

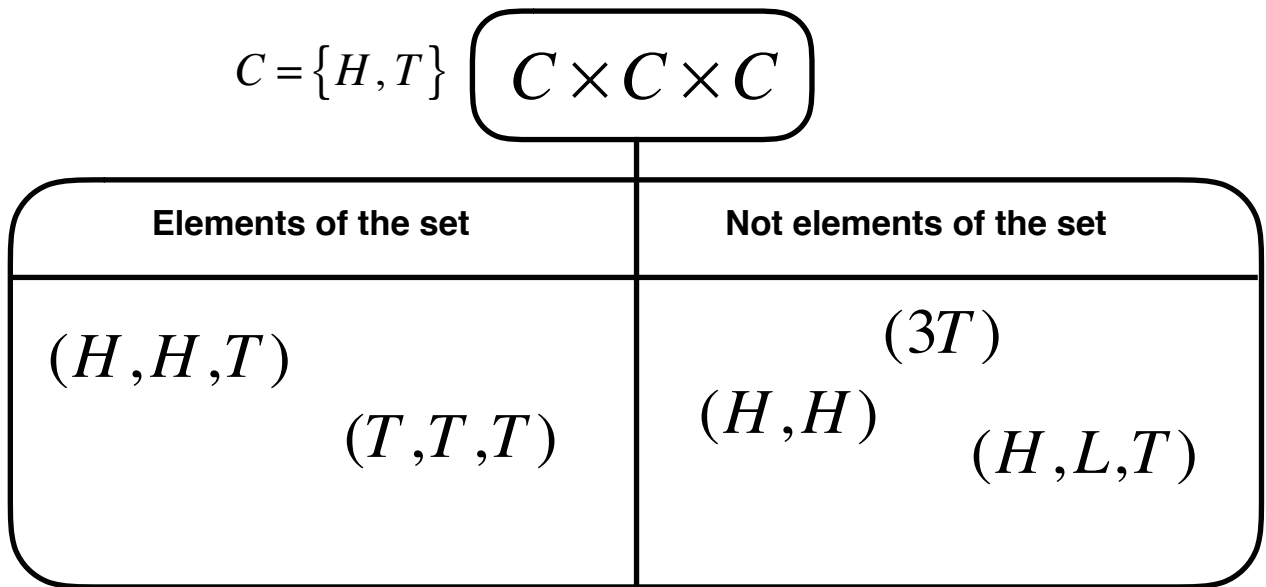
Intro to Proofs

Cartesian Product Intro Activity

- Observe the following “elements of” and “non-elements of” in the following three examples, and figure out the meaning of the operation \times .
- For each of the three examples, add at least two more examples in “elements of” and one in “non-element of”. Try to be creative.

$\mathbb{R} \times \mathbb{N}$	
Elements of the set	Not elements of the set
$(2, 8)$ $(\frac{5}{3}, 1)$ $(\pi, 5)$	23 $\mathbb{R} \times \mathbb{N}$ $(5, \pi)$

$A \times B$	
Elements of the set	Not elements of the set
$A = \{(1, 2), (2, 4), (3, 6)\}$ $B = \{(1, 2), (3, 6), (5, 10)\}$ $((1, 2), (5, 10))$ $((3, 6), (3, 6))$	$((5, 10), (2, 4))$ $(4, 8)$ $((1, 8), (1, 2))$ $((1, 2), (2, 4), (5, 10))$



$X \times Y$ is called the Cartesian product of X and Y .

Come up with an explanation/definition of the Cartesian Product. Be as thorough and precise as you can.

Explanation/definition of the Cartesian product: _____

Bonus question :-)

What is the total number of elements in each of the three Cartesian products presented?

- In $\mathbb{R} \times \mathbb{N}$, the number of elements is _____.
- In $A \times B$, the number of elements is _____.
- In $C \times C \times C$, the number of elements is _____.