Christmaths TetraTREEdron Project

Maths on Toast is inviting families, schools and communities to come together this December in spirit and online to build and decorate a festive tree with a difference, a **Tetratreedron** (or **Sierpinski tree**) that can be added to our online Tree of Hope gallery.

A message of hope
Build your Tetratreedrons, display them in your windows and watch (from a safe distance!) as your neighbours do so too, continuing the community spirit felt by many during lockdown.

More tetrahedrons = a bigger Tree of Hope!

How YOUR street, school or community can get involved:

- **Families** display a small tetratreedron in a window at home.

- **School bubbles** display a large tetratreedron made by joining tetrahedrons together to form one large sculpture.

- **Everyone** shares a picture with Maths on Toast (see below for how) for our community online gallery.

Share!
Spread the word and share photos of your creations using the hashtags **#tetratree** and **#positiveaboutmaths** on social media tagging **@mathsontoast**.

Or send your photos to **info@mathsontoast.org.uk**.

We'll create an online community gallery on our website and you can view all submissions on social media by searching using the hashtags.

For more fun activities visit www.mathsontoast.org.uk
Don't forget to share your creations and comments on Twitter, Facebook or Instagram tagging **@mathsontoast** using #positiveaboutmaths

maths on toast
the family maths charity

How to make a one:

- Using Maths on Toast's template (you could also draw your own), follow the instructions to decorate and construct a tetrahedron. You can watch a short video here:

https://www.mathsontoast.org.uk/tetratreedron/
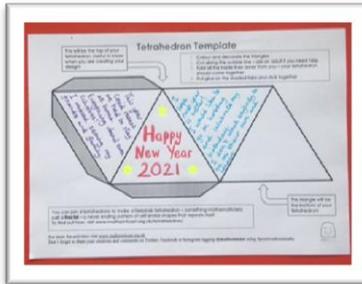
Perhaps write some of your lockdown memories or hopes for the New Year…
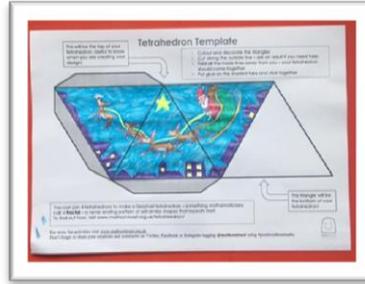
…or create a festive tetrahedron…
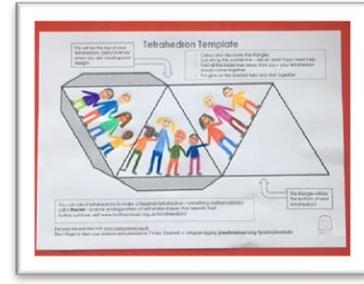
…or maybe you would prefer to add your own design!

- Use tape (or a glue gun) to stick 4 tetrahedrons together to make a Tetratreedron.
- Stick 4 Tetratreedrons together if you'd like a bigger version.

How many will you need to make an even bigger tree?

Why's this maths?

You're discovering the concept of a 'fractal' and you're talking about shapes. As you make the structure you'll see different shapes formed by overlapping triangles. What other shapes can you see? There's also hidden multiplying! You've used 4 tetrahedrons to make a tetratreedron 2 levels high, can you work out how many tetrahedrons you need to make one 3 levels high?

So, what is a tetrahedron?
A tetrahedron is a shape made from four triangles. Not just any triangles – they need to be equilateral triangles (sides all the same length).
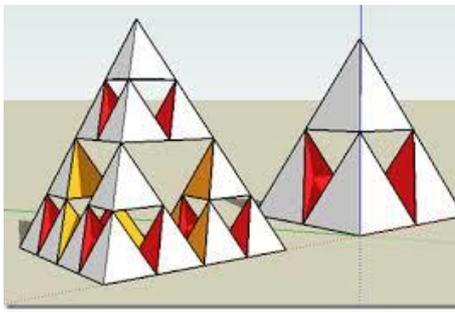
And a Sierpinski Tetrahedron?
Well, it looks like this. Look at it closely. Look at the whole shape, and then look at one corner. Do they look... similar? That similarity makes a Sierpinski tetrahedron something mathematicians call a 'fractal' – a shape that's made up of smaller versions of itself. A fractal can repeat endlessly to create larger and larger versions of itself.

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