cse547/ams547 ONE QUESTION Quiz 4 Spring 2017
(25 points)

NAME **ID:** **ams/cs**

QUESTION

1. Prove the **Main Factorization Theorem**: Every composite number can be **factored uniquely** into prime factors.

2. Explain its **General Form** below and give few examples of prime numbers and their representation.

$$n = \prod_p p^{\alpha_p} \quad \text{for} \quad p \in P, \;\; \alpha_p \geq 0$$

and this representation is unique.

3. Prove that for any $a.b, k \in Z$

$$gcd(ka, kb) = k \cdot gcd(a, b).$$

Solution space