Congruences

Congruence

Definition: Let n be a natural number and let a and b be integers. We say that a and b are **congruent** modulo n if $n|(a-b)$. We write this as $a \equiv b \pmod{n}$.

Examples:

Some basic properties of congruences

Proposition: Let n be a natural number and let a, b, and c be integers. Congruence has the following properties:

- $a \equiv a \pmod{n}$.
- If $a \equiv b \pmod{n}$ then $b \equiv a \pmod{n}$.
- If $a \equiv b \pmod{n}$ and $b \equiv c \pmod{n}$ then $a \equiv c \pmod{n}$. (Problem 5, B19)

More properties