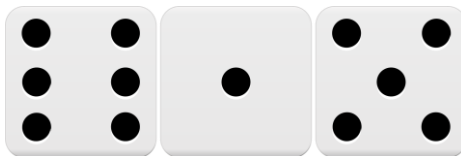Take a look at some ordinary dice.
What do you notice about the way the numbers are arranged?

Now look at these three dice in a row:

What do the numbers on the top add up to?

Can you use what you found out about the way the numbers are arranged to say what numbers are on the bottom of the dice? Were you correct?

What is the sum of the numbers on the bottoms of the dice?

Let's try that again with three different dice.

Can you work out the total?
Can you work out the numbers on the bottom and their total?

Try out some arrangements yourself. Each time record the sum of the numbers on the top and the sum of the numbers on the bottom.

Do you notice a relationship between the 'top sum' and the 'bottom sum'? Can you explain it?

I experimented with arrangements where the top sum is a multiple of three, and I found that in each case the bottom sum is also a multiple of three. Is it always true?

I try to arrange the dice so that the top and bottom sums are both multiples of four, but can't seem to be able to do it. Can you? Can you explain what you find out?

On the other hand, if I arrange **four** dice in a row it is easy to make the top and bottom sums both multiples of four. Can you arrange four dice so that the top and bottom sums are both multiples of three? Can you explain what you find out?