Example 5: Determine whether each statement is true or false:

a. $8 \in \{1, 2, 3, \ldots, 10\}$

b. $r \notin \{a, b, c, z\}$

c. $\{\text{Monday}\} \in \{x \mid x \text{ is a day of the week}\}$.

Example 6: Express each of the following sets using the roster method:

a. Set A is the set of natural numbers less than or equal to 3.

b. Set B is the set of natural numbers greater than 14.

c. $O = \{x \mid x \in \mathbb{I} \text{ and } x \text{ is odd}\}$

d. $\{x \mid x \in \mathbb{U} \text{ and } x < 200\}$

e. $\{x \mid x \in \mathbb{I} \text{ and } 50 < x \leq 200\}$

The ***cardinal number*** of a set A, n(A), is the number of distinct elements in set A.

- Repeating elements in a set neither adds new elements to the set nor changes its cardinality.

Example 7: Find the cardinal number of each of the following sets:

a. $A = \{6, 10, 14, 15, 16\}$

b. $B = \{872\}$

c. $C = \{9, 10, 11, \ldots, 15, 16\}$

d. $D = \{\ \}$