

Knowledge is NCAH!

Fractals

DID YOU KNOW?

THERE ARE
GEOMETRICAL
PATTERNS ALL
AROUND YOU?



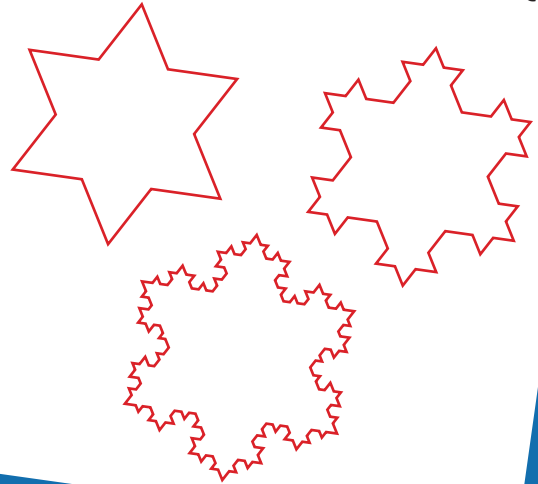
DEMONSTRATION:
FRACTAL SNOWFLAKES!

WHAT YOU WILL NEED:

Pencil, ruler, protractor, large sheet of paper (A4 or bigger), eraser

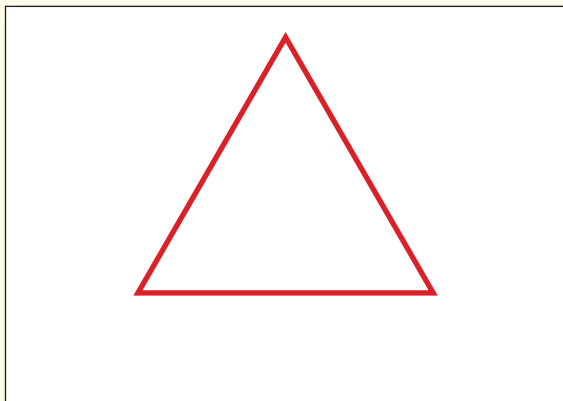
WHAT ARE FRACTALS?

Fractals are infinite patterns, that keep on repeating themselves at a smaller and smaller size.

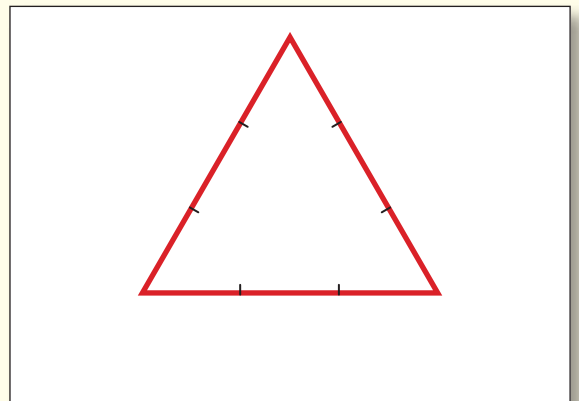


What to do:

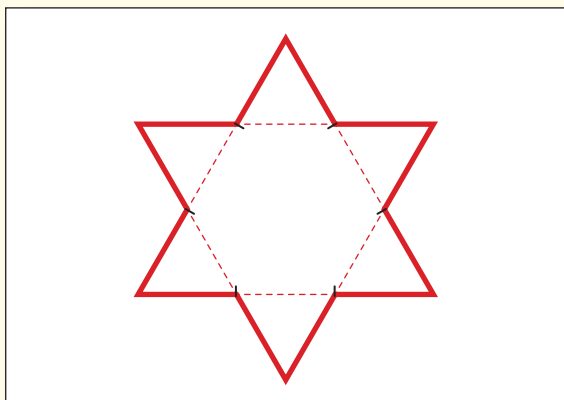
- 1 Draw a large equilateral triangle on the paper.



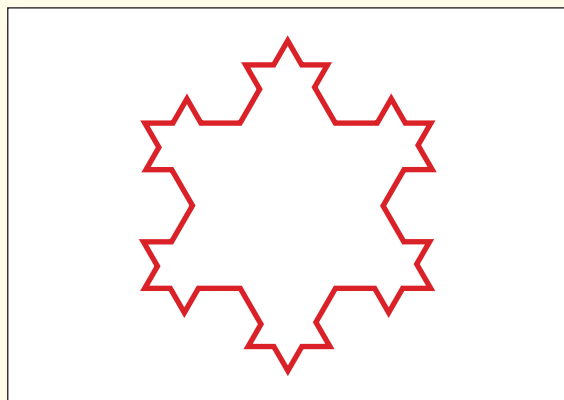
- 2 Divide each side into three equal sections.



