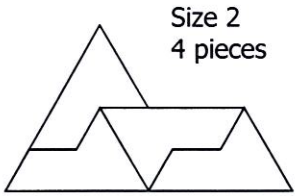
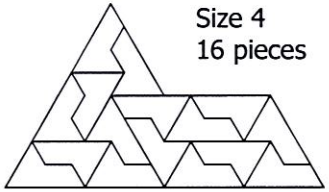
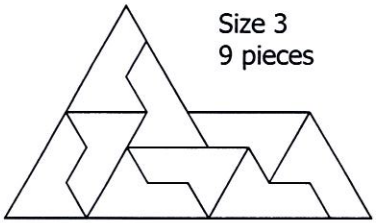
More Sphinx Ideas

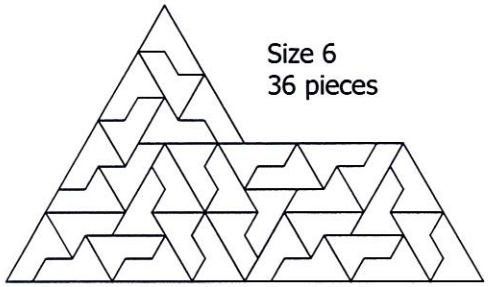
A different way of looking at the **size** of a Sphinx is to consider the pieces at its base. Assuming that the longest side of a Geo Sphinx piece has the value 1, the other sides will be worth 2/3 and 1/3. This way, the Sphinx also provides an interesting cue for **fractions activities**. Here are some examples of how we can calculate the size of a Sphinx following the above method:





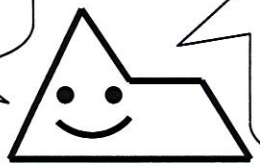


Base: 2/3 + 1 + 1 + 1/3 = 3



Base: 1/3+1+1+1/2+1/3+1+1+1/2= 6

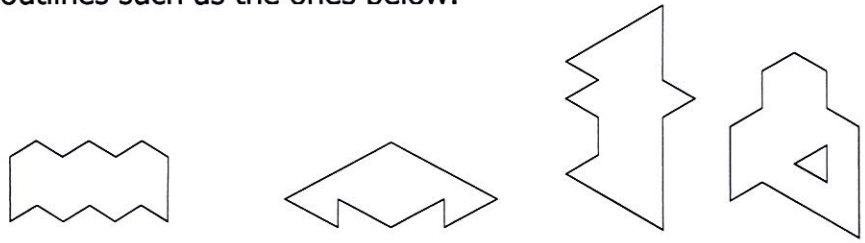
We made a size 2 & a size 3 Sphinx. Is it possible to build a Sphinx which has ANY PRIME NUMBER as its base??



Any Sphinx is always made up of as many pieces as the square of its size (base length).

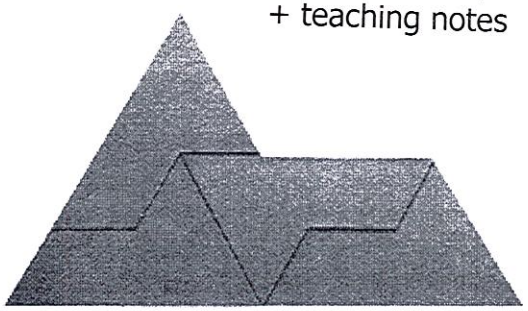
Sphinx as a Puzzle Game

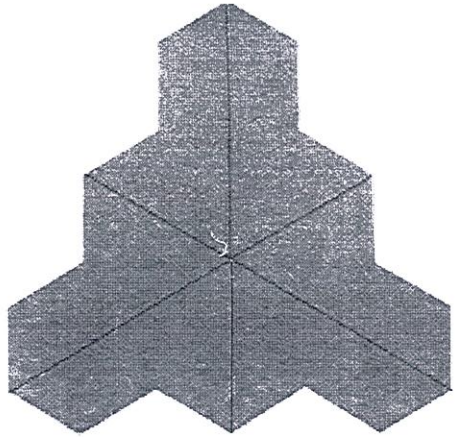
At the end of the lesson, the Sphinx can be made into an entertaining challenge by asking the children to guess how 4 pieces were joined to make outlines such as the ones below:



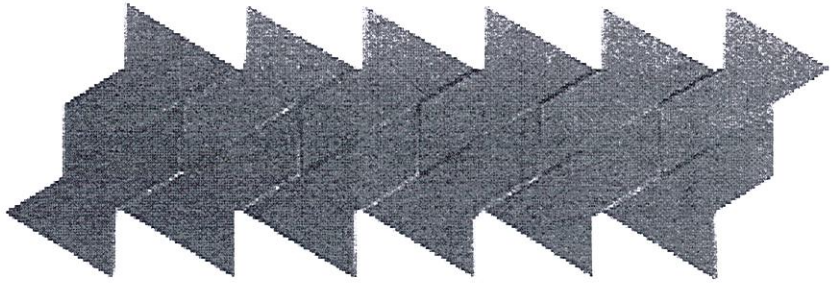
Many more 4-Sphinx outlines available at: ***www. geoaustralia.com***
What outlines could you make with 5 pieces??

