Problem 1
Find the GCD(90, 72, 36) using the intersection of sets method.

Problem 2
Find the LCM(22, 20) using the intersection of sets method.

Problem 3
Given the prime factorizations below, find GCD(34650, 15288) and LCM(34650, 15288).
\[ 15288 = 2^3 \cdot 3 \cdot 7^2 \cdot 13 \]
\[ 34650 = 2 \cdot 3^2 \cdot 5^2 \cdot 7 \cdot 11 \]

Problem 4
Find GCD(74613, 19380) using the Euclidean algorithm.

Problem 5
Find the LCM(308, 126, 8) using the division by primes method.
Problem 6
Find GCD(11!, 10!) and LCM(11!, 10!).

Problem 7
If GCD(a, 98) = 14 and LCM(a, 98) = 882, find a where a is a natural number.

Problem 8a - 8c
Assume a and b are natural numbers.

a) If a and b are relatively prime, find LCM(a, b).

b) Find GCD(a, a) and LCM(a, a).

c) Find GCD(a^2, a) and LCM(a^2, a).

Problem 8d – 8e
Assume a and b are natural numbers.

d) If a|b GCD(a, b) and LCM(a, b).

e) If a and b are two distinct prime numbers, find GCD(a, b) and LCM(a, b).

Problem 9
A karate instructor wanted to form small groups from 24 students on Monday and 42 students on Tuesday, with the same number in each of the small groups. What is the largest small-group size possible?

Problem 10
A city siren is to go off every 24 hours. A civil defense alarm is tested every 36 hours. If the siren and alarm sound at the same time, after how many hours will they sound at the same time again?