Challenge 1

Here are all the numbers you can make with 5p and 7p coins up to 28p.

1	2	3	4	5	6	7
				x		x

8	9	10	11	12	13	14
		x		x		x

15	16	17	18	19	20	21
x		x		x	x	x

22	23	24	25	26	27	28
x		x	x	x	x	x

Notice we can't make 23p, but we can make a run of five numbers from 24p up to 28p. As we can do a run of five, this means that we can make all numbers because we can simply add multiples of 5 to each of these numbers.

So the Frobenius number for 5 and 7 is 23.

Challenge 2

If we had just 2p and 4p coins then we would really struggle! We couldn't make any odd numbers. We would also struggle with just 3p and 6p coins because we could only make multiples of 3.

In fact for us to be able to make any total after a given amount, the two numbers need to be coprime. This means that they don't share a factor.

Challenge 3

The **Frobenius number** for two coprime positive integers x and y is the largest number that **cannot** be expressed as a non negative integer combination of x and y. The formula is **xy-x-y**