



Education
Scotland
Foghlam Alba

Outdoor Learning Webinar

Learning outdoors - Numeracy and Mathematics

Wednesday 30 September 2020



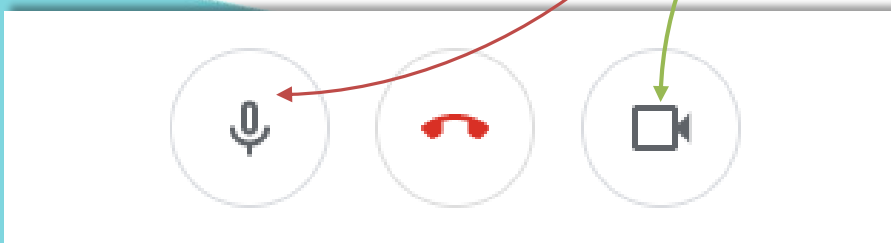
Welcome!

Please take note of the protocols for during the session

Please take a moment to say hello in the chat box and tell us where you are and what the weather is like there

Protocols:

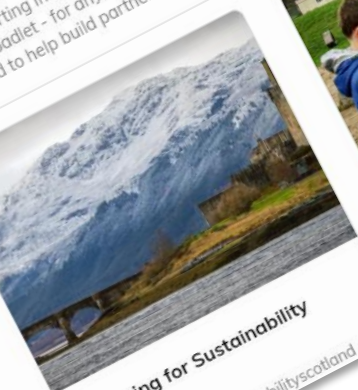
- Mute your microphone
- Turn off your camera
- Post comments, questions and thoughts into the chat window
- The chat will be facilitated
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Twitter: #LearnOutdoors
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For Scotland's learners, with Scotland's educators

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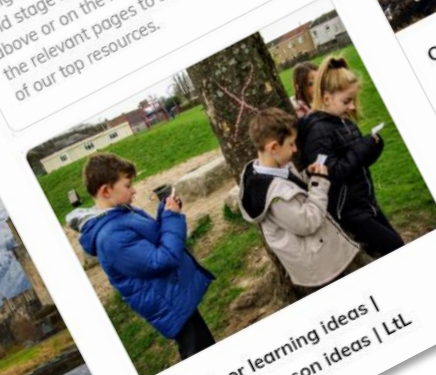


Learning for Sustainability Scotland
Learningforsustainabilityscotland

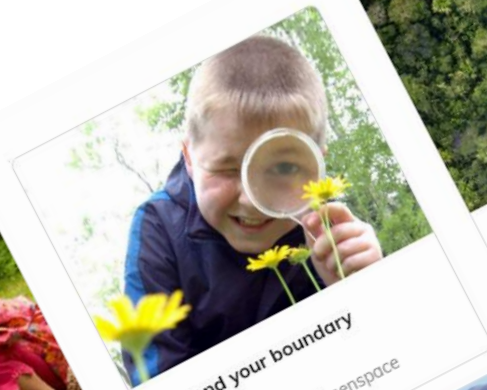


Resources | Outdoor and Woodland Learning
Owlscotland

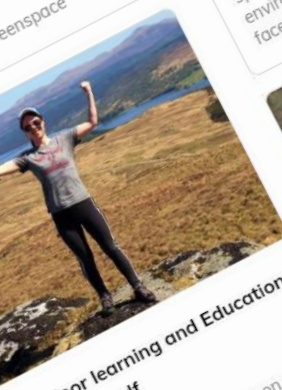
There is a wide range of outdoor learning resources here in our Resource library. Search the library using keywords, or by topic or age and stage by clicking on the blue bar above or on the home page. OR visit the relevant pages to see a selection of our top resources.



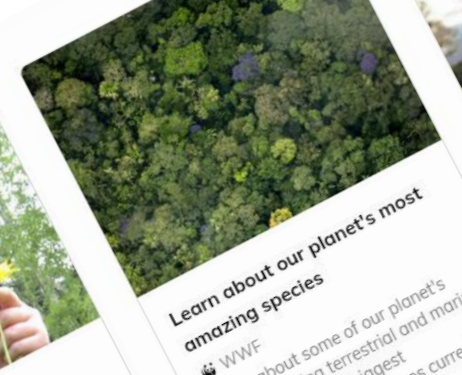
Outdoor learning ideas | Outdoor Lesson ideas | LtL



Beyond your boundary
Nature
Learning in Local Greenspace



Outdoor learning and Education Recovery.pdf
Uploaded PDF
Youthlink Scotland guidance on opportunities to collaborate with outdoor learning organisations.



Learn about our planet's most amazing species
WWF
Learn about some of our planet's most amazing terrestrial and marine species, and the biggest environmental challenges currently faced by our generation.



National Network for Outdoor Learning (Scotland)
Nnolsotland
We are the National Network for Outdoor Learning in Scotland. A



Learning in Local Greenspace - YouTube
youtube
Learning in Local Greenspace - How to find and access your space with S...



