

## 1.17: Cartesian product

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The **Cartesian product** is a direct product of sets.

The Cartesian product of two sets  $X$  and  $Y$ , denoted  $X \times Y$ , is the set of all possible ordered pairs whose first component is a member of  $X$  and whose second component is a member of  $Y$ :

$$X \times Y = \{(x, y) | x \in X \text{ and } y \in Y\}.$$

A Cartesian product of two finite sets can be represented by a table, with one set as the rows and the other as the columns, and forming the ordered pairs, the cells of the table, by choosing the element of the set from the row and the column.

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