Maths in the Garden

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Introduction

This booklet is based on ideas presented at seminars for farm educators delivered by Steve Humble, "Dr Maths".

To meet the needs of parents and home educators, we have amended the booklet to become Maths in the Garden.

How do we incorporate maths into our gardens?

The important thing is to make it fun and to use mathematical language (nothing complicated, just terms like triangle, rectangle, symmetry, number, pattern, estimate).

Maths questions: starting points

Dr Maths shared with us some simple ways to introduce maths questions:

Look at that! Look around you! What can you see?

How many?
How far or near?
How long, tall, short, tall, high, deep, heavy?
How many lines? How sharp? How curved?
How many things?
How many things in a line? How many in a shape?
How much do you see? How much more is hidden?

Can you find 5 of these…?
Estimate the size, height, length, weight of…
Can you find the middle of….?

What is the name of…?
What kind of number?
What kind of pattern?
Can you continue this pattern?
What is the chance of that?
What kind of shape? What shapes do you see? Draw them
If you can, name them.
Did you find the…?

Why do you think lots of triangles have been used?
Why do you think the bridge is arched?
Why do you think the path does not follow a straight line?

What if we change this?

What if we add a line? What if we add a shape?
What difference does it make? Is it still symmetrical?
What if we double it?

What if we change the area?
What if we alter the symmetry?

Could you make a pattern with…?
Show that this works. Is it always true?
Imagine….

Just a piece of rope

Provide your children int with a length of rope.

Can the children use the rope to form a triangle? (or a square, or a rectangle…)

Can they change the shape to a different triangle?

Can they name any of the triangle shapes ?

(isosceles has three equal sides and three equal angles; equilateral has two equal sides and two equal angles; scalene has no equal sides and no equal angles)

Animal shapes

Using large pieces of paper and pens or crayons, ask groups of children to create farm animals using shapes.

Encourage the children to talk about the shapes they have used. Can they name all the shapes?

Farm animal cards

Farmyard Snap can be played using cards which are purchased or, better still, help the children to create their own.

Making the cards
Use a piece of A4 thin card. Fold it lengthways; and lengthways again; then fold in half.

Ask the children how many cards they think they will have made!

Cut along the folds (if the children are very young you may wish to do this for them).

Using shapes or outline drawings, children must create identical pairs of cards.

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Roman Numerals

Are your children familiar with Roman numerals? Y4 pupils should recognise Roman numerals up to 100 (C).

Can your children find any in the house or garden? They are often used on clocks or sundials.

There are a few rules to learn with Roman numerals.
The numbers are represented by symbols from left to right e.g.
CLXV = 100 + 50 + 10 + 5 = 165
Always start with the highest digit and decrease e.g. CXV = 115 not LLVV11111

There are some helpful videos on line such as https://youtu.be/49oWYxExWKE

You can have fun together trying to solve maths problems with Roman numerals!

Try this link
https://www.tes.com/teaching-resource/roman-numerals-presentation-3-differentiated-worksheets-and-word-problems-extension-11221451

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Out and about in the garden

There are so many things in the garden which involve maths!

Wheels
(Health and Safety: Make sure children stay away from roads and moving vehicles.)
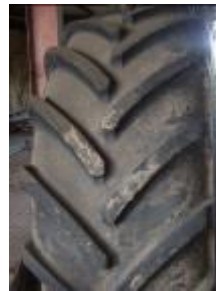
How many wheel nuts?
What's the pattern on the tyre?
Can you measure the circumference?
What is the line of symmetry?
Add more questions of your own!

Walls and flooring

Can you count how many bricks/tiles in a certain place/in a square metre?
Can you find patterns in the floor?
Could you make different patterns with the same shaped bricks/tiles?

Containers

Estimate the capacity.
Can you measure….
How many...

Shapes

There are so many shapes to discover in the garden.

Pose questions such as :

How many squares can you find?

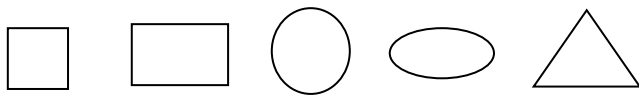Draw two circles that you can see in the garden.

How many different triangles can you see in the gate?
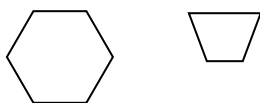

Look around you. What shapes can you see?

Draw a circle around each of the shapes below as you find them.

Square   Rectangle   Circle   Oval   Triangle

Hexagon   Trapezium

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Symmetry in the garden

What is meant by symmetry?

Something is symmetrical when a central line could be drawn on it and each side of the line is a mirror image of the other. Both sides of the shape are exactly the same.

There is a great deal of symmetry in nature. Can your children find examples of plants and flowers which demonstrate symmetry?

Symmetry in the garden

Can they find other examples of symmetry?

I Spy sheet

Or you could create an I Spy sheet with photos of different shapes to find and name.

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Creating a maths walk

At the seminar, we took a walk around the farm and made notes of stopping points where we looked for maths clues. Whatever size your garden, you could create a walk. If you feel your garden really is too small, extend the maths walk into the house.

Here are some sample questions from a Maths Trail that you could create.

Starting at the back door, find a route to the bench .

Is it possible to find a different route?

During your journey from the door to the bench can you find any examples of numbers?
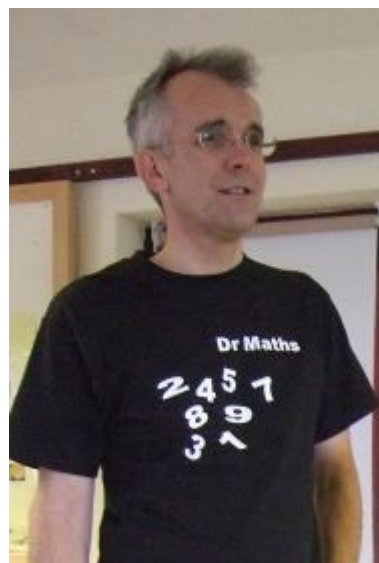
Links

The original seminar from which this information was provided was delivered by Dr Steve Humble MBE, "Dr Maths".

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http://drmaths.org

If you want to find out more about maths:
National Centre for Excellence in the Teaching of Mathematics
You need to create a login but then search for Learning Maths Outside the Classroom
https://www.ncetm.org.uk/resources/

Farming Counts
Maths activities from LEAF Education
http://www.countrysideclassroom.org.uk/resources/667

LEAF Education

LEAF Education (formerly Farming and Countryside Education) works with school communities to help children and young adults understand the connection between farming, the countryside and their daily lives.

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