Learning through Landscapes
YouTube
Learning through Landscapes helps children to connect with nature, become more active, learn outdoors, develop social skills and have fun. We do this through...

Thoughtprovoking

Creative STAR Learning | I'm a teacher, get me OUTSIDE here!
Creative STAR Learning | I'm a teacher... I'm a teacher, get me OUTSIDE here!



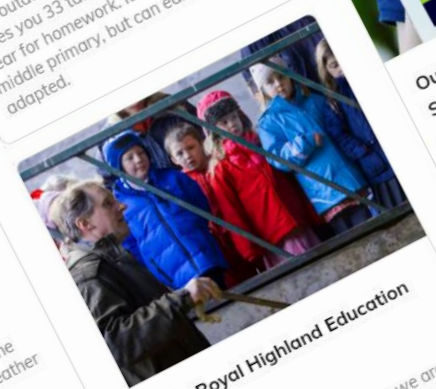
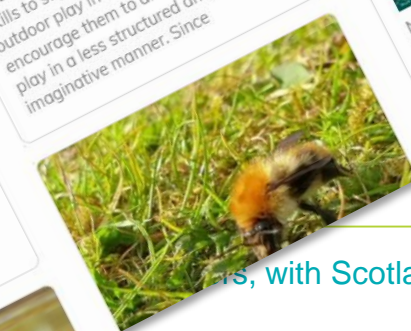
explorers | Canal & River Trust
Canalrivertrust
Free educational trips to your local canal or river. Available for schools and uniformed groups.



MerPack - Marine Education Resource Pack - COAST
COAST
This pack for primary school teachers includes fun and engaging activities with all the worksheets required. It is aimed at level 2 of the Curriculum for Excellence



Loose Parts Play Toolkit 2019 edition - Inspiring Scotland
inspiringscotland.org.uk
We are pleased to announce the publication of the revised edition of the Loose Parts Play Toolkit. The updated Toolkit provides a greater focus on helping adults develop the skills to support inclusive, all-weather outdoor play in Scotland and encourage them to allow children to play in a less structured and more imaginative manner. Since



The Royal Highland Education Trust
Rhet
Next month 18th/19th June, we are working with partners up and down Scotland to bring online activities and videos about food and farming direct to young people. The Food & Farming Extravaganza that is Royal Highland Show goes online for 2020. There are



Outdoor homework | Outdoor Lesson Idea | Learning through Landscapes
LtL
This outdoor homework resource gives you 33 tasks over the school year for homework. It is aimed at middle primary, but can easily be adapted.



Outdoor Learning
Outdoorlearningdirectory
Scotland's Outdoor Learning Directory aims to provide a portal to services supporting outdoor learning which are provided by these Scottish organisations.



Outdoor Learning Schools - Woodland Trust
Woodland Trust
Our free, curriculum-linked resources help teachers develop outdoor learning about trees and wildlife.

@STEMedscot #LearnOutdoors

...s, with Scotland's educators



Outdoor Learning Webinar

Learning outdoors - Numeracy and Mathematics

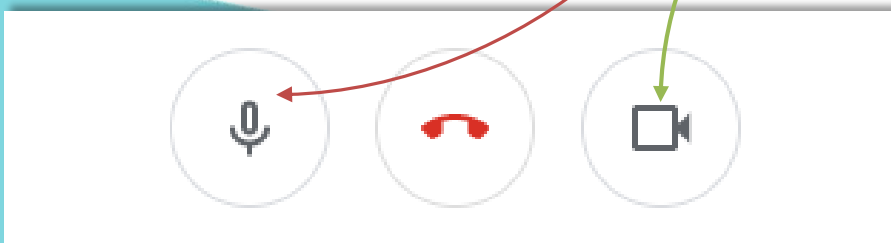
Wednesday 30 September 2020



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For Scotland's learners, with Scotland's educators



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Education
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Learning Outdoors – Numeracy & Mathematics

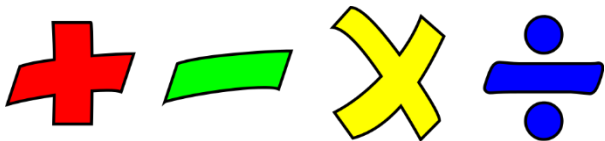
Iona Coutts & Jaclyn Andrews

For Scotland's learners, with Scotland's educators
Do luchd-ionnsachaidh na h-Alba, le luchd-foghlaim Alba


Aims of the Session




- To provide support in getting started in teaching numeracy & mathematics outdoors.
- Practical examples of using the outdoors to teach numeracy & mathematics.
- To provide opportunities for good practice to be shared.
- To provide further reading and examples to be explored after the session.




