Questions

1. List all the factors of $2^2 \cdot 3^4$.

2. Compute the GCD of 220364 and 75116 using Euclid’s algorithm. Show your work!

3. Show that if $m$ and $n$ are relatively prime integers, then their product is a perfect square if and only if both $m$ and $n$ are perfect squares.
   BONUS: Find all $k$ for which $1 + 2 + 3 + \ldots + k$ is a perfect square.

4. Show that for all natural numbers $n$, the number of distinct primes that divide $n$ is at most $\log_2 n$. 