





commas



***rational***s ( $\mathbb{Q}$ )

***integers*** ( $\mathbb{Z}$ )

**whole**



***irrational***



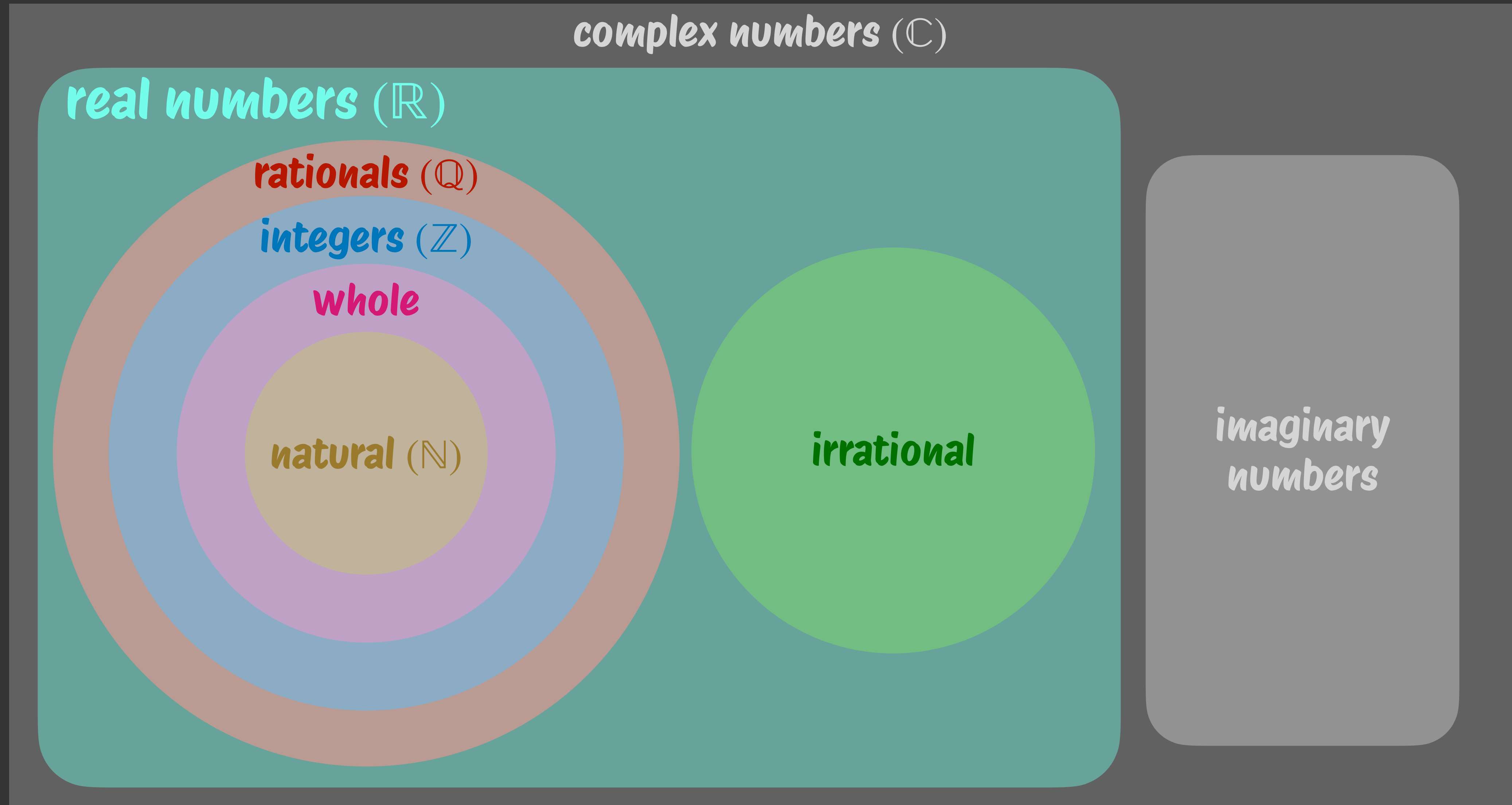
***natural*** ( $\mathbb{N}$ )



complex numbers ( $\mathbb{C}$ )

N C Z C Q C R C C

# common sets



$$\mathbb{N} \subset \mathbb{Z} \subset \mathbb{Q} \subset \mathbb{R} \subset \mathbb{C}$$

## basic operators

- addition  $+$
- subtraction  $-$
- multiplication  $\times$
- division  $\div$
- exponentiation  $x^a$
- $n$ th root  $\sqrt[n]{x}$
- factorial  $!$
- sum  $\sum_i x_i$
- product  $\prod_i x_i$

## set operators

- difference  $A \setminus B$
- complement  $A'$  or  $A^c$  or  $\bar{A}$  or  $\neg A$
- intersection  $A \cap B$
- union  $A \cup B$
- mutually exclusive  $A \cup B = \emptyset$
- Cartesian product.  
 $A \times B = \{(a, b) \mid a \in A, b \in B\}$
- symmetric difference  
 $A \oplus B = (A - B) \cup (B - A)$
- partition:  
collection of subsets whose union forms the set