Math 112 - Quiz 2

August 31, 2017

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary. YOU MUST WORK INDIVIDUALLY.

1. (1 point) Write the set in roster notation: $\{x \mid x \in \mathbb{N} \text{ and } x \leq 7\}$.

$\{1, 2, 3, 4, 5, 6, 7\}$

2. (1 point) Write the set $\{10, 11, 12, 13, 14, 15\}$ in set-builder notation.

$\{x \mid x \in \mathbb{N} \text{ AND } 10 \leq x \leq 15\}$

3. (2 points) List all subsets of the set $\{a, b, c\}$.

$\emptyset$, $\{a\}$, $\{b\}$, $\{c\}$,
$\{a, b\}$, $\{a, c\}$, $\{b, c\}$, $\{a, b, c\}$

8 OF THEM!

4. (2 points) Give an example of a single set B that satisfies all three of the following:

$B \subseteq \mathbb{N}$, $B \cong \{x, y, z\}$, $13 \in B$

$B = \{1, 2, 13\}$

→ 3-ELEMENT SET OF NATURAL #'S CONTAINING 13.

5. (4 points) Suppose U is the set $U = \{1, 2, 3, 4, 5, 6, 7\}$, and let $A = \{2, 4, 6\}$.

(a) True or False? $U \subseteq A$

FALSE, BUT $A \subseteq U$

(b) True or False? $\emptyset \subseteq A$

TRUE, $\emptyset$ IS A SUBSET OF EVERY SET.

(c) Give an example of a set that is equivalent to A, but not equal to A.

$\{1, 2, 3\}$

(d) Explain why there is not a one-to-one correspondence between A and U.

THEY ARE FINITE SETS, AND U HAS MORE ELEMENTS.