter, amazing the students. He's testing which helicopter is best. Can the students help to find out if a longer blade design will make a difference?

Through this activity you will support your group to:

- Think about what makes paper fall in different ways
- Test whether a paper spinner falls in different ways with different blade sizes
- Share their ideas with the group



Kit list

To make the spinners they will need:

- A4 Paper
- 30 cm ruler
- Metre ruler
- Paperclips or Blu-Tack
- Scissors
- 1 ready-made spinner to show the children how they work
- Large and small templates for spinners (if you think children will need them) – see following page
- Stopwatches
- Other types of paper and card

What to do

1. Read the activity card to familiarise yourself with the activity.
2. Check the kit list, including preparing a spinner and templates if you think that they might be needed.
3. Set the scene by discussing the news story and show the children a spinner falling.
4. Give children time to explore flat and screwed up paper and to think about what might be making a difference to the way that they fall.
5. Encourage the children to make their own large and small spinners. It is important to let them explore their ideas on their own. Have templates available if children need them. Some may need help to work out how to cut and fold the spinners.
6. Now let children try the spinners to see what happens.
7. Remind them about safety, particularly about not climbing to drop the spinners.
8. Give children some time to talk about their observations and ideas. You could show children other spinners with different blade lengths and ask them to predict how they will fall.
9. Children can share their 'best' spinner or they can create a display by sticking their spinners onto paper with advice for Mr Sycamore. Avoid too much writing by composing text message replies.
10. There are extra challenges on the activity card. These can be used if there is any spare time or if the children want to try out more ideas at home and earn a bonus sticker.

Things to think about

Encourage children to drop their spinners from the same height. This should be as high as possible so that the spinners can twirl before they hit the ground.

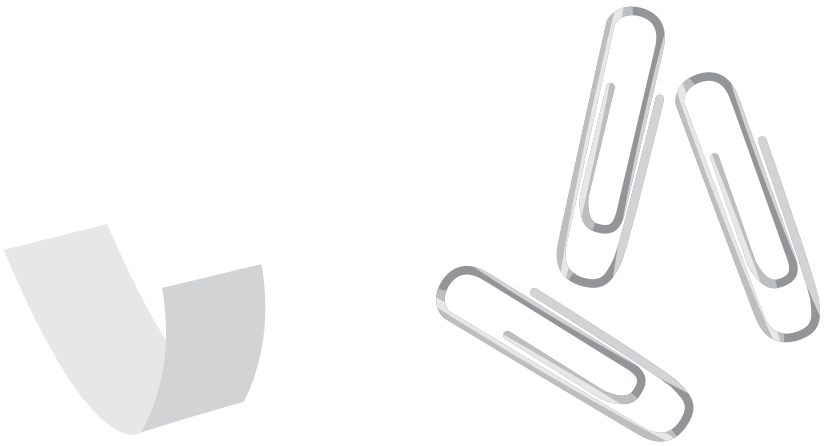
Very large spinners require a long drop to see any effect. You may need to drop them.

If they are too flimsy they will not spin.

Very tiny spinners can spin extremely quickly.

It is difficult timing the spinners if they fall quickly. However, if children want to try timing, you should let them have a go to see if works.

Adding paperclips or Blu-Tack can increase spin speed.



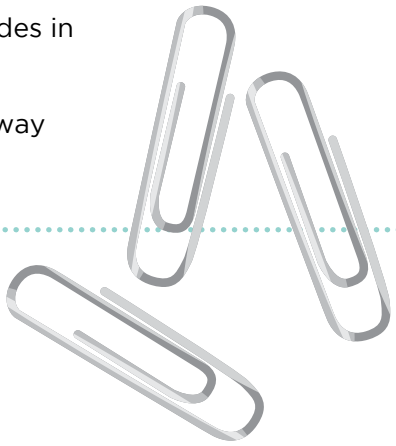
Take it further

In this situation, gravity pulls an object towards the Earth, but air pushes against it. Flat paper falls slower than screwed up paper because there is more air resistance.

Gravity pulls the spinners down. The air resists the movement and pushes on each blade causing the spinners to spin.

Spinners with longer blades will normally spin more slowly. This is because there is more surface area for the air to push against. The material on large spinners needs to be stiff enough to hold the blades in place to allow it to spin.