Getting Started



Small steps




LEARNING • OUTDOORS • SUPPORT • TEAM




Introduce the outside inside

- Introduce natural materials
- Go outside to collect artefacts/information then return in




Meet pupils outside

- Go out after or before lunch or break – stay out for 15 mins
- Use the journey to and from classroom as part of the lesson



Make outdoor lessons Routine and Expected

- Be comfortable; appropriate clothing for all
- Build up confidence, skills and experience
- Discuss and create boundaries and expectations with the pupils



Be flexible

- Be spontaneous where appropriate
- Allow for pupil led learning
- Encourage creativity

10 tips for Outdoor Learning & Curriculum for Excellence in Recovery Phase

- 1 It's learning in outdoor settings
- 2 It can be delivered by all educators
- 3 It's for all ages
- 4 It's relevant for all subject areas, and can be interdisciplinary
- 5 It helps deliver Scotland's Curriculum for Excellence
- 6 It supports health & wellbeing
- 7 Support for teachers, educators and schools is at the heart of a Recovery Phase response
- 8 Resources, information, expertise, and additional capacity are accessible and available
- 9 Green and blue space is learning space
- 10 Teachers sharing their Outdoor Learning experiences is a rich source of support

<https://nnolscotland.blogspot.com/2020/08/10-tips-for-outdoor-learning.html> - Rob Bushby article August 2020

Consult National and Local Authority guidelines in relation to equipment.

Getting Started

Start with something you feel comfortable with.

Establish clear ground rules **with** your class.

Set clear boundaries, decide this together with learners. Use markers e.g. cones, chalk, flags, etc.

Be comfortable and dress appropriately.

If you haven't taught outside often, start small and build up.

Consider using non-equipment activities to begin with.



Playground markings



Outdoor box – ready to lift



Useful Tips

Useful Playground Markings

- ten frames
- empty number lines
- empty grids
- Cartesian diagram
- Venn/Carroll Diagrams

Limited outdoor space/resources?

Collect resources to take into your establishment.

- Sticks
- Stones
- leaves



Sticks (measure example)



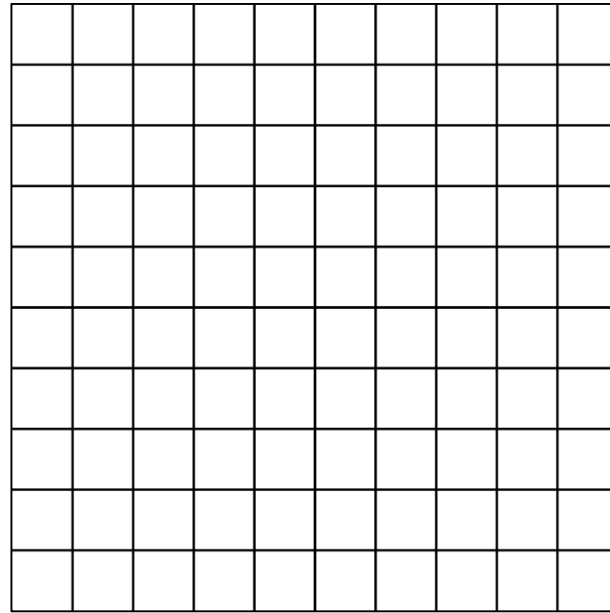
- Find me a stick longer/shorter than your hand.
- Find me a stick longer than/shorter than/around the same size as 1 metre, half a metre, etc.
- Can you find a stick which is roughly a quarter of the size of this one?
- Find two sticks that when put together measure as close to 75cm as possible.
- Can you find sticks that measure roughly 1.75 metres when placed together?
- Find a stick and measure its length choosing a sensible unit of measurement.
- Create a 2D square/rectangle/triangle and find an approximation for its area.

Other ideas

1 metre
rope snake



Credit - Creative Star -
<https://www.mathsweek.scot/schools/ideas-and-inspiration/maths-outdoors>