5-005 Geo Sphinx
Class Set: 100 pcs.
+ teaching notes

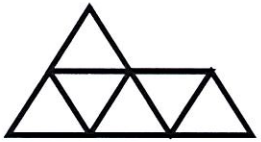




Teaching & Playing with Geo Sphinx



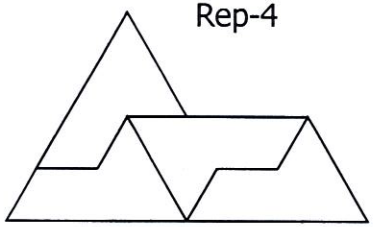
Most students will easily recognise that any regular triangle, quadrilateral, and hexagon can tile a plane surface. However, to determine whether any shape different from the above-mentioned will cover the plane without gaps or overlaps can be a far more challenging task. The SPHINX SHAPE provides a perfect extension activity for tessellation lessons. It is made up of 6 equilateral triangles as shown in the diagram ➔➔



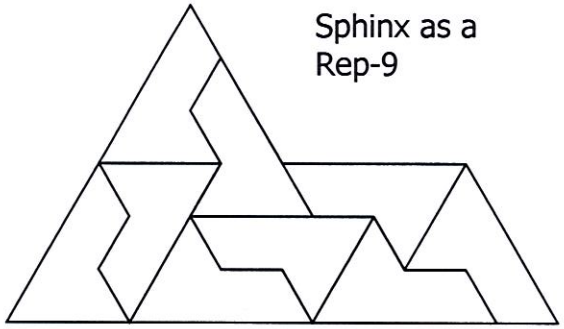
Geo Sphinx and rep-tiles

A rep-tile is a geometric shape which can be fitted together with copies (replicas) of itself to form a larger similar figure.
A simple example of rep-tile is the square: 4 congruent squares will build a larger square; with 4 of these large squares an even larger square can be made etc. By continuing this activity many times, the plane will be tiled. Therefore, we can say that the square is a rep-4 tile. So is the Sphinx. In fact, with 4 Sphinx shapes, a bigger Sphinx can be formed.
A curious fact is that every rep-4 tile is also a rep-9 tile (see diagrams below).

Sphinx as a Rep-4



Sphinx as a Rep-9

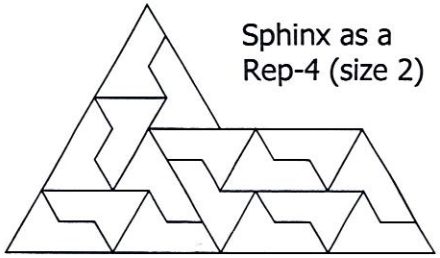


Rep-tiles help students to acquire spatial sense and to visualise and represent geometric figures as well as to explore their transformations. Creating a tiling pattern requires such mental imagery as visualising the possible rotations and placements of a tile in the tiling pattern, thus further developing spatial awareness.

Activities using Geo Sphinx

Ask students to form a Sphinx from 4 pieces. This is called a rep-4 **size 1** Sphinx. Ask them to work out what size 2 would be (4x4=16).
Ask groups of 4 to build it. Solution ➔➔

Sphinx as a Rep-4 (size 2)



Now let them calculate how many Sphinxes are needed for a rep-4 size 3 (4x4x4=64) and have them build it. Encourage them to verbalise and record a rule which allows to determine the number of Geo Sphinx shapes necessary to make ANY SIZE rep-4 sphinx.

Solution
↓↓↓

Rep-4 Sphinx size n = $4 \times 4^{n-1} = 4^n$

The experiment can be repeated with the Sphinx as a rep-9 tile. Size 2 requires 81 Geo Sphinx pieces (see diagram below). Size 3 requires 729 Geo Sphinx pieces. In this case, the summarising rule to determine the number of Geo Sphinx shapes necessary to make ANY SIZE rep-9 Sphinx is:

Rep-9 Sphinx size n = $9 \times 9^{n-1} = 9^n$

Sphinx as a Rep-9 (size 2)