MATHS learning springboards

Non-standard measures

Any leaf can be used as a 'non-standard' unit of measure

Aim: Examine the rationale behind the use of standardised measures.

Collect at least ten of the same type of leaf, as similar in size as possible. Line them up, side to side or top to bottom.
Using a metre rule, calculate the **mean** height or width of **one** leaf. That measurement is now the non-standard unit.

- Ask pupils to estimate heights and distances using your leaf unit. How easy is it to be accurate? Use 'real' measuring tools (e.g. tape measure, trundle wheel, clinometer) to check pupils' accuracy.
- Discuss why a standard unit of measurement is necessary.

Measure irregular shapes - length

Thirsty leaves

Aim: Use rulers accurately to answer the question 'Do bigger leaves always have more veins? Why (or why not)?

Collect a wide variety of different leaves – look for contrasting shapes and sizes. Give each child a leaf and a thin marker pen. Ask the class to discuss:

- What role do leaves play on a plant?
- Where do they get their water from?
- How much water does a leaf need each day?

Use the marker pen to trace over the top of all the 'veins' pupils can find in their leaves.
Use rulers and thin string to measure the total length of all the veins in the leaf.
Record the length of veins for each leaf. What is the answer to the 'aim' question?

Measuring irregular shapes - area

Area and translation using leaves

Aim: Use mathematical thinking and language.

This task gives pupils some active time outside in the natural world whilst gathering leaves for a table-based task. Incidental observations about the variety of leaf shapes, colours and textures are an added bonus.
Use the largest leaves you can find, starting with simple leaf shapes and progressing to more complicated shapes.
Start by drawing around the leaf onto squared paper.

- Calculate the area of the leaf by counting the squares.
- Measure the perimeter using a length of thin string and a ruler.
- Add translation of the shape to the exercise, for simpler leaf shapes

Are leaves truly symmetrical, or just almost symmetrical?
Link this task with the Thirsty Leaves activity above right, to compare leaf area with length of veins.

Make your own measuring tape

Nettle cordage

Aim: Use natural cordage for measurement tasks.

Making nettle cordage is a satisfying process, that could be carried out as a DT project - see the *Pappus* Play Springboards: Nettle for instructions.
Traditionally, plant cordage had many uses
Cut the cordage into 50cm and 1m lengths, and use to measure the diameter of irregular objects, make shapes with the same perimeter measurement, but different area and vice versa.
Alternatively, use long stems of a climbing plant, such as honeysuckle or ivy, stripped of its leaves.

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