large 10 x 10
grid on an old
bed sheet/
tablecloth

pocket ten
frame



Early Level



<p>Find the number</p> <p>Use chalk to draw numbers on the pavement. Shout various numbers out and the child stands by the matching number.</p> <p>Go for a 'number hunt' and look for numbers in the local environment, e.g. door numbers, street signs.</p> <p style="text-align: right;">MNU 0-01a MNU 0-02a</p>	<p>Time</p> <p>Notice the trees and discuss the ways they change throughout the year.</p> <p>Take a walk during the day, repeat the same walk at night. Discuss the differences you notice.</p> <p>Create clocks using chalk or naturally found material.</p> <p>Look for clocks during a walk e.g. on a town hall, a church or a bus stop.</p>	<p>Numbers</p> <p>Make outdoor number lines using chalk. Jump along it and count.</p> <p>Find a specified number of objects from the natural environment, e.g. 5 leaves or 4 sticks.</p> <p>Use chalk to draw ten frames. Collect items and count them. Egg boxes with ten spaces can also be used.</p>	<p>2D shape</p> <p>Use chalk to draw 2D shapes.</p> <p>Use paintbrushes and water to draw 2D shapes on a dry ground.</p> <p>Create 2D shapes using sticks or stones.</p> <p>Find various shapes within the environment, e.g. rectangular windows, circular wheels, etc.</p>	<p>Measurement</p> <p>Fill and empty various containers. Use language such as 'heavier, lighter, more and less.'</p> <p>Find objects and compare lengths. Use language such as 'longer, shorter, taller.' If sticks have been collected you could line them up from shortest to longest.</p> <p>Measure particular areas, e.g. a path or a garden using giant steps, baby steps or toy cars.</p>
<p>Patterns</p> <p>Look for patterns within the environment.</p> <p>Collect items, e.g. stones, leaves, sticks and create repeating patterns.</p> <p>Make moving patterns, e.g. hop, two jumps, four skips and repeat.</p> <p style="text-align: right;">MTH 0-19a MTH 0-13a</p>	<p>Use a 1-12 number line drawn with chalk to link to a drawn circular clock face.</p> <p style="text-align: right;">MNU 0-10a MNU 0-03a</p>	<div style="text-align: center;">  <p>MNU 0-01a MNU 0-02a</p>  </div>	<p style="text-align: right;">MTH 0-19a MTH 0-16a</p>	<p>Collect items such as pebbles, leaves, twigs and make comparison. bigger/smaller, longer/shorter</p> <p>Collect rainfall in a jug and keep track of it each day.</p> <p style="text-align: right;">MNU 0-11a</p>

Early Level

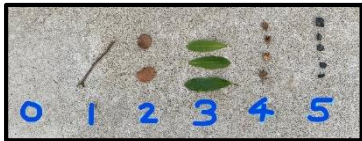


Number Collections

Draw numerals on the ground and collect items to represent each number.

Shout out a number and ask learners to collect that amount of items e.g. 'Who can find me two leaves? Who can find me five stones?'

MNU 0-01a



Problem Solving

Creating different structures using natural or man made items.

Money

Plan a trip to a local shop. It could be to buy ingredients for a recipe. Use real money to pay for their item.

Create a pretend outdoor shop.

MNU 0-09a

Positional Language

Hunting for items – on, under, in, etc.

Pupils to give each other instructions to follow.

MTH 0-17a

Symmetry

Use natural items found to create symmetrical designs.

On a dry day use paintbrushes and water to create symmetrical pictures on the ground.

MTH 0-19a

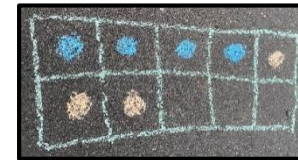
Addition

Send children to collect 2/3 items each. Add the total of leaves, twigs, etc.

Draw a ten frame. Fill with items or draw dots with different colours. What is the total?

Draw a number line. Ask learners to stand on a particular numeral and move forwards/backwards e.g. two spaces.

MNU 0-02a
MNU 0-03a



Data Handling

Make a human pictogram.

Make pictograms using types of leaves or other natural resources.

Sort materials that they find into different categories decided by them. Discuss their choices.

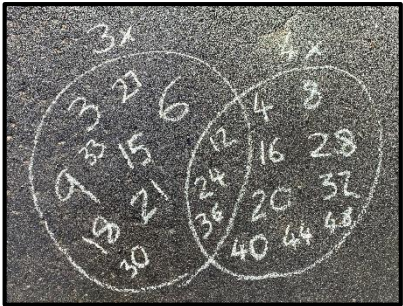
MNU 0-20a
MTH 0-16a



First Level

Multiplication and Division

Draw Venn diagrams on the ground to explore multiplication.



Use leaves and sticks to explore multiplication and division.



$5 \times 2 = 10$ $10 \div 2 = 5$ $10 \div 5 = 2$



Four lots of three leaves.

MNU 1-03a
MNU 1-07b

Shape

Identify and name the 2D shape names in the environment: e.g. square, rectangle, triangle, circle, hexagon, pentagon.

MTH 1-16a

Probability

Discussion of various probability events. What is the likelihood of certain things, e.g. Leaves falling from trees, the tree falling down, finding a bug, etc.

MNU 1-22a

Partitioning

Use chalk to show partitions.



MNU 1-02a

Problem Solving

Creating different structures using natural or man made items.

Fractions

Draw various 2D shapes and section them into halves and quarters.



Collect materials and use them to calculate fractions.

'I have collected four items. Three quarters of these items are leaves.'



Use outdoor objects to arrange materials and create linking facts.

$(\frac{1}{4} \text{ of } 20 \text{ is } 5)$ $(\frac{2}{4} \text{ of } 20 \text{ is } 10)$ $(\frac{3}{4} \text{ of } 20 \text{ is } 15)$ $(\frac{4}{4} \text{ of } 20 \text{ is } 20)$

Clear links should be made between fractions, multiplication and division as this will benefit learners when moving to abstract calculations.

