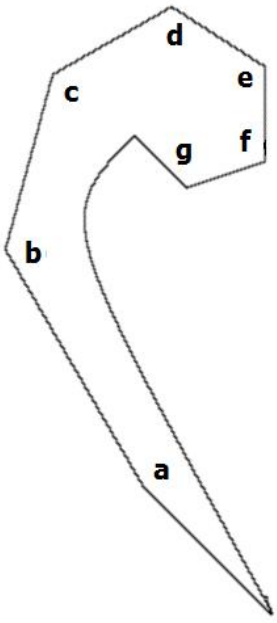
The Fiddlehead Tile

Jonny Griffiths



On the left in the image above is a picture of the tuning end of a violin, known as the scroll, the final piece of wood you reach as you travel down the fingerboard. In the centre is a picture of a young ostrich fern, understandably known as ‘a fiddlehead’; these are (so I’m told) delicious when boiled then fried in butter. So when I came to name the shape on the right, to call it the Fiddlehead Tile seemed entirely natural.

When it comes to discussing this tile’s nice properties, a picture is definitely worth a thousand words.

So placing the angles and b together gives an equilateral triangle, b and c together gives a square, and so on up to a regular octagon.

There is some serious mathematics to come out of this, that maybe year 11 students would appreciate, and all this gives a great opportunity to use the Logo drawing program.

1. Suppose you know that angle a is 165^0. What do the angles b, c, d ... g have to be then? What happens to the tile as you vary angle a?
2. Suppose you know that the areas of the central regular polygons are equal. Take the square as being of area 1 square unit (the square is of side 1 unit). What do the other sides of the Fiddlehead Tile have to be now?
3. So you know how the Fiddlehead Tile is constructed - can you design your own tile? Can you go to more sides than the regular octagon?

References: the idea for the Fiddlehead tile comes from an article I wrote ten years ago, ***Totally Perfect Siders***, *Mathematics in School,* Volume 34 Number 3, May 2005.

MSWLogo can be downloaded (for free) from **http://mswlogo.en.softonic.com/**

A sheet of Fiddlehead Tiles can be downloaded from
http://www.s253053503.websitehome.co.uk/articles/mydirr/fiddlehead-sheet.pdf

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