Submission for the Test Flight Project for Introduction to Mathematical Thinking.

Problem 2:

Proposition: The sum of any five consecutive integers is divisible by 5.

Proof: Let $n \in \mathbb{Z}$. Then we have

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

Grouping the ns gives us

$$5n + 1 + 2 + 3 + 4$$

or

$$5n + 10$$

rewritten as

$$5(n+2)$$

we see that it is a multiple of 5 which proves our proposition. □