mathsweek LONDON 2020

OUTDOOR MATHS

Maths is all around us so we want to encourage all children to discover maths on their own doorstep!

Here is a selection of short, fun activities you can do with children in the garden, in the park or in the playground!

EYFS: ages 3–5

Numbers in nature

This activity is lovely to do when out and about doing some daily exercise or in your local park.

Make all of the numbers using different natural objects; leaves, bark, flowers, stones, sticks… be creative!

Choose a number 1–10. Can you count out different sets of objects to make this number? Great for seeing numbers represented in different ways!

Counting rainbows

There are so many rainbows out and about at the moment! The next time you take a walk outside, try counting them. Spot them in windows, on pavements, outside schools… How many do you see?

If you want to, try a rainbow tally chart

Every time you see a rainbow, draw a line. That is your first line in your tally! When you get to the 5th rainbow, cross out your four other lines. This helps you keep track of how many rainbows you saw!

Tower challenge

Take ten A4 pieces of paper. Doesn't matter what is on them – dig out the recycling!

Using any folding or rolling technique you like, make the tallest tower you can. No other resources are allowed and it must be freestanding!

Once you have built your tallest tower, measure it. Use a tape measure or ruler if you have one, or if not, use any other resources you have at home.
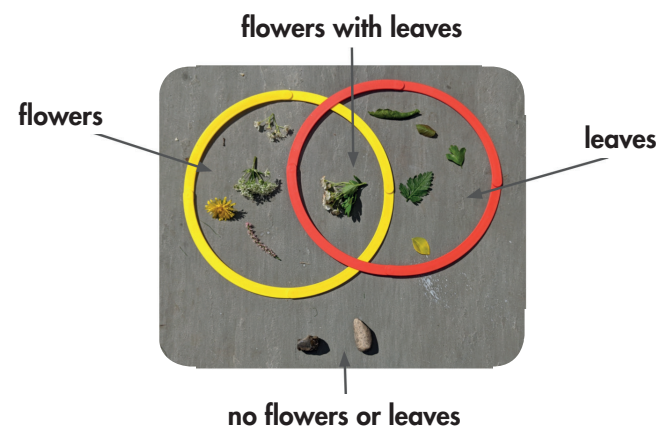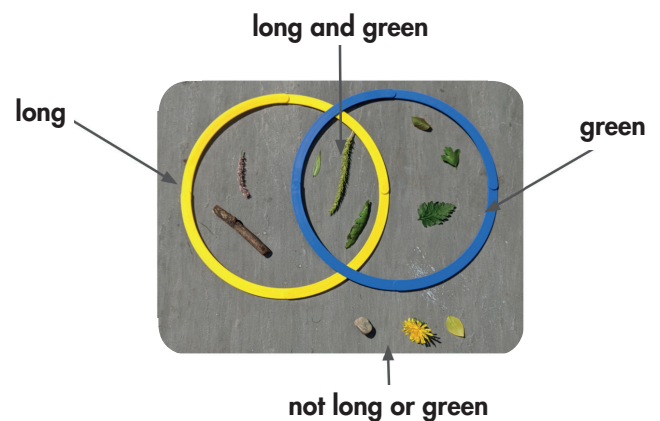

What is the tallest tower you can make?

Do you think if you had 20 pieces of paper you could double the height? Can you compete with someone else at home to make the tallest tower with 5 pieces of paper each?

Venn diagrams in nature

Collect lots of natural objects together when out for daily exercise or in your garden. How could you put them into categories? An easy way to start is to think about opposites; flowers vs leaves, long sticks vs short ones.

Can you put your natural objects into venn diagrams like the ones below? Whatever features you choose, there must be some objects that have BOTH and can go in the middle!


long

long and green

green

not long or green

flowers

flowers with leaves

leaves

no flowers or leaves

Growing patterns

Gather objects you have at home to make a pattern. You can use buttons, cubes, stones, coins… anything that can you can create patterns from. Each time you create the next sequence in your pattern, it must get bigger. It can become longer, wider, have an extra column or row, become taller… etc. Have a look at some examples using objects found lying around at home!
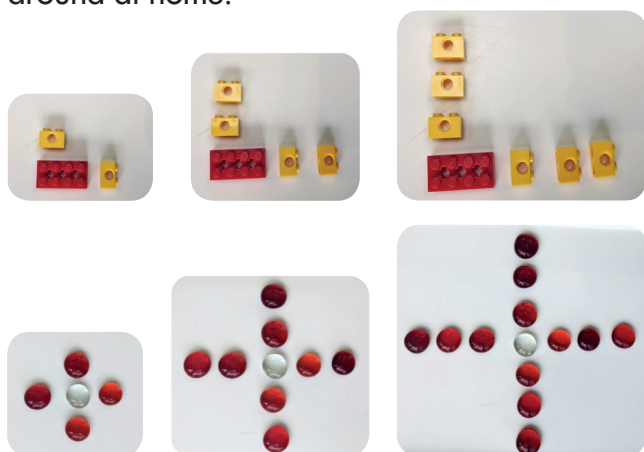
Now you are going to number the pattern every time it becomes bigger. We will call this 'n' for the number in the sequence.

