1. Give gcd of
(a) 420 and 600
(b) $12^{2021}$ and $6^{1000}$
(c) $10^{10} - 1$ and $10^{10} + 1$

(a) 60 (b) $6^{1000}$ (c) 1

2. Consider $\mathbb{Z}_{13}$.
(a) In multiplication table, how many rows have all elements ?
(b) What is the product of 3 and 7 ?
(c) What is the sum of 8 and 7 ?
(d) What is the inverse of 2 ?

(a) 12 (b) 8 (c) 2 (d) 7

3. (a) Calculate $3^{20} \mod 7$ using dexpo algorithm.
(b) Check your answer using Fermat’s Little Theorem.

Dexpo for $3^a \mod 7$: 0 → 1, 1 → 3, 2 → 2, 4 → 4, 5 → 5, 10 → 4, 20 → 2
FLT says $3^6 \mod 7 = 1$. So answer is $3^{20 \mod 6} \mod 7 = 9 \mod 7 = 2$

4. Describe the steps in using the original RSA cryptosystem.