Maths Challenge Activities Year 5 (Curriculum Link: Decimal Numbers)

(These have activities have been collated by your teachers from the nrich websites)

Challenge 1

Decimal Time

In France in 1793 decimal time was introduced, then abandoned only two years later.

Look at these pairs of times. The ones on the left are our time, and the clocks on the right show the corresponding French decimal time.

Can you decipher how French decimal time works?

15:43 6:54

12:00 5:00

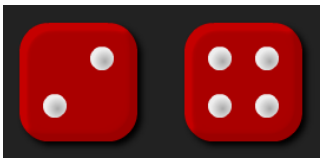
nrich.maths.org

Hints

What does the word "decimal" make you think of? You could try looking it up in a dictionary.
How many hours are there in one of our days? What time is it half way through our day?
So, what time is it half way through the French decimal day? What does this tell you about the total number of hours in the French decimal day?
Do both systems have the same number of minutes in an hour?

Challenge 2

Round the Dice Decimals 1



There are two dice, each of them with faces labelled from 1 to 6.
When the dice are rolled they can be combined in two different ways to make a number less than 10 with one decimal place.

For example, if I roll a 2 and a 3 I can combine them to make 2.3 or 3.2.

Now round each of these numbers to the nearest whole number: 2.3 rounds to 2 and 3.2 rounds to 3. Repeat for other rolls of the dice.

Do both of the numbers you make ever round to the same whole number?

Hints

Begin by rolling the dice and making the different decimal numbers. Then round each of them to the nearest whole number. Remember that sometimes you round up and sometimes you round down.

You could record your results in a table like this one:

Numbers rolled	1st decimal number	Rounds to	2nd decimal number	Rounds to
2 and 3	2.3	2	3.2	3
2 and 6	2.6	3	6.2	6

Challenge 3

Round the Dice Decimals 2

There are three dice, each of them with faces labelled from 1 to 6.
When the dice are rolled they can be combined in six different ways to make a number less than 10 with two decimal places.

For example, if I roll a 2, a 3 and a 6, I can combine them to make 2.36, 2.63, 3.26, 3.62, 6.23 or 6.32.

Now round each of these numbers to the nearest whole number:
2.36 rounds to 2, 2.63 rounds to 3, 3.26 rounds to 3, 3.62 rounds to 4, 6.23 rounds to 6 and 6.32 rounds to 6.

Repeat for other rolls of the dice.

Can each of the six numbers round to the same whole number?
Can each of the six numbers round to a different whole number?

Hints

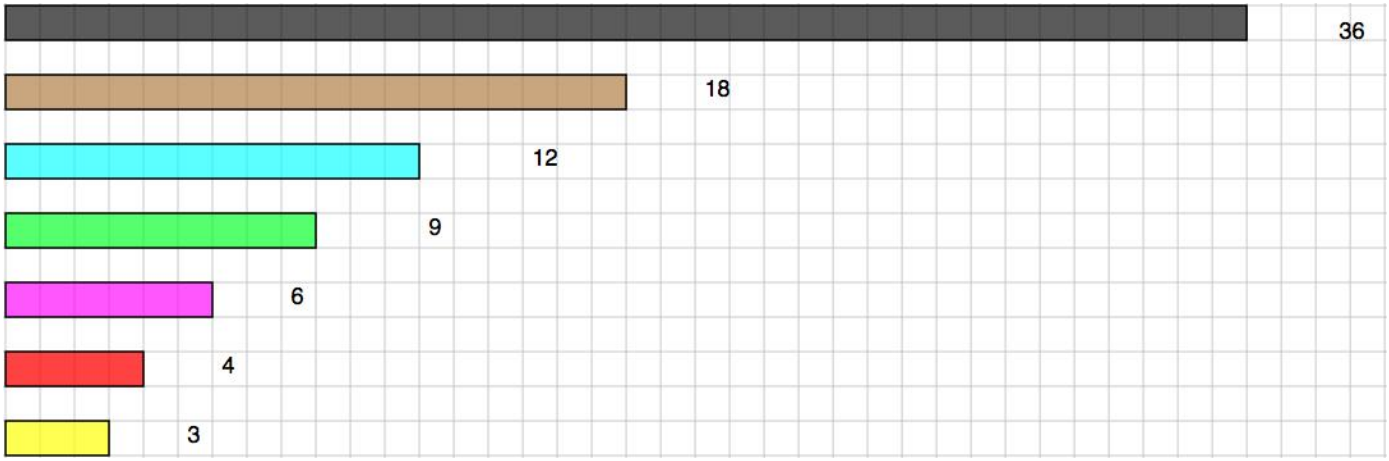
Begin by rolling the dice and making the different decimal numbers. Then round each of them to the nearest whole number. Remember that sometimes you round up and sometimes you round down.
You could record your results in a table like this one:

