MATHS learning springboards

Leaf and flower symmetry

Reflective and rotational symmetry using natural materials.

Aim: Pupils use reasoning and maths vocabulary.

Activity 1:

Pupils collect a variety of whole leaf specimens; sort them by shape, and then choose those with the most regular/symmetrical shapes – the *Pappus Plant ID sheets* will help you identify hazel leaves, which are largely symmetrical through the central stem, and lime leaves, which are 'cordate' – wider at the base than the top, and toothed.

- Identify examples of reflective (line) or rotational symmetry:
    - Rotational symmetry, where an image can be rotated on a central point and still looks the same
    - Reflection symmetry, where one half reflects the other half along a central line.
- Are leaves truly symmetrical, or just 'almost'?

Cut the leaves in half, glue to a piece of paper and draw an exact reflection of the remaining leaf; try to match colours and the edges of the leaf.

Activity 2:

Pupils find flowers, leaves, sticks, pinecones and other natural objects in the school grounds.

- Pupils can lay skipping ropes or hoops out to form an area to sort their shapes. Use chalk to label them.
- Remind pupils of the language of symmetry.
- Use a mirror to test whether each object is symmetrical or not then sort them into different groups (not symmetrical, reflectionally symmetrical, rotationally symmetrical).
- Create a symmetrical pattern of leaves, petals and flowers for both rotational and reflective symmetry

Set challenges for one other, by partially completing a pattern and asking a partner to complete it with rotational or reflective symmetry.

Resources:

Leaves, flowers, petals, cones from the school grounds or collected and brought into school.
Mirrors

Other Pappus resources:

- Leaf Masks: Creative Arts Learning Springboard
- Fractals: Maths Learning Springboard

Key vocabulary:

Reflective, rotational, asymmetrical, axis.

Success criteria:

Pupils identify and create patterns with rotational and reflective symmetry and recognise asymmetrical leaves.

Symmetry nature outdoors

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