



# RHS Campaign for School Gardening



Open Futures

## 30 Sneaky ways to teach Maths and Science in the Garden

1	Explore the garden and match colour cards and sort materials according to texture	Look out of the window and what colours do you see? If you match the cards to nature's colours there are many shades of green and yellow. In Autumn the colours change again to oranges and red. Collect leaves – Are they shiny, prickly, ribbed, hairy, rough, smooth, sticky? Rough bark rubbings, feathery grasses, hard pebbles?
2	Look for 2D and 3D shapes, reflective symmetry, different materials, living and never living objects	There are many circles and spheres, but few naturally occurring squares and rectangles apart from the stem of the Mint family which is square. Reflective symmetry – leaves, butterflies, flowers, beetles.
3	Angles, perpendicular	How many can you see? Angles of branches, canes in the ground, perpendicular posts, trees in the ground, sundial, ramps, wigwam, bird's beaks, pitch of roof or shed.
4	Use the garden resources for different sorting activities	Collect different flowers or leaves or a mixture of objects to sort according to chosen characteristics – use hoola hoops. Could be used to distinguish between living and never living.
5	Draw a garden plan map and find the treasure	On a plan of the garden mark out a route with a treat at the end to encourage children to visualise and understand directions. Repeat the other way round, where children have to give directions to the shed, etc., from a particular point using the map.
6	Test the senses	Grow plants to satisfy taste, smell, sight, touch, hearing. Taste tests with voting for sweetest and then display results as bar chart, etc. Grow herbs, roses for scent, vegetables and fruit for taste, brightly coloured foliage and flowers and painted hard structures for sight, textured plants for touch and rustling bamboo and trees and buzzing bees.
7	Mini-beasts, habitats and food chains	Make a bug hotel out of pallets or smaller versions, encourage plants beneficial for wild life, keep grass long in a small corner, plant hedges. Look out for black fly on broad beans and caterpillars on cabbages.
8	Micro-organisms, mini-beasts and the compost heap	The compost heap is a unique habitat and is teeming with life. Look at decomposition – put something that will not break down, like a crisp bag/wool sock/piece of cotton/plastic bottle to test the theory. Living things need oxygen to live so turn and mix the heap regularly.
9	Parts of the plant	Dig up a weed such as a dandelion and study the plant parts. Pick a petal from a buttercup and see the nectary at the base.
10	What does a seed need to grow?	Plant a seed and make a growing diary and time line.
11	Investigate environmental factors on plant growth	Using the same compost, but various amounts of light, temperature and amount of water given to see effects. 3 beans on a stick experiment. Make a flight reflector. How to make an experiment fair?
12	Do plants take up water?	Celery experiment – see lesson plan



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13	Capacity	Compost in pots, watering with different amounts of water, rain gauge. Make comfrey fertiliser, has to be diluted 1:10.
14	Potato experiments	Weigh at the start and then at the end. Put in order and find mode, largest, smallest. Plant the first early variety, Red Duke of York in large pots as you can just tip them out and can be easily seen.
15	Measuring	Make giant rulers and measure length, perimeter, height, area. Mark up in multiples of 2, 5, 10 etc., depending on number patterns being studied. Use a trowel to measure the length of beds, etc., and to space out plants equidistantly.
16	Numbers	Sow in numbers. Count the number of bulbs you are planting – who can get the most bulbs in a pot side by side. Count out large seeds.
17	Seasons	Carbon miles and importing out of season produce. Measure temperature over the four seasons. Go through all your packets of seeds and file them in the correct month by reading the back for sowing time.
18	Time	Planting planner, when to sow, how long from sowing to harvest.
19	Forces	Push the trowel/spade into the soil. Pull out the weeds. A wheelbarrow with a flat tyre is hard to push. Air resistance when a sycamore wing falls. The wind blowing, using a spade as a lever to lift earth; apples falling from a tree; slipping on wet surfaces.
20	Seeds	Seed safari (See Lesson Plan), biggest, smallest, sort a bag of mixed pulses. Collect conkers and seeds; sort into size.
21	Go on a bug hunt	Look at habitats, food chains, keys for identifications, symmetry.
22	Enterprise projects	Grow and then sell – tomatoes sell well. Collect seeds and sell. Grow salad, bag up and sell.
23	Planning the garden	Measure out an area and make a plan using fuzzy felt garden design resources. Work out the cost of weed, top soil, fruit bushes, etc., using a price list. Which is the sunniest part of the garden and do things grow better here?
24	Fractions and percentages	How many germinated – more than half? What percentage germinated? Measure out half a bag of compost.
25	Pollination	Observe insects, find a bee with pollen on its hairy body, visit a bee hive, investigate how plants attract pollinating insects. Look at wind pollination in many trees and sweetcorn and grasses.
26	The Circle of life	Borlotti beans – show, grow, leave some to go to seed, store, sow the following season.
27	Garden competition	Who can grow the tallest sunflower competition. All sow a seed on the same day – take the largest 5 from each class and plant outside. Measure height each week or count the number of leaves. Let them flower, collect the seeds in the Autumn, start the circle of life again the following year.
28	Investigations	How to control slugs; try different methods. Worm survey – does pinching-out tips encourage more flowers, but are they smaller?
29	Life cycle of a butterfly	Cabbage White butterfly lays its eggs on Nasturtium and Brassicas. Hunt for caterpillars on a bug hunt. Pasta life cycle.
30	The seed packet	Seasons, growing periods, cost per seed, temperature for germination. Make a seed packet and work out cost of sharing out a packet.