# comp 9020 22t2 quiz1 Examination point

## 1

Let $m, k, n \in \mathbb{Z}$ such that $k > 0$ and $m \geq n$. The number of multiples of $k$ between $m$ and $n$ (inclusive) is

$$\lfloor \tfrac{m}{k} \rfloor - \lfloor \tfrac{n-1}{k} \rfloor$$

## 2

$0|n$ is false except when $n = 0$.
$n|0$ is always true.
$0|0$ is true.

## 3

$gcd(m, n)$ and $lcm(m, n)$ are always taken as **non negative integers**, even if $m$ or $n$ is negative.

$gcd(m, n) \cdot lcm(m, n) = |m| \cdot |n|$

$gcd(m, n) = gcd(m, m - kn)$ (Euclid gcd Algorithm)

## 4

$m =_{(n)} p$ is more commonly written as $m \equiv p \bmod (n)$

if $a \equiv b \bmod (n)$ and $a \equiv b \bmod (m)$, then $a \equiv b \bmod (mn)$ if and only if $m, n$ are coprime.