



INVESTIGATION



Consecutive Products

$$4 \times 5 = 20$$

$$12 \times 14 = 168$$

MathSphere

Consecutive Products

Consecutive numbers are numbers that are next to each other in a sequence.

Eg. In the sequence 1, 2, 3, 4, 5, 6, 7, ... the numbers 5 and 6 are consecutive, so are 8, 9, 10.

In the sequence of odd numbers 1, 3, 5, 7, 9, 11, 13, ... the numbers 7 and 9 are consecutive, so are 125, 127 and 129.

Can you find two consecutive numbers in the sequence 1, 2, 3, 4, 5, 6, 7, ... that multiply together to give 30?

What about 72 ?

What about 40 ?

Which numbers can be made this way? Is there a pattern?

Things to try:

1. What happens if you only use odd numbers, such as 11×13 ?
2. What happens if you only use even numbers, such as 6×8
3. What happens if you multiply three consecutive numbers together?
4. Which multiplications of consecutive numbers give square numbers?

Answer Guide

When producing a sequence of numbers made by multiplying consecutive numbers, make sure the children do not miss out every other one.

Eg. In the sequence 1, 2, 3, 4, 5, 6, 7, 8, ... many children will multiply 1×2 , 3×4 , 5×6 etc and miss out 2×3 and 4×5 etc.

This series of multiplications gives the following set:
2, 6, 12, 20, 30, ... which is twice the triangle numbers.

Those children that can handle a little algebra may be encouraged to discover that the general term is $n(n+1)$. This leads naturally to the general term for the triangle numbers being $n(n+1)/2$.