Reading Questions 4

page 26: Theorem 1.50 and its proof

1. If $1, 2, 3, 4 \in Z_7$ then $1 + 2 + 3 + 4 = 1 + 5 + 4$.
2. The division algorithm is an algorithm that uses division.
3. Do you have any comments or questions about the proof?

Section 1.3 Integers mod n and Elementary Properties of Integers (Part 2)

$(Z_n, +)$ is a group

P 1. Write the prime factorization of 630

P 2. Let $x, y, z \in Z_n$ such that $y + z = nq_1 + r_1$ and $r_1 + x = nq_2 + r_2$ where $0 \leq r_1, r_2 < n$. Prove $x + (y + z) = r_2$ in Z_n.

$(Z_n^\times, \cdot)$ is a group

P 3. List the elements of $Z_6^\times$ and $Z_7^\times$.

P 4. List the elements of $Z_7^\times$ and their inverses.