$4 \times 5 = 20$ $5 \times 4 = 20$ $\frac{1}{4} \text{ of } 20 \text{ is } 5$
 $20 \div 4 = 5$ $20 \div 5 = 4$ $\frac{1}{5} \text{ of } 20 \text{ is } 4$



MNU 1-07a
MTH 1-07c

First Level

Measurement

Find objects longer/shorter/about the same as 1m.

Estimate and draw a variety of lines.

Collect and measuring rainfall.

MNU 1-11a

Angles

Make right angle testers using the corner of a rectangular sheet of paper. Find as many right angles outside as possible.

It will become clear that most right angles are man made . Investigate if there are right angles to be found in nature.

Make shapes with sticks and count the number of right angles.

MTH 1-17a

Grid references

Mark out a large grid using chalk on a pavement. Give instructions about which square to stand in e.g. A5 or C7, etc. They can also draw shapes in given grid references.

Each of you set up your own small battleship grid with 1 or 2 ships on it (keep them hidden from each other). Play against each other to sink opponents ship.

Take turns of being blindfolded and the other has to give instructions, e.g. forward 4, turn right, etc.

MTH 1-18a

Data Handling

Draw Venn diagrams/carroll diagrams using chalk. Classify various item found, e.g. smooth, rough, brown, green, natural, man made, etc.

Collect data about a variety of topics, e.g. litter in the street, traffic in surrounding area, types of trees.



MNU 1-20a
MNU 1-20b

12 Hour Clocks

Draw large circles with chalk on the ground. Divide it into quadrants and add numbers to make a clock face. Collect sticks to use as hands and ask them to show the correct time (o'clock, quarter past, half past and quarter to).

MNU 1-10a

Symmetry


Create symmetrical pictures using natural resources.

Draw symmetrical patterns on the ground.

Look for symmetry within nature.

MTH 1-19a

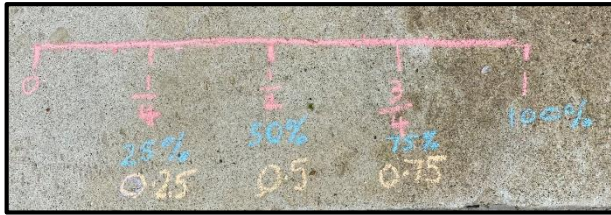
Second Level

<p>Symmetry</p> <p>Identify symmetry outdoors.</p> <p>Use chalk to create pictures with multiple lines of symmetry.</p> <p>Use natural materials to create an image. Ask a partner to create a symmetrical version.</p> <p style="text-align: right;">MTH 2-19a</p>	<p>Patterns and Relationships</p> <p>Look for Fibonacci sequences in real life.</p>  <p style="text-align: center;">https://www.youtube.com/watch?v=nt2OIMAJ6o</p> <p style="text-align: right;">MTH 2-13a</p>	<p>Measure</p> <p>Measure a variety of items to the cm, fallen twigs, benches, windows, height of plants, etc.</p> <p>Draw a variety of different lines, mark halfway, then half again, etc. Record as decimals , 0.25, 0.5, 0.75, etc.</p> <p>Find the area of different parts of the garden or area outside.</p> <p>Draw shapes with given perimeters. You could use sticks to create these shapes.</p> <p>Use chalk to draw shapes with same perimeters but different areas.</p> <p style="text-align: center;">MNU 2-11a MNU 2-11b MNU 2-11c</p>
<p>Shape</p> <p>Identify 3D shape in the local environment, discuss the properties of these shapes. How are these shapes used within the environment.</p> <p>Pupils to draw nets of 3D objects on the ground.</p> <p style="text-align: right;">MTH 2-16a</p>	<p>Time - Seconds</p> <p>Time themselves/each other to the exact second - how long does it take to run 100m, run 'round the block', throw and catch a ball 20 times, etc. Challenge them to improve each time.</p> <p>Calculate the duration of time it takes to complete an activity, e.g. go for a walk, run or cycle using the starting and finishing times. Estimate how long it might take before the journey begins.</p> <p style="text-align: right;">MNU 2-10a MNU 2-10b</p>	<p>Plotting Points</p> <p>Draw grids on the ground and plot various points using the correct notation e.g. (5,3).</p> <p style="text-align: right;">MTH 2-18a</p>

Second Level

Fractions, Decimal Fractions and Percentages

Use chalk to draw number lines and mark points in different ways.



Collect items and note the different ways of recording what has been found.



$\frac{3}{4}$ or **0.75** or **75%**

of what I have found are leaves.

Count items within the local area, e.g. cars, bushes, trees and calculate how many of them are a certain colour or type. Use decimal fractions and percentages.



MNU 2-07a
MNU 2-07b

Angles

Look around the local area and divide everything into 2 groups - manmade and natural. Discuss findings. Most man made items will be right angles and natural items will usually be acute or obtuse.

