Çankaya University
Department of Computer Engineering

CENG 277 - Discrete Structures

**Name-Surname:** 23.10.2014

**ID Number:**

# CLASSWORK 3

Let $m, n$ be positive integers such that their greatest common divisor is 6 and least common multiple is 378. Find all possible values of $m$ and $n$.

**Answer:**

$$\gcd(m,n) = 6, \qquad \text{lcm}(m,n) = 378$$

$$m = 6p, \quad n = 6q, \quad p, q \in \mathbb{Z}$$

$$378 = 6pq \quad \Rightarrow \quad pq = 63 = 3 \cdot 3 \cdot 7$$

$p$ and $q$ are relatively prime.

$$p = 1, \quad q = 63 \quad \Rightarrow \quad m = 6, \quad n = 378$$

$$p = 7, \quad q = 9 \quad \Rightarrow \quad m = 42, \quad n = 54$$

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Let $m, n$ be positive integers such that their greatest common divisor is 8 and least common multiple is 840. Find all possible values of $m$ and $n$.

**Answer:**

$\gcd(m,n) = 8, \qquad \text{lcm}(m,n) = 840$

$m = 8r, \quad n = 8s, \quad r, s \in \mathbb{Z}$

$840 = 8rs \quad \Rightarrow \quad rs = 105 = 3 \cdot 5 \cdot 7$

$r = 1, \quad s = 105 \quad \Rightarrow \quad m = 8, \quad n = 840$

$r = 3, \quad s = 35 \quad \Rightarrow \quad m = 24, \quad n = 280$

$r = 5, \quad s = 21 \quad \Rightarrow \quad m = 40, \quad n = 168$

$r = 7, \quad s = 15 \quad \Rightarrow \quad m = 56, \quad n = 120$