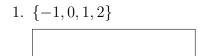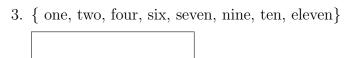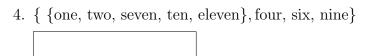Name _____ **Cardinality and Power Set**

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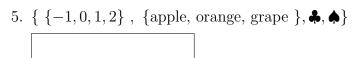
Write down the cardinality of each of the following finite sets in the corresponding box.

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 }, $\clubsuit, \spadesuit\}$

   

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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 $\{1, 2, 3\}$