\[ M = \prod_{i} \alpha_i \]
\[ N = \prod_{i} \beta_i \]

\[ \gcd(M, N) = \prod_{i} \min(\alpha_i, \beta_i) \]
\[ \text{lcm}(M, N) = \prod_{i} \max(\alpha_i, \beta_i) \]

Use this to prove
\[ \text{lcm} = \frac{MN}{\gcd} \]
Modular Arithmetic