

**Definition:** When  $a$  and  $b$  are integers and  $a$  is nonzero,  $a$  **divides**  $b$  means there is an integer  $c$  such that  $b = ac$ . Symbolically,  $F(a, b) =$  \_\_\_\_\_ and is a predicate over the domain \_\_\_\_\_. Other (synonymous) ways to say that  $F(a, b)$  is true:

$a$  is a **factor** of  $b$        $a$  is a **divisor** of  $b$        $b$  is a **multiple** of  $a$        $a|b$

When  $a$  is a positive integer and  $b$  is any integer,  $a|b$  exactly when  $b \bmod a = 0$ . When  $a$  is a positive integer and  $b$  is any integer,  $a|b$  exactly  $b = a \cdot (b \operatorname{div} a)$ .