Numbers rolled	1st 3-digit number	Rounds to	2nd 3-digit number	Rounds to	3rd 3-digit number	Rounds to	4th 3-digit number	Rounds to	5th 3-digit number	Rounds to	6th 3-digit number	Rounds to
2, 3 and 6	2.36	2	2.63	3	3.26	3	3.62	4	6.23	6	6.32	6

Challenge 4

Fraction Lengths

Here are some lengths, which could be made out of connecting cubes or strips of coloured paper/card:



To start with, the **black** will be counted as ONE so that the **brown** one is 12, the **blue** one is 13, etc.

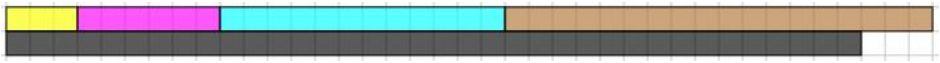
Using different combinations, put them together to equal the length of the **black**, which is 36 long.
For example, if you were to choose the **brown**, **blue** and **magenta** (pink) you could write them down as the 12, 13, 16

So we would have: 12+13+16=1

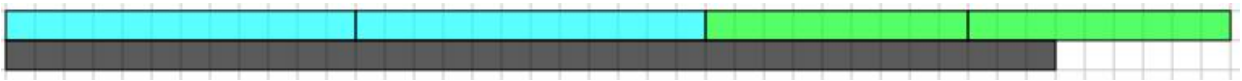
MOVING ON

Choose any four of the strips, except the **black** one, and put them together.
Now, compare them with the **black**.

Here are two examples to start you off. Have a go and find as many different fours as you can.



Using a 3, 6, 12 and an 18 makes 1112



Using two 12s and two 9s makes 116

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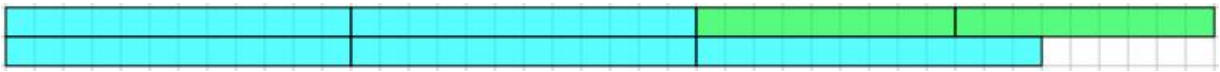
GOING EVEN FURTHER

Now the light blue strip is the ONE (1).
Use the same fours that you chose before but this time, compare them with the light blue strip instead of the **black**.

Here are the examples used above, but this time compared with a light blue:

Comparing these four to the light blue it makes 314



Comparing these four to the light blue it makes 312

Now you go ahead with the fours that you have chosen.

What can you say about the results you got when comparing your fours with **black** and comparing them with the light blue?

Hints

Why is what you've chosen true?
Can you think of a way of writing it down? Can it be written a different way?
What is the 'whole'?