Create pictures using a variety of sticks. Mark obtuse angles with one colour, acute with another and right with a drawing of a square.

Identify and classify angles in the local area using the terms acute, right, obtuse, straight, reflex.

Mark out compass points and work with a partner to follow/give directions.

MTH 2-17a

MTH 2-17b

MTH 2-17c

Algebraic Equations

Use items found outdoors to create simple algebraic equations.



MTH 2-15a

Negative Numbers

Use chalk to draw number lines including negative numbers.

Look for things in the real world where negative numbers are used, e.g. temperature, bank balances, buildings, golf scores, bank balances.

MNU 2-04a

More Useful Tips

Outdoor Learning with Secondary Classes

- Send a reminder the day before
- Meet the learners outside
- Leave a “note on the door”
- Take a walkie talkie or mobile phone
- Maintain the usual expectations regarding behaviour
- Consider how you can share time and learning with colleagues from other departments
- Consider how you could work with other agencies or local employers on an outdoor project

Third Level

Ratio and fractions

Collect items and use them to explore ratio. For example, in what ratios are different types of leaves found? Are different samples similar or not? What does this tell you? Can these ratios be simplified?

This could be interleaved with asking questions about fractions, what fraction of the sample is each type?

Links to data analysis can also be made regarding sampling variation. Links to Environmental Science could be made.

MNU 3-08a

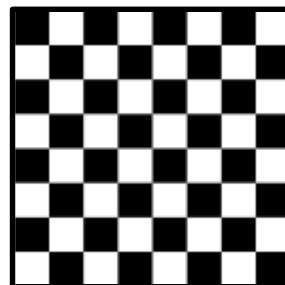
Multiples, factors and primes

Use an outdoor 100 square to chalk off composite numbers leaving the prime numbers to 100 (Sieve of Eratosthenes)

MTH 3-05b

Powers and roots

Explore the exponential growth of powers of two by laying out rows of stones, or pine cones for example. Make sure to use items that are plentiful!!



Alternatively, if a painted chess or draughts board is available on the ground the [rice on a chessboard legend](#) can be explored.

MTH 3-06a

Angles

Encourage learners to use chalk to create pictures on the ground made of parallel and non-parallel lines. Ask learners to find complementary, supplementary, corresponding, alternate and vertically opposite angles. Learners could estimate the size of one or two angles within their diagrams and use these estimates to calculate the sizes of any related angles.

MTH 3-17a

Negative numbers

Use chalk to draw number lines including negative numbers.

Learners can physically add and subtract integers by moving along the number line.

MNU 3-04a

Third Level

Speed, distance and time

Estimate and measure the time taken to walk, hop, skip and run a fixed distance. How accurate were the estimates? What were the relative speeds, e.g. was running twice as fast as walking? Calculate the average speeds. How long would it take to cover one kilometre running at this speed? Links could be made with PE and methods for accurate time measurement in sport.

MNU 3-10a

Data and analysis

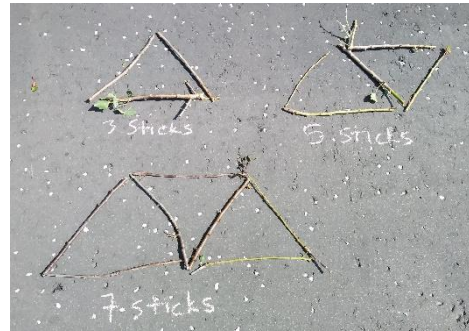
Collect items or data from school grounds, local gardens or green spaces such as fallen leaves, cones or pictures of wild flowers. Discuss methods of collecting data to reduce or avoid bias.

Link with Environmental Science or Biology colleagues to analyse the data and compare results. How can the data be presented? What does the data show? How does collection methodology affect the results?

MTH 3-20b

Patterns

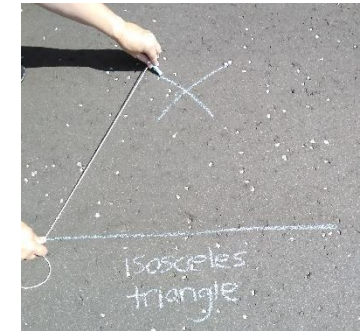
Use sticks to make patterns that follow linear relationships. Numbers of sticks can be written in chalk to deduce the pattern and determine a rule.



MTH 3-13a

Properties of 2D shapes

Investigate constructing triangles and other 2D shapes on the ground using a metre stick or other straight edge and a piece of string attached to chalk instead of compasses.



MTH 3-16a

Scale plans and bearings

Use magnetic compasses and plans of school buildings and grounds to follow an orienteering course to develop practical experience of using bearings as directions.

Work with Geography colleagues on the mathematics of map reading.

MTH 3-17b

Scale drawings

Working outdoors enables learners the chance to create large scale diagrams and pictures, removing restrictions of scale imposed by working in the classroom. Learners could produce large scale representations of a variety of objects including those that could be collected from the outdoors.

