

(20 pts) NAME (printed neatly): _____

Quiz Grade: _____

1. 1. (10 pts) Circle all true statements.

a. If $C = \{-2, -1, 0, 1, 2, 3\}$, then $\{-1, 3\} \in A$.

b. If $A \subseteq B$ and $B \subseteq A$ for any two sets A and B , then $A = B$. TRUE

c. If $A \cap B = \emptyset$ for any two sets A and B , then $A \cup B = U$, where U is the universal set.

d. $(A \cup B)^C = A^C \cup B^C$

e. None of these

2. Suppose that the universal set $U = \{0, 5, 7, 10, 12, 15, 17, 20, 23\}$, $F = \{x \mid x \text{ is an element in } U \text{ that is evenly divisible by } 5\}$, $A = \{5, 7, 12, 20, 23\}$ and $B = \{0, 10, 12, 17\}$.

a. (15 pts) $A^C \cap F = \{0, 10, 15\}$

b. (15 pts)

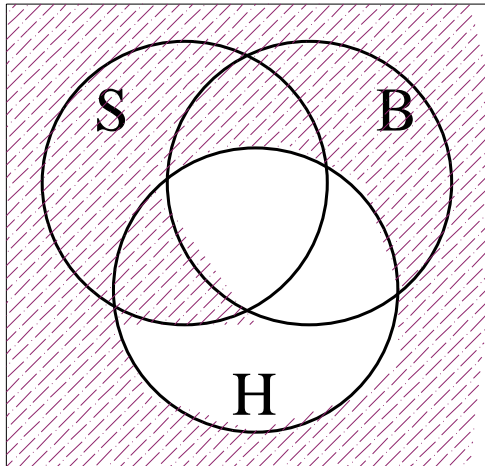
$$n((A \cap B)^C \cap F) =$$

$$n((A^C \cup B^C) \cap F) = n(\{0, 5, 7, 10, 15, 17, 20, 23\} \cap \{0, 5, 10, 15, 20\}) = n(\{0, 5, 10, 15, 20\}) = 5$$

c. (10 pts) How many subsets does set A have?

$$2^{n(A)} = 2^5 = 32$$

3. (20 Points) Using the Venn diagram provided, shade the region corresponding to $(S \cap B^c) \cup H^c$.



4. (10 pts) The providence of Maroon Isle has license plates that consist of 2 different letters, followed by 3 numbers. If the letters are case-sensitive, how many different license plates are possible?

$$52 * 51 * 10 * 10 * 10 = 2,652,000$$