Sycamore seeds are sometimes called helicopters because of the way they spin as they fall.



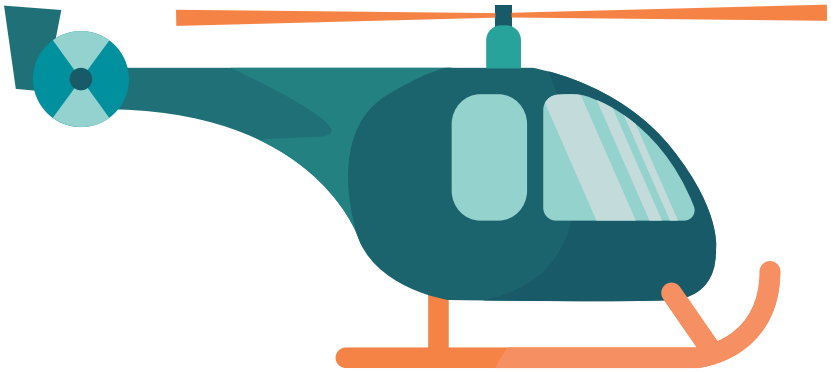
Keywords

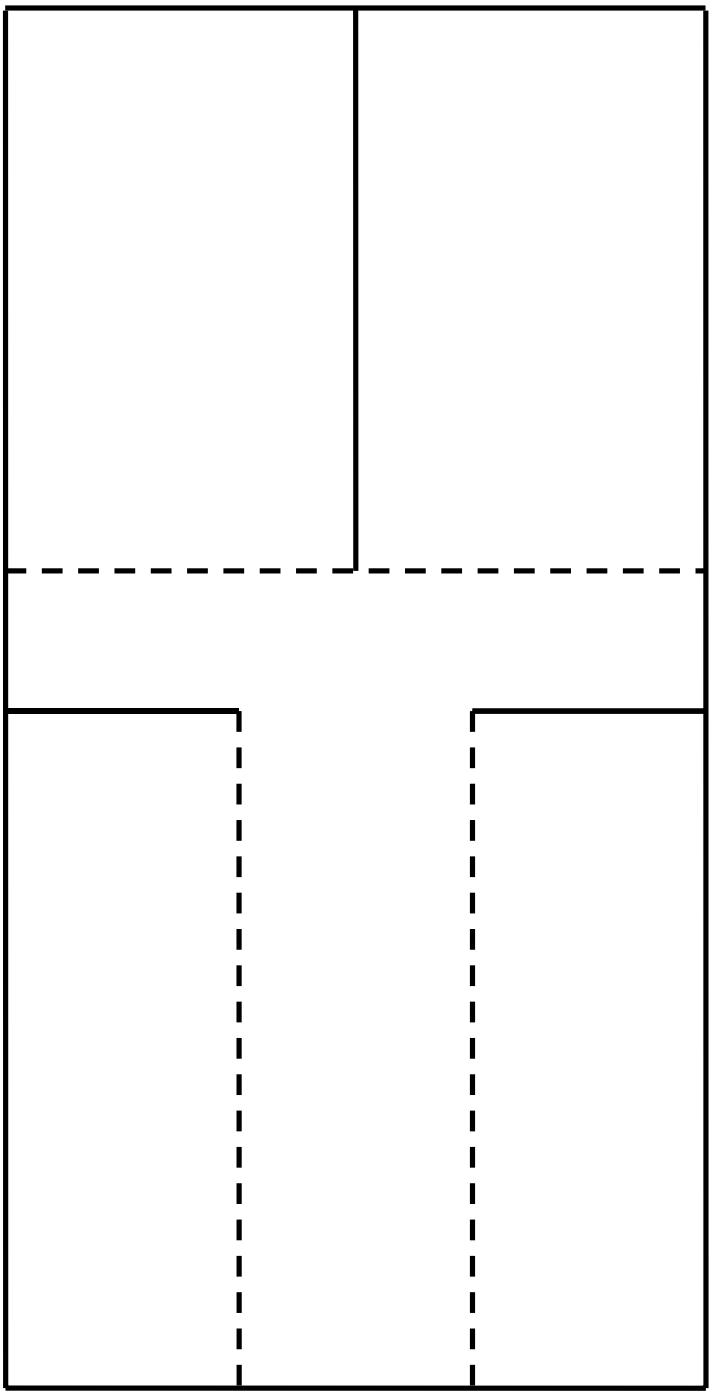
- Flight
- Shape
- Size
- Aerodynamics

Watch out!

