Intro to Discrete Structures
Lecture 12

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Definition 1: If $a, b \in \mathbb{Z}$ with $a \neq 0$, we say that a **divides** b if there exists $c \in \mathbb{Z}$ such that $b = ac$.

When a divides b we say that a is a **factor** of b and that b is a multiple of a.

$a \nmid b$

The notation $a \mid b$ denotes that a divides b. We write $a \nmid b$ if a does not divide b.

$a \mid b$ if and only if $\exists c\,(ac = b)$

$2 \nmid 7$ $\quad$ $2 \mid 10$

Integers Divisible by d

Example 2: Let n and d be positive integers. How many positive integers not exceeding n are divisible by d?