

Snowflake science

Create a winter wonderland in your home with these frozen fractal experiments.



Catch a snowflake

Get outside and learn about the unique properties of snowflakes.

What you need

- Black piece of card
- Magnifying glass
- Warm gloves

1 Place your piece of black card outside, in a sheltered spot, for at least 10 minutes. It needs to be cold and dry to catch a snowflake.

2 When it snows, hold your piece of card flat to try and catch snowflakes. Study the ice crystals with a magnifying glass.

3 Shake off the card and try again. How many different shapes and patterns can you find?

How does it work?

A snowflake forms when a drop of water in the sky freezes around a tiny bit of dust – the seed of a snowflake. As the ice crystal falls, more water freezes around the original drop and so it grows. Water freezes in regular, repeated patterns, which is why all snowflakes are hexagonal.



GETTY IMAGES: REX SHUTTERSTOCK

Make a snow globe

These homemade Christmas toys would make a lovely present for family or friends.

What you need

- A clean, empty jar with lid
- Toys (you could use LEGO, or Christmas cracker gifts)
- Glue (we used a hot glue gun)
- Glycerin
- Water
- White biodegradable glitter
- Spoon

1 Glue your chosen toy the underside of the jar lid and wait until it to dries completely.

2 Fill the jar halfway with glycerin, then top it up (almost to the top) with water. Add a teaspoon of glitter at a time until you're happy with the amount of snow in the jar.

3 Screw the lid onto the jar, being careful not to spill out any of the liquid. Now, turn the jar upside down and shake it up. The glitter in your jar should flurry and swirl, just like a real snow storm.



How does it work?

The glitter in your snow globe falls slowly like snow because of the viscosity, or thickness, of the liquid in the jar. Viscosity is a word that describes how easily a liquid flows. Water, which flows easily, has a low viscosity, whereas liquids like honey or syrup don't flow easily and so have high viscosity. Glycerin thickens up the water to create the perfect viscosity for the glitter snowflakes to fall in the jar like snow in a snowstorm.

Craft geometric crystals

These funky science patterns look great on your Christmas tree.

What you need

- White paper
- Scissors

1 Use a plate as a template to draw a large circle in the middle of your white paper. Then, cut the circle out.

2 Next, fold the circle in half four times. You should have a shape that looks like a thin slice of pie.

3 Snip shapes and patterns into the folded paper. If you fancy cutting some science heroes into your snowflakes, head to fi.edu/snowflakes where you can download and print free templates of famous figures, such as Albert Einstein, Benjamin Franklin, Jane Goodall and many more.



How does it work?

Snipping random shapes into your snowflakes highlights just how unique these wonders of nature really are. Why are all snowflakes different? It's because each one experiences slightly different conditions as it falls through the air. Thin needle-like shapes tend to form in colder air. Less humid (wet) air forms flatter spines. This small difference in initial conditions creates an infinite variety of patterns.

