

Ratings encoding

In the table below, each row represents a user’s ratings of movies: ✓ (check) indicates the person liked the movie, ✕ (x) that they didn’t, and • (dot) that they didn’t rate it one way or another (neutral rating or didn’t watch).

| Person | Fyre | Frozen II | Picard | Ratings written as a 3-tuple |
|--------|------|-----------|--------|------------------------------|
| P_1 | ✕ | • | ✓ | |
| P_2 | ✓ | ✓ | ✕ | |
| P_3 | ✓ | ✓ | ✓ | |
| P_4 | • | ✕ | ✓ | |

Defining sets

To define a set using **roster method**, explicitly list its elements. That is, start with $\{$ then list elements of the set separated by commas and close with $\}$.

To define a set using **set builder definition**, either form “The set of all x from the universe U such that x is ...” by writing

$$\{x \in U \mid \dots x \dots\}$$

or form “the collection of all outputs of some operation when the input ranges over the universe U ” by writing

$$\{\dots x \dots \mid x \in U\}$$

We use the symbol \in as “is an element of” to indicate membership in a set.

Example sets: For each of the following, identify whether it’s defined using the roster method or set builder notation.

$$\{-1, 1\}$$

$$\{0, 0\}$$

$$\{-1, 0, 1\}$$

$$\{(x, x, x) \mid x \in \{-1, 0, 1\}\}$$

$$\emptyset$$

$$\mathbb{N} = \{x \in \mathbb{Z} \mid x \geq 0\}$$

$$\mathbb{Z}^+ = \{x \in \mathbb{Z} \mid x > 0\}$$

$$\{\mathbf{A}, \mathbf{C}, \mathbf{U}, \mathbf{G}\}$$

$$\{\mathbf{AUG}, \mathbf{UAG}, \mathbf{UGA}, \mathbf{UAA}\}$$