

## Dotty triangle corners

*Children use trial and improvement to find different ways of making a given total by adding three numbers.*

## Skills practised:

- Adding three small numbers
- Recognising pairs of numbers that make 3, 4 and 5

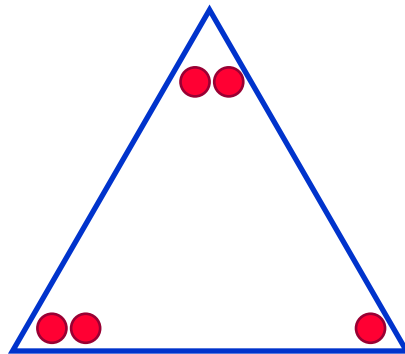
*Conjecture: We can find all the possible ways of making totals 3 to 7 using three amounts.*

### What to do:

*Children work in pairs.*

*Children will need copies of a largish triangle (see resources) blu-tacked™ to the table and some counters or small bricks.*

1. Ask children to lay the large triangle flat on the table.
2. They take 5 counters and arrange them on the triangle so that there is at least one counter in each corner, e.g.



3. Ask children to write an addition to match,  $2 + 2 + 1 = 5$ .
4. Next they use their five counters and try to arrange them in a different way on the triangle.
5. If they can, they write the addition to match.
6. Next they use four counters.  
How many ways can they find of arranging them on the triangle?
7. Ask them to try 3 counters and to write matching additions.
8. Now ask them to try 6 counters – how many ways can they find this time?  
Can they be sure that they have found them all?

**CHALLENGE:** Children try 7 counters. Are they positive that they have found all the different ways of arranging them?

Ask children to look at how many ways they found to arrange 3 counters, 4 counters, 5 counters, 6 counters and 7 counters. Can they predict how many ways there will be of arranging 8 counters on the triangle?

### Aims:

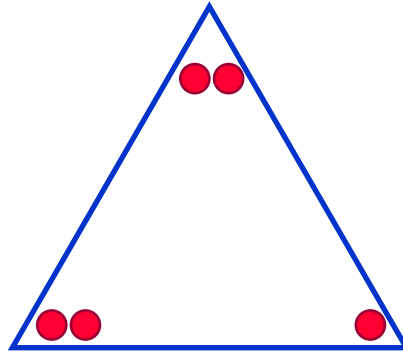
- To use trial and improvement to find different combinations
- To order a search for combinations
- To make predictions and test them out

### Minimum number of calculations expected

10

## Dotty triangle corners

1. Lay the large triangle flat on the table.
2. Take 5 counters and arrange them on the triangle so that there is at least one counter in each corner like this:



3. Write the addition to match.
4. Arrange the 5 counters in a different way on the triangle.
5. Write the addition to match.
6. Try with four counters.  
How many ways can you find to arrange them on the triangle?
7. Try with 3 counters and write the matching additions.
8. Finally, try with 6 counters – how many ways can you find this time?  
Can you be sure you have found them all?

	$2 + 2 + 1 = 5$

### Challenge

Try with 7 counters. Can you be sure you have found all the different ways of arranging them?

Looking at how many ways you found to arrange 3 counters, 4 counters, 5 counters, 6 counters and 7 counters. Can you predict how many ways there will be of arranging 8 counters on the triangle?

