Investigating triangles

Learning objectives
(Y2) Use/apply strand:
Describe patterns and relationships involving numbers or shapes, make predictions and test these with examples.
(Y2) Shape strand:
Visualise common 2D shapes; sort, make and describe shapes, referring to their properties.

Expected prior knowledge
- Understand that a 2D shape is a space enclosed by lines.

You will need
Sets of equilateral triangles (one per child) (these can be cut from the photocopiable page but card or plastic ones would be preferable); photocopiable page 83 (one per child); scissors; glue.

Key vocabulary
2D shape, side, triangle

Brainteaser links
9: 'Is it true? (2)' on page 14.
19: 'Rough snack symmetry' on page 17.

Activity introduction

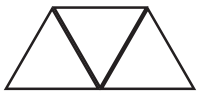
- Ask a child to take some of the equilateral triangles and put them together to create a 2D shape. With the class, discuss the shape in terms of its properties.
- Ask: *How many triangles have been used? How many sides does it have? How many corners/vertices does it have? Are all its sides the same length?*

Activity development

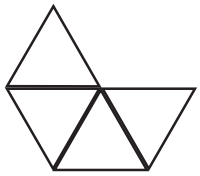
- Hand out copies of photocopiable page 83 to each child. Explain that the challenge is to make shapes with differing numbers of sides using the equilateral triangles. The children may work independently or in pairs.
- If the children are going to use paper triangles from the sheet, supply them with scissors to cut them out. These may be glued down on a separate piece of paper once a solution has been found for each challenge.
- All shape activities should be used as an opportunity to explore the properties of shape and develop use of the associated language. It may be possible to extend the language of more able children beyond age expectations. This will support them in explaining their ideas. It is important that when new vocabulary is introduced, the children have the opportunity to discuss and explore its meaning.

Solutions

A 4-sided shape, using 2 triangles

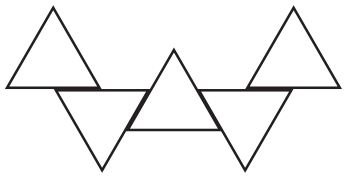


A 4-sided shape, using 3 triangles



A 6-sided shape, using 4 triangles

A 7-sided shape, using 5 triangles



A 15-sided shape, using 5 triangles

Review

- Share the children's solutions. Ask: *Are the shapes all the same?* Some that appear different may be the same but presented in different orientations.

Next steps
- The first four solutions involve tessellation of the equilateral triangles. A tessellation is an arrangement of shapes that fit together to create another shape with no gaps or overlaps.
- Explore shapes that tessellate and those that do not.