n = number in the sequence

n = 1   n = 2   n = 3
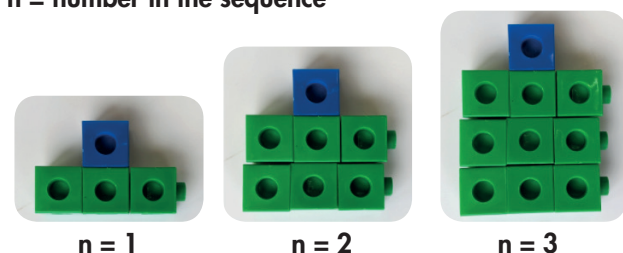
Can you describe the next few patterns in the sequence?

Can you work out how many objects there are in each pattern?

Is there a quick way to work out the number of squares in the 20th pattern?

Or the 50th pattern?

Or… the nth pattern?

64 challenge

This fantastic task is taken from Nrich – full details here: **https://nrich.maths.org/80**

Write the numbers up to 64 in an interesting way so that the shape they make at the end is interesting, different, more exciting … than just a square. Here are some ideas other children came up with to show that the numbers could be arranged in an interesting way.

Anan
```
 1  2  5  6  9 10 13 14 17 18 21 22 25 26 29 30
 3  4  7  8 11 12 15 16 19 20 23 24 27 28 31 32
33 34 37 38 41 42 45 46 49 50 53 54 57 58 61 62
35 36 39 40 43 44 47 48 51 52 55 56 59 60 63 64
```

Lizzie
```
 1  2  5 10 17 26 37 50
 4  3  6 11 18 27 38 51
 9  8  7 12 19 28 39 52
16 15 14 13 20 29 40 53
25 24 23 22 21 30 41 54
36 35 34 33 32 31 42 55
49 48 47 46 45 44 43 56
64 63 62 61 60 59 58 57
```

Charlotte
```
                    32
                 34 31 33
              28 36 29 35 30
           40 25 26 38 27 37
     20 44 21 43 22 42 23 41 24
  50 15 49 16 48 17 47 18 46 19 45
 8 56  9 55 10 54 11 53 12 52 13 51 14
64  1 63  2 62  3 61  4 60  5 59  6 58  7 57
```

Serena
```
 1  2  3  4  5  6  7  8  9 10 11
12 13 14 15 16 17 18 19 20 21
22 23 24 25 26 27 28 29 30
31 32 33 34 35 36 37 38
39 40 41 42 43 44 45
46 47 48 49 50 51
52 53 54 55 56
57 58 59 60
61 62 63
64
```

Lizzie
```
 1  2  3  4
 5  6  7  8
 9 10 11 12
13 14 15 16
17 18 19 20
21 22 23 24
25 26 27 28
29 30 31 32
33 34 35 36
37 38 39 40
41 42 43 44
45 46 47 48
49 50 51 52
53 54 55 56
57 58 59 60
61 62 63 64
```

Kimberley
```
 1  2  3  4  5  6  7  8
 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56
57 58 59 60 61 62 63 64
```

Nicola
```
 1  2  3  4  5  6  7  8  9 10
                           11
                           12
                           13
36 37 38 39 40 41 42
35                43
34 56 57 58       44
33 55 64 59       45
32 54 63 60       46
31 53 62 61       47
30 52 51 50 49 48
29
28 27 26 25 24 23 22 21 20
19
```

Rosie/Sophie
```
 1  2  3  4  5  6  7  8
28 29 30 31 32 33 34  9
27 48 49 50 51 52 35 10
26 47 60 61 62 53 36 11
25 46 59 64 63 54 37 12
24 45 58 57 56 55 38 13
23 44 43 42 41 40 39 14
22 21 20 19 18 17 16 15
```

Most of them, as you see, end up with shapes that were not squares. Those that did end up with an 8 by 8 square put the numbers in an interesting order into the shape.

Once you've given that a go, try out the investigation that comes with it!

Thanks to Natasha Dolling, Maths Director at LEO Academies Trust for putting together these activities.

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