

Jackson's consecutive numbers

Jackson explores the answers you get when you add **consecutive numbers** together. He systematically records them like this;

For example: $1 + 2 = 3$, $2 + 3 = 5$, $3 + 4 = 7$, $4 + 5 = 9$, etc ...
He calls these the sum of two consecutive numbers.

Using his method, write down some of the sums of three consecutive numbers. One is done for you.

Write down some more. For example: $1 + 2 + 3 = 6$

He decides to find out whether 36 can be written as the sum of two, three, four or five consecutive numbers. He uses the following table to record his information. Put some more numbers into their correct columns.

Sum of 2 consecutive numbers	Sum of 3 consecutive numbers	Sum of 4 consecutive numbers	Sum of 5 consecutive numbers
3	6	10	15
5	9	14	20
7	12	18	25
9	15	22	30

Using the information from Jackson's table, write some generalisations that he could use to make a quick test to see whether 36 is the sum of two, three, four or five consecutive numbers.

Choose any number of your own less than 50. Check whether it is the sum of two, three, four or five consecutive numbers.

Extend Jackson's table to include sums of six and seven consecutive numbers.

Explore all the numbers less than 50 that **cannot** be written as sums of consecutive numbers.