# 2014 SM4 Week 6 Investigation

How many diagonals are there in a hexagon?

How many diagonals are there in a regular polygon with 13 sides?

There are 170 diagonals in a polygon. Determine how many sides are on the polygon.

The number of combinations of n objects taken r at a time "n choose r" is given by:

$$ {}_nC_r = \frac{n!}{(n-r)!\,r!} $$

Write an expression (using nCr) to count the number of diagonals in a polygon. Provide a short explanation.