

The greatest common divisor of two numbers  $m, n$ , denoted

$\gcd(m, n)$ , is the largest integer

that divides both  $m$  and  $n$ .

$$\text{eg } \gcd(16, 12) = 4$$

The least common multiple of two numbers  $m$  and  $n$  is the smallest positive integer that is a multiple of both  $m$  and  $n$ , denoted  $\text{lcm}(m, n)$ .

$$\text{eg } \text{lcm}(16, 12) = 48$$

Euclidean Algorithm for finding

$\text{gcd}(m, n)$ :

eg find  $\text{gcd}(288, 51)$ .

Idea just keep dividing

until you get to 0.

The gcd is on the 2<sup>nd</sup> line from bottom

"Just keep dividing"

$$288 = 5 \cdot 51 + 33$$



$$51 = 1 \cdot 33 + 18$$



$$33 = 1 \cdot 18 + 15$$



$$18 = 1 \cdot 15 + 3$$



$$15 = 5 \cdot 3 + \underline{0}$$

done

3 is gcd  
of 288, 51.

one line  
up