Divisibility, primes, and greatest common divisors

The goal of this chapter is to review basic facts about divisibility, get comfortable with the new notation, and solve some basic linear equations.

We will also use this material as an opportunity to get used to the course.

Definition (a divides b)**.** Let $a, b \in \mathbb{Z}$. The a *divides* b, denoted $a \mid b$, if there exists an integer c such that $b = ac$. If $a \mid b$, then a is said to be a *divisor* or *factor of* b. The notation $a \nmid b$ means a does not divide b.

Note that 0 is not a divisor of any integer other than itself, since $b = 0c$ implies $a = 0$. Also all integers are divisors of 0, as weird as that sounds at first. This is because for any $a \in \mathbb{Z}$, $0 = a0$.

Learning outcomes:
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