Weekly Practice 5 key

1. (a) $\{1, 1/2, 1/3, 1/4, 2, 2/3, 3, 3/2, 3/4\}$; Cardinality = 9
   (b) $\{1, 3\}$; Cardinality = 2
   (c) $\left\{\frac{1}{1}, \frac{1}{4}, \frac{1}{9}, \frac{1}{16}, \dots\right\}$; Cardinality = infinite

2. These are some sample answers. Other correct ones are possible.
   (a) $\{n \in \mathbb{N} : 1 \leq n \leq 4\}$
   (b) $\{n/3 : n = 0, 1, 2, 3\}$
   (c) $\{2n : n \in \mathbb{N}\}$

3. (a) First note that $C' = U \setminus C = \{b, d, f, g, h, i, j, k, l\}$. Therefore $B \cup C' = U$. Therefore the statement is **True** because $B \cup C' = U$ and so A is automatically a subset.
   (b) $A \cap (B \cup C') = A \cap U = A$
   (c) Note first that $B \setminus A = \{g, i\}$. Therefore $C \setminus (B \setminus A) = C \setminus \{g, i\} = C$.
   (d) We have $C \cap B = B$. Therefore the statement is **true** because A is not a subset of B since $d \in A$ but $d \notin B$.