MTH 3-17c

Fourth Level

Measurement and shape

Calculate the perimeters and areas of complex shapes created by the lines on sports pitches. Use a variety of methods to measure dimensions to varying degrees of accuracy and compare solutions. Explore the impact of inaccuracies when solving related problems, e.g. finding the cost of painting lines or resurfacing courts.

Use the properties of 3D shapes to build shelters. Assess their appropriateness in terms of cost of materials used, shelter from weather, space inside etc.

MNU 4-11a MTH 4-11b MTH 4-16b

Trigonometry

Use a clinometer to measure angles of elevation, then use these and measured horizontal distances to calculate the height of buildings. Remember to adjust for the height of the viewer.

MTH 4-16a

Coordinates and straight lines

"Plot" points on an outdoor coordinate grid using people as points in four quadrants. People can walk from the origin to their point to reinforce the x, y order.

Create shapes on the outdoor grid, for example, where would a fourth person have to stand to create a square? A parallelogram?

Investigate translations of shapes and points. Where would you/they be standing if moved 3 places up? 2 places down? What if their position was reflected in the x axis or y axis?

MTH 4-18a MTH 4-18b

"Plot" lines of people on an outdoor coordinate grid. Explore vertical and horizontal lines (as viewed from above). What do the coordinates of all the people have in common? Ask learners to stand on a point with a given property e.g. $y = 2x$, $y = 2x + 1$ to investigate sloping lines.

MTH 4-13c MTH 4-13d

Patterns

Use sticks to make patterns that follow linear relationships. Numbers of sticks can be written in chalk to deduce the pattern and determine the general formula for the nth term.



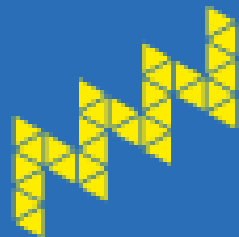
MTH 4-13a

Gradient

Calculate the gradient of ramps or paths around the school. Significant problem solving might be needed to measure distances involved.

Investigate the gradient of lines between points using an outdoor coordinate grid.

MTH 4-13b



Maths Week
Scotland

Maths Week Scotland
28 September - 4 October 2020

Maths Week Scotland is a celebration of the importance of maths in our everyday lives.

Enjoy events and activities across Scotland, and find out about the maths in everything from solar flares to robots.

We're planning a series of special events throughout the year so follow the hashtag **#MathsWeekScot** and also our **Twitter** to keep up to date with the latest news.

<https://www.mathsweek.scot/news/maths-week-scotland-2020>

For Scotland's learners, with Scotland's educators
Do luchd-ionnsachaidh na h-Alba, le luchd-foghlaim Alba

OUTDOORS

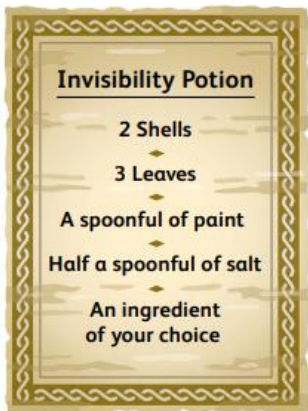
Making Potions

Use maths to take children on a magical adventure!

Gather natural materials or other classroom items such as pebbles, coins, shells, leaves etc. Decide what you want your potion to do. Make your invisible? Be able to fly?

Provide containers of coloured water with utensils such as ladles or whisks.

Together, estimate how many cups it will take to fill each container. Whilst filling them, discuss empty, half-empty and full.



Give the children instructions for making their potions like this example.

Nature Book



Create a book exploring numbers using natural materials.

Pages could include:

- 1 petal, 2 leaves, 3 twigs
- Symmetrical pattern of twigs
- Round items
- Items longer than 6cm

Natural Art

Work together to create amazing symmetrical patterns using only natural resources.



Number Hunt

Create a number hunt in your outdoor space.

- Place signs with the numbers 1–20 in an open space

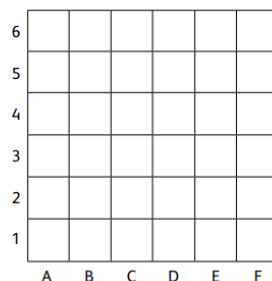
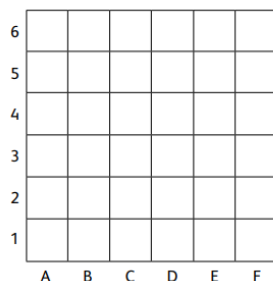
- Prepare a selection of cards with numbers represented in different ways such as digit, dots, domino, finger pattern
- Ask children to go and find all the different versions of a number

Hide and Seek

This is a whole class activity. Before you start work out how many squares your grid will need in order to fit more than half of your class.

