

Week 1

Biscuit Decorations

Andrew decorated 20 biscuits to take to a party.

He lined them up and put icing on every second biscuit.

Then he put a cherry on every third biscuit.

Then he put a chocolate button on every fourth biscuit.

So there was nothing on the first biscuit.

How many other biscuits had no decoration? Did any biscuits get all three decorations?



<https://nrich.maths.org/154>

Week 2

School Fair Necklaces

Rob and Jennie were making necklaces to sell at the school fair.

They decided to make them very mathematical.

Each necklace was to have eight beads, four of one colour and four of another.

And each had to be symmetrical, like this.



How many different necklaces could they make?

Can you find them all?

How do you know there aren't any others?

What if they had 9 beads, five of one colour and four of another?

What if they had 10 beads, five of each?

What if.....??????

<https://nrich.maths.org/9692>

Week 3

Mystery Matrix

Have a look at this table square or matrix:

x	2	3	4	5
2	4	6	8	10
6	12	18	24	30
7	14	21	28	35
9	18	27	36	45

Can you see how it has been constructed?

Why are some numbers in black and some in red?

Can you explain why the red 6 is in that particular square?

Why is there a 45 in the bottom right-hand corner?

You will notice that the numbers 2 - 9 are used to generate the matrix and only one of these numbers is used twice (the 2).

Can you fill in the matrix (table square) below?

The numbers 2 -12 were used to generate it with, again, just one number used twice.

x						
	32			40		
					49	
			22			
		15				27
			24			
					42	

<https://nrich.maths.org/1070>

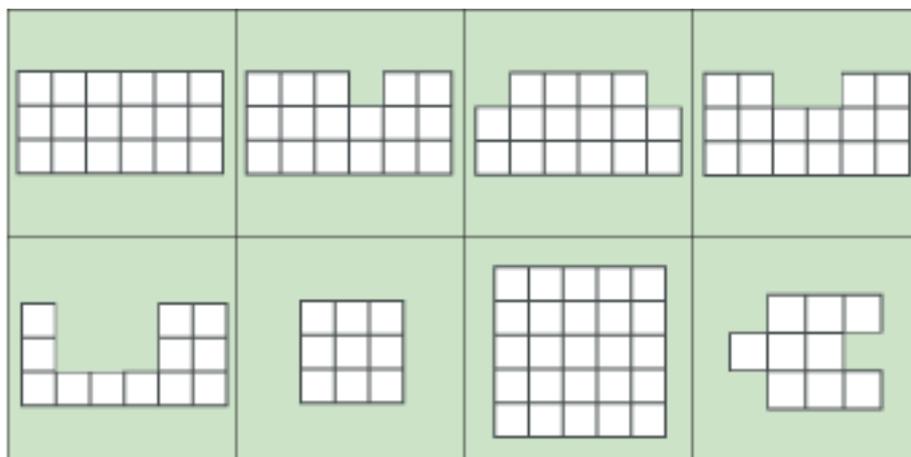
Week 4

Area and Perimeter



What is the area of each shape?
What is the perimeter of each one?

What about the shapes below?



You can print out [a set of shapes](#) and cut them into separate cards. [These cards](#) have the coloured background.

Challenge

Can you draw a shape in which the area is numerically equal to its perimeter?

Can you draw a shape in which the perimeter is numerically twice the area?

Can you draw a shape in which the area is numerically twice the perimeter?

<https://nrich.maths.org/7280>

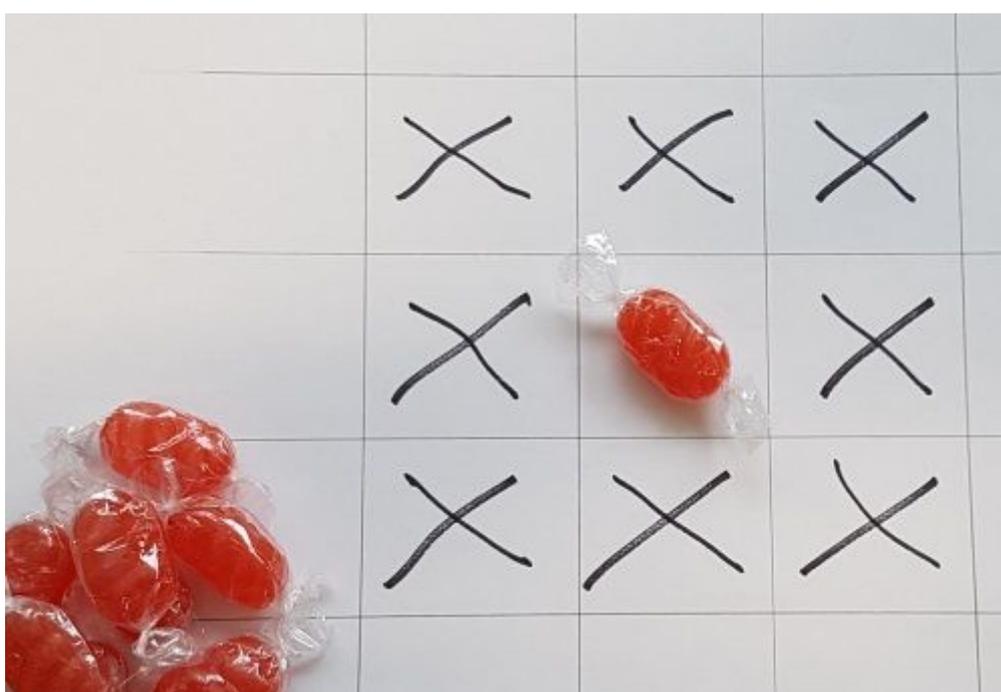
Week 5

Sweets in a Box

A sweet manufacturer has decided to design some gift boxes for a new kind of sweet.

Each box is to contain 36 sweets placed in lines in a single layer in a geometric shape without gaps or fillers.

How many different shaped boxes can you design?



Challenge

The sweets come in 4 colours, 9 of each colour.

Arrange the sweets so that no sweets of the same colour are adjacent to (that is 'next to') each other in any direction. In the picture below, none of the squares marked x can have a red sweet in them.

<https://nrich.maths.org/84>