

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 of 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!**