



## Secret Shapes and Fractal Fun Thinking Walk

This activity can be spread over three lessons. It is possible to do it at any time of the year, however there is likely to be less choice of things to look for and collect in winter, but fractal patterns in trees may be clearer then. You can do the walk in the school grounds or in a local park or take a walk along a local street. It is amazing how many different shapes are hidden in plants. The plants may be hiding too, so look in all sorts of weird and wonderful places for them, you may even spot plants sprouting from the walls of tall buildings. Look at plants from far away and up close too to help find those hidden shapes.

### 1. Secret shapes and fractals

To help you look for secret shapes and fractals in plants with your class, there is a Power Point on our website which you may find useful with lots of lovely pictures and facts, including information on what fractals are. [www.greatplanthunt.org](http://www.greatplanthunt.org)

### 2. Prepare for your Thinking Walk

#### Ask the children to:

 Think about how they should behave on a Thinking Walk. Talk about respecting the plants, all other living things, the importance of collecting only things which have fallen from plants and not picking anything which is still growing.

 Look at the Power Point 'Secret Shapes and Fractals' to inspire the children (select slides appropriate for the age and ability of the children).

 Make the Secret Shapes and Fractal Finder cards. These will form a selecting device to get your class looking out for plants and the shapes hidden in them. The cards can be downloaded from the website and cut out and mounted on card or laminated. You could make just one set of cards for the whole class to share, or children could work in

groups. You could design and make more cards to add to the pack. You may also like to make a bag to put the cards in. There are instructions for making a collecting bag in the teachers' book, Foundation stage which could be easily adapted by asking the children to design their own handle. [www.greatplanthunt.org/foundation](http://www.greatplanthunt.org/foundation)



You may choose to leave out the cards which are Fractal Finders or those which have shapes which younger or less able children are not familiar with.



Make sure that the children appreciate that when the card says 'plant' this could be a small moss, a herbaceous plant, a shrub or a tree.



Think about what the class might need to take on the Thinking Walk in addition to their bag of Secret Shapes and Fractal Finder cards e.g. a magnifying glass, a note/sketch book (see website for ideas) or camera.

### 3. Go on the thinking walk



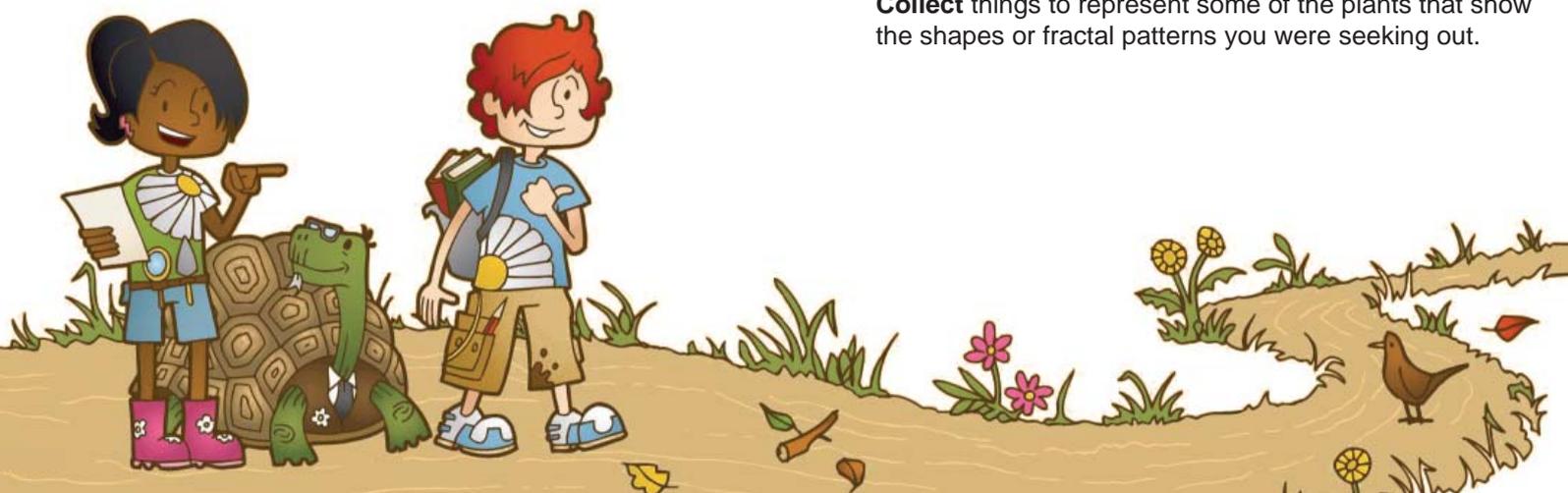
Spend 45 minutes walking in the playground, local park, churchyard or neighbourhood. The class should stop at intervals on the walk and select a card which will determine what they have to look for. These stops could be random, after a set number of paces, or predetermined spots chosen by the teacher and be repeated as often as time permits.

**Discover** many different and sometimes extraordinary places where plants grow.

**Observe** many different shapes and fractal patterns hidden in the structure of plants.

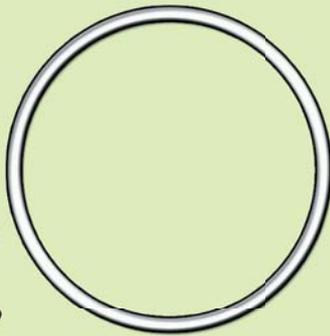
**Record** the shapes and fractal patterns by taking photographs or doing quick sketches.

