I.7. Prove that the sum of any two odd integers is even.

Let the two odd integers be **m** and **n**.

From the definition of odd numbers, we have:

$$m = 2k + 1\,, where\ k \in \mathbb{Z}$$

and

$$n = 2j + 1\,, where\ j \in \mathbb{Z}$$

Then:

$$m + n = (2k + 1) + (2j + 1) = 2k + 2j + 2 = 2(k + j + 1)$$

Let: $k + j + 1 = x$

Since $k \in \mathbb{Z}$ and $j \in \mathbb{Z}$, then $x \in \mathbb{Z}$

So: $m + n = 2x \rightarrow even$