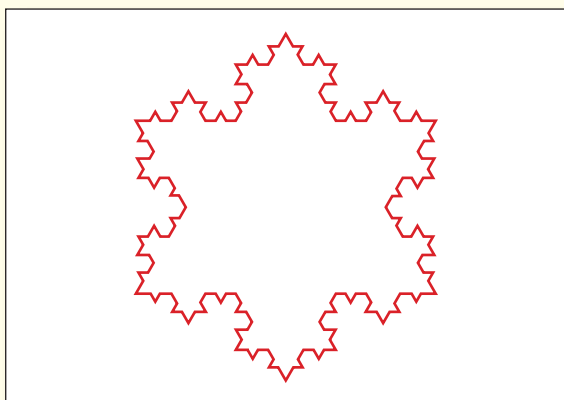
3 Draw smaller equilateral triangles on the middle section of each side and erase the base of each new triangle.



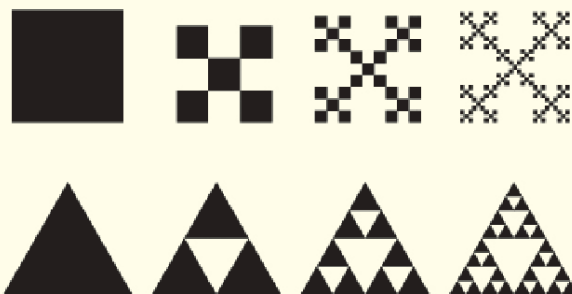
4 Repeat steps 2-3 on each side of your new shape.



5 Repeat steps 2-3 as many times as you can!



6 Start with another basic shape and see what kind of pattern you can create! Here are a few to inspire you:



To Infinity and Beyond!



You have just made a **FRACTAL** - a geometric pattern made from a simple shape repeated at a smaller and smaller size. You probably had to stop repeating the pattern because the detail got too small, but if you kept magnifying your pattern you could add to it forever. In other words, fractals are infinite!

NATURE'S FRACTALS

Here's the really mind-blowing part! Fractals are all around us - tree branches, river systems, the structure of your lungs, blood vessels and spiral patterns like seashells and galaxies. Just look at this fern. See how the lobes on either side of the mid-line are the same shape as the whole leaf but smaller? Each lobe is also made of even smaller lobes - it's a fractal!



CAREERS



FRACTAL GEOMETRY IS USED BY COMPUTER SCIENTISTS, BIOLOGISTS AND GRAPHIC DESIGNERS TO NAME A FEW!

CURRICULUM LINKS:

Geometry; Patterns; Fractions



Crossword fun

								1									
	2																
					3												
				4						5							
										6							
	7																
	8																

PUZZLE YOUR MIND!



CLUES

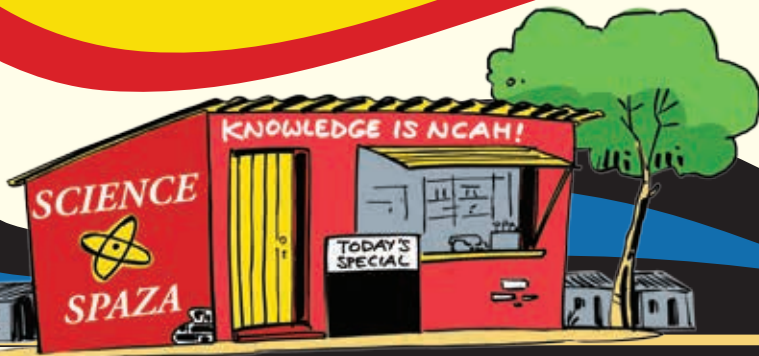
Across:

- 2. Limitless
- 4. Pattern made from a simple shape repeated at a smaller and smaller size
- 6. Plants, animals, etc.
- 7. Person who studies living things
- 8. Repeated design or sequence

Down:

- 1. Study of shapes
- 3. Three-sided shape
- 5. Part of human breathing system

Solution: Across: 2. Infinite 4. Fractal 6. Nature 7. Biologist 8. Pattern; Down: 1. Geometry 3. Triangle 5. Lungs



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STARTING YOUR OWN SCIENCE SPAZA



Think of a place where people get together to have fun, learn from each other and pick up a few essentials. That's right! Your local spaza shop! Only this time you'll be picking up science essentials!

Science Spaza is a science club supported with fun activities as well as tips and tools to make your science time really worthwhile. It's a space where learners can engage with science in a fun and interactive manner and where teachers can get new ideas for practical science teaching.

What will you need?

- A group of friends who are excited about science
- A parent or teacher to assist you
- A time and a place to meet
- Some curiosity and an interest in finding out more about the world!



Application Form - Science Spaza

Name of school: _____

Municipality: _____

Province: _____

Name of your science club:

Contact person: _____

Name: _____

Surname: _____

Telephone number: _____

Email address: _____

Postal address: _____

To be filled in by responsible adult (parent/teacher)

Name: _____

Surname: _____

Position: _____

ID Number: _____

Signature (parent/teacher):

Date: _____

Send to PO Box 22106, Mayor's Walk, 3208, Fax to 086 610 5453
email: info@sciencespaza.org or submit your application online at
www.sciencespaza.org