



Collecting

Sorting and describing, using mathematical properties such as size, shape and pattern

Counting and comparing numbers

Understanding the characteristics of 3D shapes



Children often enjoy making collections of natural or found objects, like leaves, pebbles or buttons, making subgroups, arranging them in patterns or putting them into containers.

Adults could provide varied assortments of all kinds of objects such as shells, miniature toys or fabrics, or take children on collecting trips outdoors, providing containers for sorting and opportunities to display arrangements.

The Activity

Observing the usual health and safety precautions, take the children on an autumn walk with collecting bags and invite them to choose something to collect, such as twigs, conkers, ash-keys.

Encouraging mathematical thinking and reasoning:

Describing

Tell me about your collection . . .

Have you seen shapes like these before?

Recording

What a lot you've got!

Do you want to make a label for your collection and show how many there are?

Reasoning

Why do you think they are like . . . ?

Is there something else you can think of that could belong here?

Opening out

Can you find another way to sort your collection?

What if you sorted them into the divided tray?

Is that tray big enough? (Can you find one that is?)

The Mathematical Journey

Same and different:

- grouping according to a rule eg buttons with two holes
- developing language to compare and contrast shapes (informal vocabulary such as 'pointy', progressing to mathematical terms like straight or round) and measurement (from bigger, fatter, to more specific terms like longer, wider, heavier, holds more)

Shape, space and position:

- grouping by properties like curved or straight
- arranging in straight or curved lines, making shapes or patterns

Number:

- noticing amounts increase as more are collected
- counting and cardinality - progressing from knowing some number words, to saying one number for each object, then knowing the number of the whole group
- relative number size - comparing numbers
- part-whole numbers - noticing numbers within numbers, for subgroups within collections

Resources

You will already have lots of collections of things in your setting. You might provide assortments which:

- have potential for shape and pattern spotting, such as buttons, fabric scraps, cards
- are miniature objects, such as cars, small people or animals
- are connected with parents' jobs or activities, e.g. nuts and bolts, tickets, packaging
- are part of a role play area e.g. treasure, hats, shoes, tools, boxes
- are specifically mathematical e.g. numerals in different fonts, blockplay shapes
- are available cheaply, at scrap schemes, pound shops or car boot sales

A camera may be useful to take photos of collections, especially temporary ones out of doors

And more ways into the same mathematics.

Child initiated collecting

Outings – children might be stimulated to collect in outdoor environments such as woods or a park. If you note what children are interested in, you can supplement collections back in your setting.

NB You may need to deter children from picking flowers or collecting unsavoury objects like litter (or ensure they wear gloves)!

Making provision to stimulate collections

Hide collections in sand, around the setting or outdoor area – or put in water to be 'caught' and fished out.

Provide containers of different sizes and shapes, especially with compartments, like printing trays, chocolate boxes, bun or plant trays.

Display collections in compartments with labels.

Use light boxes to look at shapes of silhouettes or place between hinged mirrors – collections put between them will appear much bigger!

Provide purposes for sorting and arranging e.g. resources for tidying and checking, for creative work or for a shop or role play area.

