



PRIME NUMBERS

Definition

A number $n \in \mathbf{N}$, $n > 1$, is *composite* if there exists $m, k \in \mathbf{N}$ (not necessarily distinct) satisfying $m, k < n$ and

$$n = m \cdot k$$

A number which is not composite is called *prime*. Throughout this sheet, “number” is an element of \mathbf{N} . In other words, we exclude the natural number 0.

Examples

The first few primes. Since the only number smaller than 2 is 1 and $2 \neq 1 \cdot 1$, 2 is the first and smallest prime. Likewise, $3 \neq 1 \cdot 2$, $3 \neq 1 \cdot 1$, $3 \neq 2 \cdot 2$. So 3 is the second smallest prime.

The first composite. Now consider 4. Since $4 = 2 \cdot 2$ and $2 \leq 4$, 4 is the smallest composite number.

