Flip and flop

Children cut shapes from a shape and create symmetrical patterns.

Skills practised:

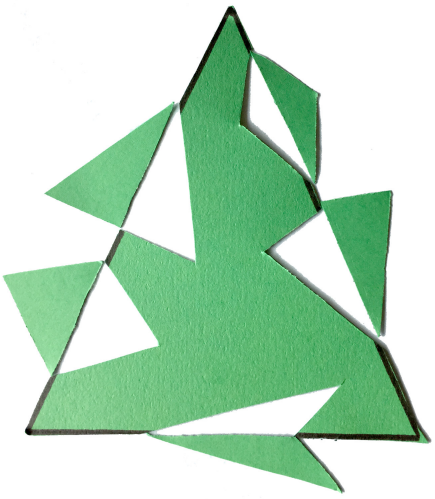
- Naming and recognising common 2-D shapes
- Creating and identifying line symmetry

***Conjecture**: We can create a symmetrical pattern using one basic 2-D shape.*

What to do:

Children work in pairs or individually.
They will need the shape-outlines (see child sheet). Some thin card in contrasting colours, scissors and a Pritt Stick™ per pair.

1. Children spread out the shape cards.
2. They correctly identify and name each shape.
3. Then each child chooses a shape.
4. They draw round it on one colour of card and cut it out carefully.
5. Both children then cut smaller versions of their big shape from its edges, e.g.
   - They cut small triangles of different shapes from the triangle.
   - They cut small rectangles of different shapes from the rectangle.
   - They cut small pentagons of different shapes from the pentagon. And so on.
6. Each time the child cuts a shape, they should make sure it is DIFFERENT from the one before – the same **type of shape**, e.g. triangle, but a different size, orientation or shape.
7. Children keep cutting *different* shapes of the same type from round the edges.
8. They stick the original large shape, with all the bits cut out of it, on a piece of contrasting coloured card.
9. Now each child flips each little shape so that it is exactly symmetrical to its 'gap' in the edge of their large shape. Each little shape and its 'hole' then make a symmetrical pattern.



How many different shapes of that type can they cut?
Which ones make the most interesting symmetrical pattern?

CHALLENGE: Can you do this activity, starting with a semi circle?

Aims:

- To use mathematical reasoning to work out the way to stick different shapes to create symmetrical patterns
- To practise naming and identifying 2-D shapes and their properties

Minimum number of calculations expected

N/A

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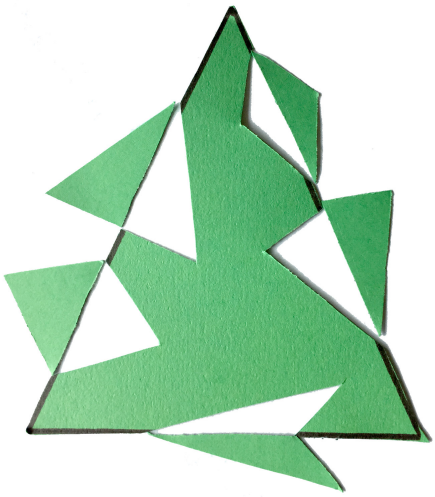

1. Spread out the shape cards.

2. Correctly identify and name each shape.

3. Each choose a shape.

4. Draw round it on one colour of card. Cut it out carefully!

5. You are both going to cut smaller versions of your shape from its edges.
   - Cut small triangles of different shapes from the triangle.
   - Cut small rectangles of different shapes from the rectangle.
   - Cut small pentagons of different shapes from the pentagon. And so on.

6. Each time you cut a shape, make sure it is DIFFERENT from the one before – the same type of shape, e.g. triangle, but a different size, orientation or shape.

7. Keep cutting *different* shapes of the same type from round the edges.

8. Now stick your original large shape, with all the bits cut out of it, on a piece of contrasting coloured card.

9. Now flip each little shape so that it is exactly symmetrical to its 'gap' in the edge of your large shape. Each little shape and its 'hole' then make a symmetrical pattern.

Challenge

Can you do this activity, starting with a semi-circle?