

Inside \mathbb{N} then if $n \in \mathbb{N}$

$$\implies n = p_1 \cdots p_k$$

for primes p_1, \dots, p_k in essentially
a unique way.

Inside \mathbb{Z} life is not quite
as good as if $\mathbb{Z} \cong \mathbb{Z}$ and

$$\boxed{z = p_1 \cdots p_k = q_1 \cdots q_l} \quad p_i, q_i \text{ all prime}$$

$\implies k=l$ and after renumbering if
necessary, p_i and q_i are associates