

Cut out the statements and put them in order, to prove that the sum of the first  $n$  odd numbers is  $n^2$ .

$2n - 1, 2n - 3, 2n - 5, \dots, 1$	A
As you go along both lists, the corresponding terms in the two lists add up to $2n$	B
Write one list below the other so that the terms are aligned	C
$1, 3, 5, 7, \dots, 2n - 1$	D
Now list the first $n$ odd numbers in descending order	E
Therefore the sum of both lists is $2n \times n = 2n^2$	F
Adding together the second numbers from each list also gives $2n$	G
Start by listing the first $n$ odd numbers in ascending order	H
Therefore the sum of the first $n$ odd numbers in each list adds up to $n^2$	I
Adding together the first numbers from each list gives $2n$	J
In total there will be $n$ pairs that add up to $2n$	K