The Euclidean Algorithm

Historical Remarks: 1) **Algorithm** = description of a (finite) procedure (usually: suitable for programming). The word **algorithm** was derived from the name of the 9th century mathematician Al-Khwarizmi.

2) **Euclid** lived in Alexandria (Egypt) around 300 B.C. His name for this algorithm was “reciprocal subtraction”.

3) The algorithm existed **long before** Euclid.

Description if the algorithm – taken from a Chinese collection of problems written between 206 B.C. – 221 A.D. (Han period); these were based on a much earlier collection. (All books in China were burned in 213 B.C.).

Step 1: Lay out \( m \) and \( n \) on the counting board.

Step 2: Diminish the numbers by alternate subtraction until you get equal numbers.

Step 3: Divide the numerator and denominator of \( \frac{m}{n} \) by these equal numbers.

Result: the fraction is in **lowest terms**!