

# Fantastic Fractals

You need: isometric grid or dot paper, a computer

**ACTIVITY**

Sometimes, when you examine an object closely, you find that there is a pattern inside a pattern inside a pattern. This kind of object is called a fractal. A well-known fractal is the Koch snowflake.

1. Follow the instructions on the right to make a Koch snowflake for yourself.
2. a. Draw up a chart like this and complete the details:

Step	Number of sides	Length of each side	Total perimeter	Area (in small triangles)
1	3			
2				
3				

- b. How is the total perimeter of the snowflake increasing?
- c. How is the total area increasing?
- d. Predict what would happen if this process continued.

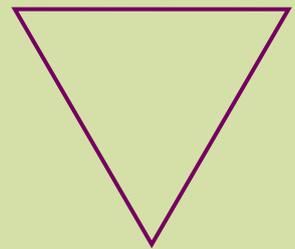
3. Create a Koch snowflake using a computer drawing program.

These processes will help:

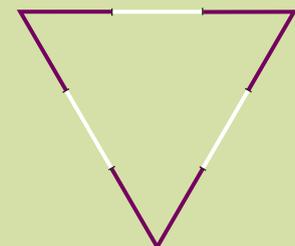
- copying
- enlarging
- rotating
- reflecting
- translating
- pasting.



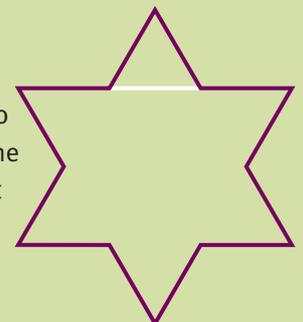
- i. Using a pencil and isometric grid paper, draw a large equilateral triangle with sides that are each 18 units:



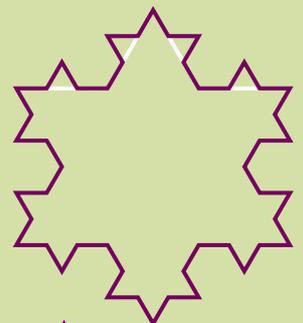
- ii. Divide each line segment into 3 equal parts and then rub out the middle part:



- iii. Fill in the gap with two line segments, each the length of the part that you removed:



- iv. Repeat the process for each of the smaller line segments:



- v. Repeat the process one last time:

