

Maths

- INVESTIGATE SHAPE AND SYMMETRY
- INVESTIGATE MEASURE
- NUMBER ACTIVITIES
- TIME AND PROBLEM SOLVING GAMES

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London Schools Project

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INVESTIGATE SHAPE AND SYMMETRY

Introduction

Discuss symmetry with the children and create symmetrical patterns using a variety of materials.

Looking at Leaves

Use the '*Looking at Leaves*' worksheet, decide which leaves are symmetrical and which are not? Are any of them nearly symmetrical?

Go on a walk around the grounds or a park and collect leaves in small groups.

Observe the leaves. Ask questions such as: Which is the thickest/thinnest? Which is the smallest/largest? Which has smooth edges? Which has crinkled edges? Which is symmetrical/non-symmetrical?

Draw around or stick the symmetrical leaves on a large piece of paper (in groups). All groups come together to show their leaves. Does everyone agree they are symmetrical? How can we check?

Hidden Shapes

Set up a trail of hidden laminated shapes. Walk the trail, using the '*Hidden Shapes*' worksheet, to find, draw and name the hidden shapes along the trail. Tick the symmetrical shapes or draw on lines of symmetry.

Extension Activities

Draw your own symmetrical tree shape using paint/crayons/natural materials. Create repeating patterns by printing using leaves– include translation and rotation of the leaf shape.

Links to KS1 National Curriculum

Ma3 Shape, Space and Measures.

- 1d) Use the correct language and vocabulary for shape.
- 2a) Describe properties of shapes that they can see or visualise using the related vocabulary.
- 2b) Observe and describe common 2D shapes.
- 2c) Create 2D shapes.
- 2d) Recognise reflective symmetry in familiar 2D shapes and patterns.
- 3b) Recognise movements in a straight line (translations) and rotations.



HIDDEN SHAPES

Find, draw and name the shapes hidden along the trail.
Tick the symmetrical shapes.

Shape:	Shape:	Shape:
Shape:	Shape:	Shape:
Shape:	Shape:	Shape:

INVESTIGATE MEASURE

These are activities that can be carried out to investigate measure. There are worksheets provided on the following pages.

Introduction

Provide the children with opportunities to estimate and measure lengths in and outside the classroom.

Year 1 should use non-standard units, whereas standard units can be introduced in Year 2.

Walk around the school grounds, woods or park collecting several objects along the way, e.g. fallen twigs, leaves, pebbles. Order these objects from smallest to largest.

Nature's Measures

Get the children to choose one object each that they can use to measure with.

Continue in small groups, selecting appropriate objects to measure, using a variety of non-standard units, including the selected object. Pupils should use the '*Nature's Measures*' worksheet to first estimate and record the estimation then record the actual measurement.

For Year 2 pupils, standard units of measure can be introduced.

Other Measure-related Activities

In pairs, children follow each other's verbal instructions on how to reach a place.

How many paces or footprints from one place to another? Compare answers. Why are they different? What could we use so that we all get the same answer?

Look for right angles. Draw the shapes you find and mark the right angles.

Back in the Classroom

Get the children to keep their woodland object and use it to measure things in the classroom. Are some objects more useful than others?

Use this activity to lead on to a discussion around the advantages and disadvantages of non-standard and standard units of measure.

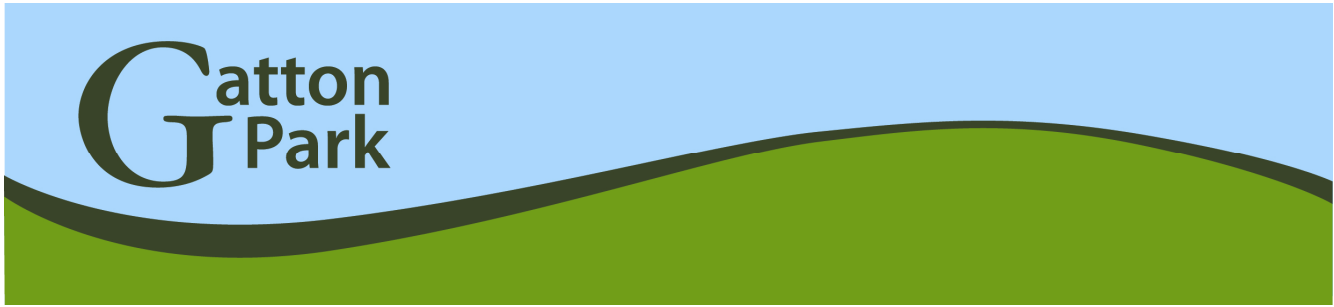
**Links to KS1 National Curriculum
Ma3 Shape, Space and Measures.**

1b) Select and use appropriate equipment when solving problems involving measures or measurement.

1d) Use the correct language and vocabulary for measures.

4a) Estimate the size of objects and order them by direct comparison using appropriate language; compare and measure objects using uniform non-standard units, then with a standard unit.

4c) Estimate and measure objects; choose and use simple measuring instruments, reading and interpreting numbers, and scales to the nearest labelled division.



Woodland Measures

Year 1 Worksheet

Find things to measure.
Decide which unit it is best to measure them with.

	Draw and name the things you have chosen here	My estimate of the length	My measurement of the length
Finger widths			
Handspans			
Footprints			
Paces			
My woodland object			

Woodland Measures

Year 2 Worksheet

Find things to measure.

Decide which unit it is best to measure them with.

	Draw and name the things you have chosen here	My estimate of the length	My measurement of the length
Finger widths			
Hand spans			
Footprints			
Paces			
My woodland object			
Centimetres			
Metres			

NUMBER ACTIVITIES

This page gives some ideas of outdoor activities related to number.

Number and the Number System

- Make numbers by sticking natural materials on to coloured card
- Make a spiral of 50 slabs to practice counting the steps e.g. in ones, twos or threes, by stepping and counting or placing children at regular intervals along the slabs

Place numbers around the grounds (e.g. in trees)

- Find the numbers then put them in order from smallest to largest.
- Give directions such as: start at tree 8, walk two trees clockwise, which tree number are you at now?
- Find all the odd/even numbers.
- Play a mental maths game to revise doubles, halves, number bonds to 10 and simple additions and subtractions. The children start at a central point and the teacher thinks of a number and describes it through maths, for example having number 6 in mind, and saying double 3. The children then find and run to the tree with number 6 on it.

Leaf Patterns

Collect a variety of different leaves. Group the leaves by asking which are the same and which are different - for example yellow leaves and green leaves.

The children then make repeating linear patterns. Count the number of each type of leaf and select what comes next. For example green leaf, green leaf, yellow leaf, green leaf, green leaf, yellow leaf.

These patterns can then be translated into letters and numbers so that patterns can be described as e.g. 2g y 2g y. Pupils can then give each other sequences to be turned into leaf patterns.

Processing, representing and interpreting data – using minibeasts

In small groups, look for and identify minibeasts. Sort these into sets e.g. those with legs (6, 8 or more than 8) and those with no legs.

Count the numbers in each set and show these results in a table or pictorially. The activity can end with the pupils showing, discussing and explaining their work.

This activity can be differentiated by outcome with pupils deciding how many sets to sort the minibeasts into, as well as the most suitable way of presenting their data.

Links of KS1 National Curriculum

Ma2 Number.

- 2b) Create and describe number patterns; recognise sequences including odd and even numbers.
- 2c) Read and write numbers to 20 at first and then to 100 or beyond; understand and use the vocabulary of comparing and ordering numbers.
- 5a) Solve a relevant problem by using simple lists, tables and charts to sort, classify and organise information.
- 5b) Discuss what they have done and explain their results.

TIME AND PROBLEM SOLVING GAMES

This page gives some ideas about games that can be played outside.

TIME

Living Clock

Children sit on the twelve chairs in a circle, each holding numbers 1-12 making the clock face. Two children stand in the centre, one is the hour hand, and the other is the minute hand. Children make times on the clock suggested by the teacher or other children. Children take it in turns to be clock hands and see how quickly they can make a given time whilst all the other children agree or disagree on clock hand positions.

Days of the Week

Learn days of the week through drama. Recite the poem "Monday's Child". Children work in groups, each group is allocated a chair and a day of the week. They then create a short drama about their day's child. For example, "Wednesday's Child is full of Woe" – why, what has happened, how is the child going to resolve it?

Monday's child is full of grace.

Tuesday's child is fair of face.

Wednesday's child is full of woe.

Thursday's child has far to go.

Friday's child is loving and giving.

Saturday's child works hard for a living.

But the child that's born on the Sabbath day is bright, bonnie, good and gay!

Swapping Months

Learn the months of the year through an easy game. Children sit on the twelve chairs each holding a month of the year. One child stands in the centre, names two months of the year, who then have to swap chairs, whilst the central child has to try and get to one of their chairs before they do.

Problem solving:

Frogs and Toads

In this game the children can be the counters themselves, using the carpet tiles as counting spaces. Start with three frogs in a line on one side of the line of tiles and three toads in a line in the other side, with just one empty space between the frogs and toads. The frogs and toads then have to change places, taking as few moves as possible. They can slide to an adjacent empty space or hop over one other frog or toad to an empty space on the other side. Can

they swap them over without moving any frogs or toads backwards? Does it help to have more spaces in between the frogs and toads to start with?

Tangrams

Children collect shapes of a certain colour, hidden in an area of the grounds/park. The shapes then fit together to make a bigger shape, for example all the red shapes must be collected by one group, which are then fitted together to make an oval shape. The first team to collect and construct their shape are the winners. Then each group can try to make their shapes into an animal shape.

Maths Scavenger Hunt

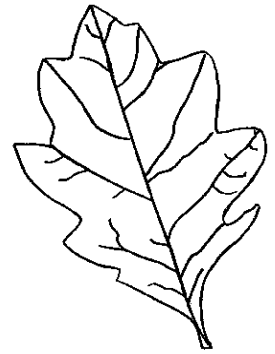
The children can go for a walk around the school grounds or a local park on a maths scavenger hunt, using a variety of maths related ideas. An example is shown.

Maths Quest

Scavenger Hunt

Can you find all of these things on our walk?

1. A leaf larger than 5cm



Is this leaf symmetrical?

2. A flower with more than 4 petals



3. Something smaller than the size of a coin

4. Something larger than the size of the coin

5. Something the shape of a circle

