

We can write 3 consecutive numbers as $x, x+1, x+2$.
Then, if we add up these three numbers we would get:
 $x + (x+1) + (x+2)$.

If we simplify this expression, we get:

$$3x + 3$$

The first term of the simplified expression ($3x$) can be seen to be a multiple of 3. To this term, we add another 3. This would again result in a number that is a multiple of 3. In this way, I can convince myself that the sum of any 3 consecutive numbers (integers) is a multiple of 3.

Similarly, for 5 consecutive numbers, we can them as $x, x+1, x+2, x+3, x+4$.

If we add them up, we would get:

$$x + (x+1) + (x+2) + (x+3) + (x+4)$$

If we simplify this expression, we get:

$$5x + 10.$$

This expression helps prove that the sum of 5 consecutive numbers is a multiple of 5.

Further for 7 consecutive numbers, the expression can be written as:

$$7x + 21 = 7(x+3)$$

This shows that the sum of 7 consecutive numbers is a multiple of 7.