**Collect** things to represent some of the plants that show the shapes or fractal patterns you were seeking out.



**Seriously Circular!**

How many circles or spheres can you spot hidden in the plants here?



**Love Heart!**

Notice the leaves around you - are there any leaves which are heart shaped?



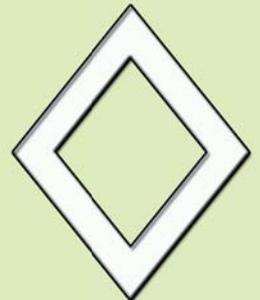
**Seeing Stars!**

Can you spot a star shape or a star burst in a plant nearby?



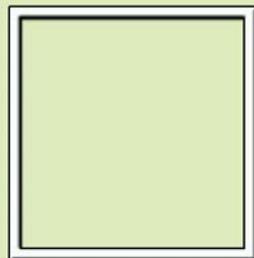
**Diamond Discovery!**

Is there a diamond shape hidden in a plant near you?



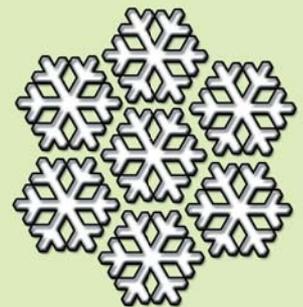
**Secret Squares!**

Can you seek out a square hidden in any of the plants you can see here?



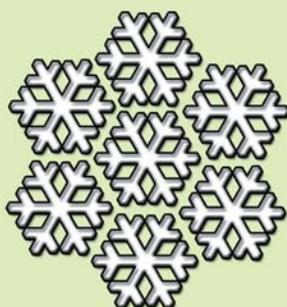
**Fractal Fun!**

Find a tree nearby - does it have a fractal pattern?



**Fractal Fun!**

Can you see any fractal patterns here?



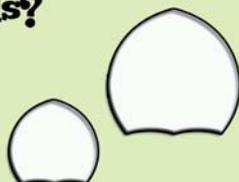
**Loop the Loop!**

Can you see any plants growing in spirals?



**Ding Dong!**

Can you find flowers which are shaped like bells?



**Point the Way!**

Can you find any leaves which are shaped like arrows?



**Shadowy Shapes!**

Look for a plant shadow - what are the shapes it makes?

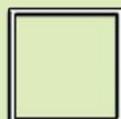


**Cylinder Seeker!**

Look around - can you spot plants which are made up of cylinder shapes?



**Pick'n Mix!**  
Look at the bark on a tree nearby - how many shapes are hiding here?



**Pick'n Mix!**

Look for a tree - how many shapes can you see hidden between the branches?



4. Back in class



The Thinking walk provides a great opportunity to explore cross curricular links in science maths, art and literacy. Work together as a class, in groups, or individually using the photographs, sketches, collected items and memories of the Thinking Walk. Depending on age and ability, the findings could be used to:

**collect** examples of all the different shapes found on the Thinking Walk and find out whether there were any shapes which were missing

**investigate** whether some shapes are more common than others

**design** a card game where cards showing different shapes have to be matched with their recordings of shapes

**look** at the spirals in nature and their relationship to Fibonacci numbers

**create** a 'Shapes in Nature' tree to display the range of shapes found, or mount the shapes onto the appropriately shaped giant shape

**design** repeating patterns using printing techniques based on the shapes

**introduce** parts of the plant

**explore** the idea of fractal patterns in nature. Is it possible from the photographs or sketches recording the fractals to work out whether they are looking at a part of the pattern or the whole thing? They may be able to use their recordings to create a game 'BIG or small' where the players have to work out whether they are looking at a part of the pattern or the whole thing. This idea could then be extended to look at the concept of scale and how we indicate the scale of something in a drawing or photograph.

**use** magnifiers and microscopes to look at the materials collected which show fractal patterns and compare similarities between the smaller units of the structure and the whole. It would be helpful to look at the Power Point at this point. A good example to show would be the photographs of ferns. [www.greatplanthunt.org](http://www.greatplanthunt.org)

**create** a fractal forest using printing techniques, or a garden in miniature using the idea of fractal patterns, or fractal patterns using oil paint and plastic laminated sheets. You can find out how to do all of these activities by looking at the Powerpoint provided. [www.greatplanthunt.org](http://www.greatplanthunt.org)

**encourage** pupils to use their imagination to see things differently, by creating a trail using the poem below. Can the children find different shapes in the plants they see? The flowers chosen are from the Great Plant Hunt Identikit. [www.greatplanthunt.org/teachers](http://www.greatplanthunt.org/teachers) These are common plants which you should be able to find locally. Alternatively you could go out with the pupils and create similar rhymes for plants which you find in your playground or local environment.

### Daisy

What are these wheels  
scattered over the ground?  
Whatever has happened  
best look around?

### Cleavers

Have a close look  
at the bugs' googly-eyes.  
What are they seeing  
is it tasty flies?

### Plantain

These are spaceships  
pointing to the sky.  
But where are they going  
you tell me why?

### Dandelion flower

These are golden suns  
shining brightly today.  
Look to the sky  
will clouds hide them away?

### Dandelion seed head

These are fireworks  
for a fun celebration.  
Make one of their sounds  
a big exclamation!

**create** concrete poems using memories of their Thinking Walk, written so that the words form the outline of the plant or fill the shapes they identified.



Once you start noticing shapes in nature they are everywhere.  
Have you found any that we haven't?

