

Math 112 - Quiz 2

January 23, 2019

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (2 points) List all of the subsets of $\{1, 3, 5\}$. THERE ARE $2^3 = 8$ OF THEM.

$\emptyset, \{1\}, \{3\}, \{5\}, \{1, 3\}, \{1, 5\}, \{3, 5\}, \{1, 3, 5\}$

2. (1 point) Let A be the set of letters of the word *MISSISSIPPI*. What is the only subset of A that is NOT a proper subset?

A ITSELF, $\{M, I, S, P\}$.

EVERY OTHER SUBSET IS PROPER.

3. (1 point) Suppose that A is a set with $n(A) = 10$. How many subsets does A have? Do not attempt to list them.

$$2^{10} = 1024 \text{ SUBSETS}$$

4. (1 points) Explain why $\{0, 1, 2, 3, 4\}$ is NOT a subset of \mathbb{N} .

↑
0 IS NOT AN ELEMENT OF \mathbb{N} .

Turn over.

5. (5 points) In this problem, the universal set is the set of natural numbers, \mathbb{N} .

Also, let $A = \{x | x \in \mathbb{N} \text{ and } -3 < x < 4\}$,

$B = \{x | x \in \mathbb{N} \text{ and } x > 7\}$, and

$C = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$.

$$A = \{1, 2, 3\}, \quad B = \{8, 9, 10, 11, \dots\},$$

$$C = \{1, 2, 3, \dots, 10\}$$

(a) Write A in roster notation.

$$A = \{1, 2, 3\}$$

(b) Determine B' .

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

(c) Determine $A \cup C$.

$$A \cup C = C = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$$

(d) Determine $B \cap C$.

$$B \cap C = \{8, 9, 10\}$$

(e) Determine $A \cap \emptyset$.

$$A \cap \emptyset = \emptyset$$