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

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





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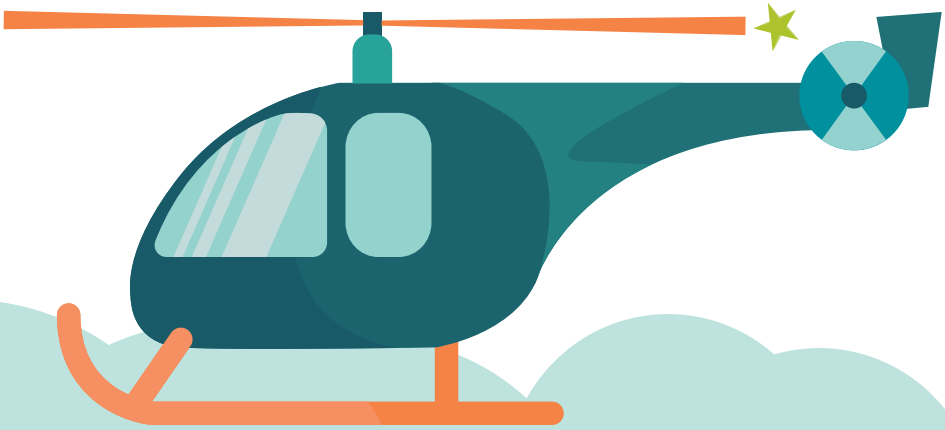
Activity Card



Mr Sycamore, class 5 teacher at Startown Primary School, amazed pupils and staff when he arrived for work in a helicopter!

"It's a bit of a hobby really," said Mr Sycamore, "I'm flying a different one every day and then I'll buy the one I like the best. This helicopter has a short blade design, I wonder if the size of blade makes a difference? I'll need some Super Spinner test pilots to help me decide!"

Your challenge

Can you help Mr Sycamore decide if the size of the blades makes a difference?

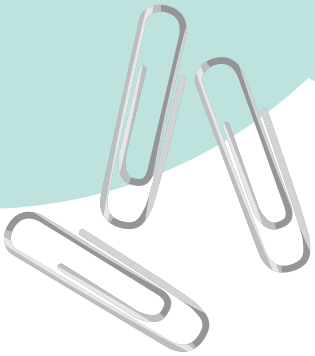
Building full size helicopters is difficult but you can have fun making paper helicopter blades and watching how they fall.

Discuss

What happens if you drop flat and scrunched up paper?
What do you notice about the way that they fall?
What might be making a difference to the way that they fall?

Getting started

You can make paper spinners to use as a model.
You will need to put a paper clip on the bottom to help them to fall properly.
What sizes will you make them?
How big will you make the blades?
How many clips will you add?



Test your ideas

Watch the spinners carefully as they fall.
Can you make them go faster and slower?
You could try landing them on a target and score points for where they land.
Remember to change only one thing at a time.

Share your ideas

You could make a display for Mr Sycamore using your spinners to show him what happened.

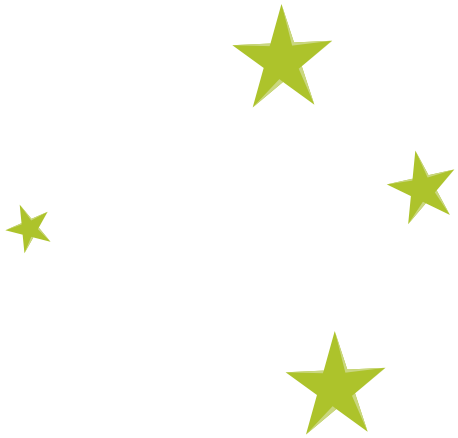
Extra things to do

Does the spinner act differently if you change its shape?

What if you make spinners from different kinds of paper?

What else could you change?

Can you make a bar chart to show your results?



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