Name _____ **Cardinality and Power Set**

DEFINITION

The **cardinality** of a (finite) set is the number of elements in the set. For example, the cardinality of the set $\{-1, 0, 1, 2, \text{apple}, \heartsuit\}$ is SIX. There are six different "things" listed in the set.

Write down the cardinality of each of the following finite sets in the corresponding box.

1. $\{-1, 0, 1, 2\}$

   [ ]

2. $\{\heartsuit, \clubsuit, \spadesuit, \diamondsuit\}$

   [ ]

3. { one, two, four, six, seven, nine, ten, eleven}

   [ ]

4. { {one, two, seven, ten, eleven}, four, six, nine}

   [ ]

5. { $\{-1, 0, 1, 2\}$, {apple, orange, grape }, $\clubsuit, \spadesuit$}

   [ ]

DEFINITION

The **power set** of a set is the set of *all* subsets of a set. For example, the power set of the set $\{1, 2\}$ is$\{\{\}, \{1\}, \{2\}, \{1, 2\}\}$. The **empty set** $\{\}$ is the set with cardinality zero. The empty set is a subset of every set.

Write down the power set of $\{1, 2, 3\}$

Write down the cardinality of the power set of $\{1, 2, 3\}$