Draw two grids that size on the playground using chalk. Each grid point should be large enough for one child to stand in. You will also need to create a set of letter and number cards which match up with the coordinates on your grid.

Split the class into two equal groups. Each group should be allocated one of the grids.



All children should choose a coordinate to stand on within the grid their group has been allocated. The teacher should then draw a random letter and number from the letters and numbers pile and shout out the coordinate that they make, e.g. 'B5'.

If there is a child standing on that coordinate they have to leave the grid and stand at the side.

The winners are the group which are the last to have anyone left on their grid.

OUTDOORS

Sticky Situation

Challenge children individually or in teams to find four sticks which, when placed together, are exactly one metre in length..

Children can only measure the sticks once they have placed them together.

The winning child or group are those with the closest to one metre.

Give it a go through the week with different objects or lengths and see if estimation skills improve!

OUTDOORS

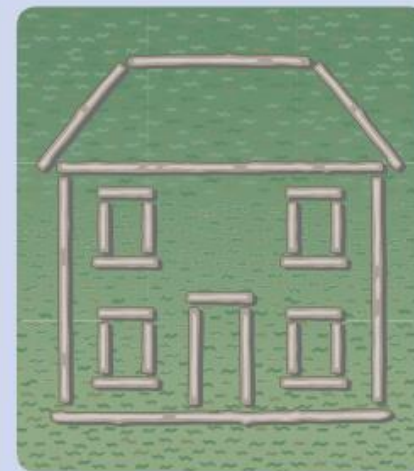
Sticks and Angles

Collect a range of sticks of different lengths.

Challenge learners to be the first person to make a picture using the sticks that includes all of the following.

- a right angle
- an acute angle
- a straight angle
- an obtuse angle
- a reflex angle.

The first person to create a picture with all of these is the winner!

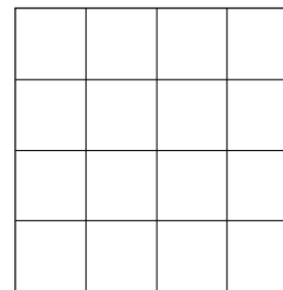


A description of the different types of angles can be found [here](#).

OUTDOORS

Rotational Symmetry

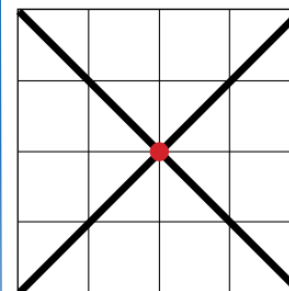
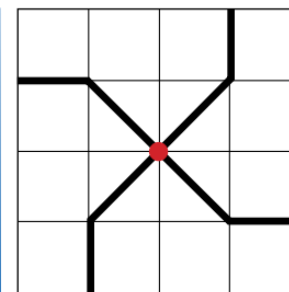
With chalk outside (or on a piece of squared paper) draw a four by four square.



Now split your square into four equal parts (quarter the square) so that the pattern within the square has rotational symmetry of order 4 (quarter turn symmetry) around the centre.

Two examples are shown opposite.

There are more than twenty different ways this can be done. Try to find as many as you can!



<https://www.mathsweek.scot/news/maths-week-scotland-2020>

Further Reading/Examples

Policy and Documentation

- [Curriculum for Excellence Through Outdoor Learning](#)
- [Outdoor Learning – Practical guidance, ideas and support for teachers and practitioners in Scotland](#)
- [Building your Curriculum: Outside and In](#)
- [CfE Factfile – Outdoor Learning](#) (Parent information)

Education Scotland Outdoor Learning Wakelet



Learning for Sustainability/Outdoor Learning

Examples and Further Support - Mathematics

- <https://creativestarning.co.uk/maths-outdoors/>
- https://www.ltl.org.uk/free-resources/?swoof=1&pa_subject=mathematics
- <https://thirdspacelearning.com/blog/13-outdoor-maths-activities-early-years-year-6-plus-bonus-ages/>
- <https://outdoorclassroomday.org.uk/resources/lesson-ideas/>

Keen for more outdoor learning professional learning?

Previous webinars:

- HT's journey <https://youtu.be/Oecsj8AXiTA>
- OL across the 4 contexts <https://youtu.be/CeFrR2iLy7Y>
- Using digital tools to capture, create and share outdoor learning <https://youtu.be/YS32oAUJL7w> and a Sway with all the links from the session <https://bit.ly/33ekdJ5>

Online teaching learning outdoors 2 hour module (SAPOE):

- <https://professionallearning.education.gov.scot/learn/learning-activities/teaching-learning-outdoors/step-1>
- [STEM Nation Webinar Team](#) - joining code kz41xx4
- Booking <https://professionallearning.education.gov.scot/learn/events/>

Evaluation and what next?



Outdoor Learning Webinar Evaluation

<https://bit.ly/2FwUZNP>

Share your outdoor learning,
and tag us at @STEMedscot
#LearnOutdoors
@edscot_maths





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