② Elementary number theory

__Def. 2.1__ Let a and b be integers with $b \neq 0$. We say that b divides a, or that a is divisible by b, if there is an integer c such that
$$a = c \cdot b.$$
We write $b|a$ to indicate that b divides a.

__Ex.__ $847 | 485331$ since $485331 = 573 \cdot 847$

__Def. 2.2__ A common divisor of two integers a and b is a positive integer d that divides both of them. The greatest common divisor of a and b is the largest positive integer such that $d|a$ and $d|b$. We ~~der~~ write $\gcd(a, b) = d$. The $\gcd(0, 0)$ is not defined.

__Ex.__ $\gcd(12, 18) = 6$ since $6|12$, $6|18$ and ~~there is~~ no larger number with this property. Similarly,
$$\gcd(748, 2024) = 44.$$

__How to find the gcd?__

~~Divisors of~~ We use division with remainder to describe the Euclidean Algorithm to determine the gcd of two integers.