2. True or false: The sum of any five consecutive integers is divisible by 5.

Prove by induction.

Suppose the first of the five consecutive numbers are a_n, then the sum is

$S_n = a_n + (a_n+1) + (a_n+2) + (a_n+3) + (a_n+5) = 5a_n + 10$.

consider the initial case, where $a_0 = 0$

$S_0 = 10$, which is divisible by 5.

Next, Suppose $S_n = 5a_n + 10$ is true,

then we have $S_{n+1} = S_n - a_n + (a_n+5)$

$= S_n + 5$

Since both S_n and 5 are divisible by 5.

S_{n+1} is also divisible by 5, thus the above statements holds.