Challenge 5

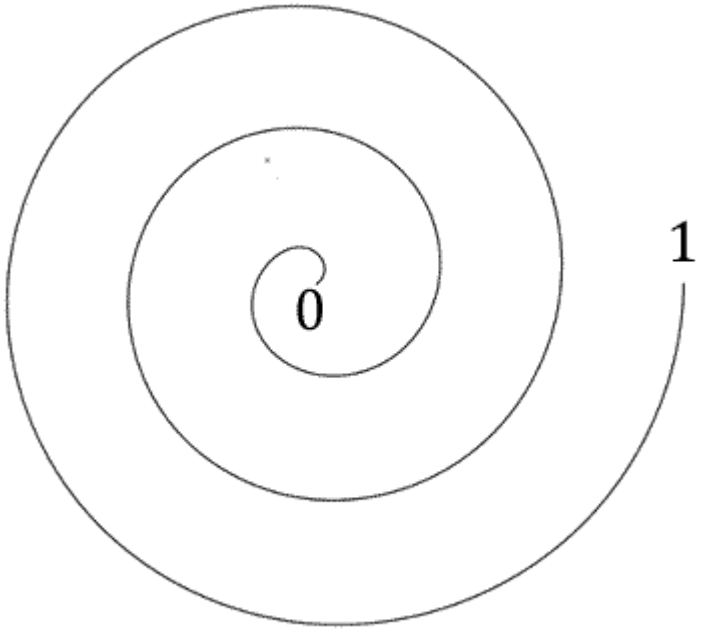
Spiralling Decimals

Have you noticed that some very long numbers are very big whilst other very long numbers are small? Can you think of an example of each?
Here's a game where you can test your skill at putting small numbers into the right order - it's not as easy as it sounds!

How to play

You need a partner, a copy of the game board (see below), and two different coloured pencils.
Decide who goes first.
Take turns to choose a number from the grid and mark it on the spiral. Make sure you know where 0 and where 1 is!
Keep taking turns until one of you has marked three numbers next to each other.

0.5	0.25	0.75	0.3
0.35	0.9	0.99	0.999
0.1	0.01	0.05	0.79
0.64	0.32	0.54	0.865

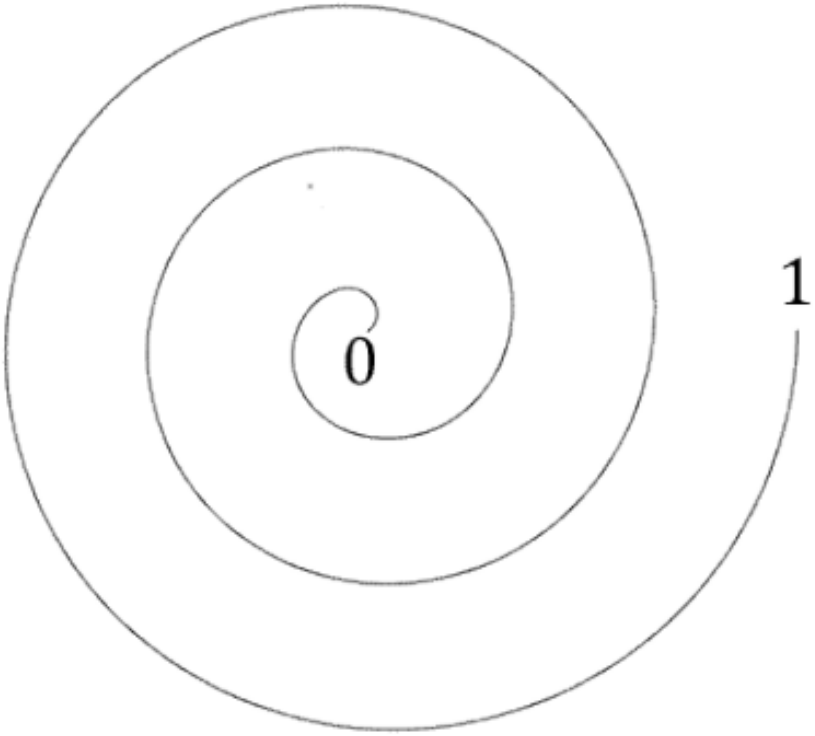


What next?

Can you work out a winning strategy?
Does it matter who goes first?
Does it matter which number you choose first?

Can you make up a different set of numbers which would make the game more challenging?
Perhaps you could have different start and end numbers for your spiral?
Send us your ideas so that we can share them with other children.

Spiralling Decimals



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Maths Challenge Solutions for Parents Year 5

These links will take you to the possible challenge solutions as outlined on the enrich website.

Challenge 1: https://nrich.maths.org/4818/solution

Challenge 2: N/A

Challenge 3: N/A

Challenge 4: https://nrich.maths.org/12935/solution

Challenge 5:N/A