

1. Sets are equal.

2. Cardinality is 3.

3. Power set of $\{a, \{a, b\}\}$ is $\{\phi, \{a\}, \{\{a, b\}\}, \{a, \{a, b\}\}\}$

4. $A = \{a, b, c\}$ and $B = \{y, z\}$.

a. $A \times B = \{(a, y), (a, z), (b, y), (b, z), (c, y), (c, z)\}$

b. $B \times A = \{(y, a), (y, b), (y, c), (z, a), (z, b), (z, c)\}$

5. $A = \{1, 2, 3, 4, 5\}$ and $B = \{0, 3, 6\}$.

a. $A \cup B = \{0, 1, 2, 3, 4, 5, 6\}$

b. $A \cap B = \{3\}$

c. $B - A = \{0, 6\}$

6. $A = \{0, 2, 4, 6, 8, 10\}$, $B = \{0, 1, 2, 3, 4, 5, 6\}$, and $C = \{4, 5, 6, 7, 8, 9, 10\}$.

a. $A \cap B \cap C = \{4, 6\}$

b. $(A \cup B) \cap C = \{4, 5, 6, 8, 10\}$