

# Domino sets solution by Shaunak

When you buy a set of 0-6 dominoes they often come in cardboard boxes - and those boxes sometimes don't last very long!

What if you were given lots of dominoes in a bag?

Before you started playing it might be a good idea to find out if you have a full set!

How would you go about it?

How could you be sure?

I think I would be sure that there are supposed to be 28 dominoes by counting the possible number of dominoes. I would go:

(0, 0)	(0, 1)	(0, 2)	(0, 3)	(0, 4)	(0, 5)	(0, 6)
(1, 1)	(1, 2)	(1, 3)	(1, 4)	(1, 5)	(1, 6)	
(2, 2)	(2, 3)	(2, 4)	(2, 5)	(2, 6)		
(3, 3)	(3, 4)	(3, 5)	(3, 6)			
(4, 4)	(4, 5)	(4, 6)				
(5, 5)	(5, 6)					
(6, 6)						

This has 28 sets, so I would be sure that there should be 28 dominoes.

I also have a formula to calculate the number of dominoes. This formula states that if there are 0 -  $n$  dominoes, then there will be  $(n + 1)(n + 2)/2$  dominoes in total. This is the triangular numbers formula, which has been modified so that it suits this problem.

What if someone gave you some 0-9 dominoes?

How many do you think there would be in a full set?

Using the above formula, I would predict a 0 - 9 set of dominoes would contain

$(10)(11)/2 = 55$  dominoes.

how I arranged my dominoes. This way of arranging gave me the idea of using the triangular numbers formula:

