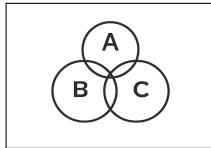
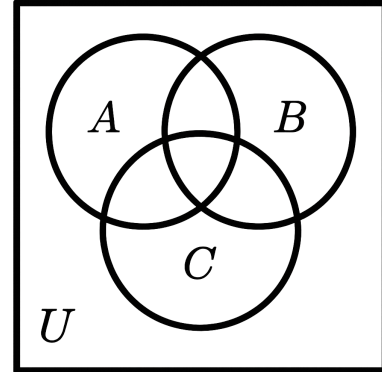
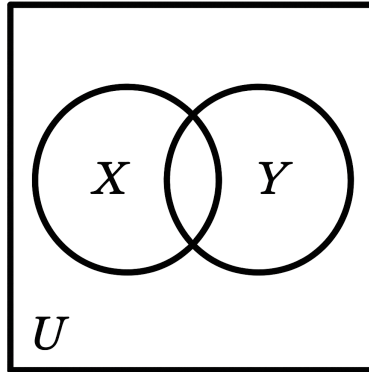
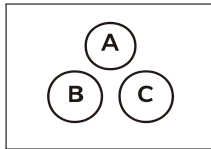


2

Discrete Distribution Set Operations

D



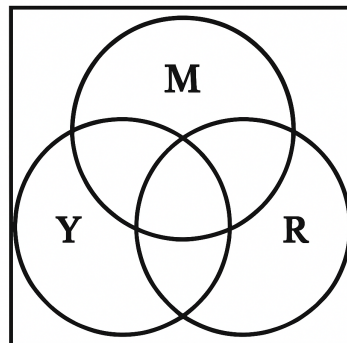
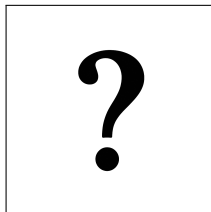
$$|X \cup Y| = |X| + |Y| - |X \cap Y| = |U| - |X^C \cap Y^C|$$

$$|X \cap Y| = |X| + |Y| - |X \cup Y| = |U| - |X^C \cup Y^C|$$

$$|A \cup B \cup C| = |A| + |B| + |C| - |A \cap B| - |B \cap C| - |A \cap C| + |A \cap B \cap C|$$

$$|A \cap B \cap C| = -|A| - |B| - |C| + |A \cup B| + |B \cup C| + |A \cup C| + |A \cup B \cup C|$$

$$|A \cap B| = |A \cap B \cap C^c| + |A \cap B \cap C|$$



$$Y = 3,000 : M = 4,600 : R = 7,000$$

$$R \cap M = 3,010$$

$$R \cap Y = 1,400$$

$$Y \cap M = 1,400$$

$$Y \cap R \cap M = 600$$

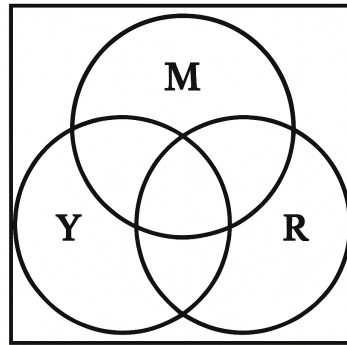
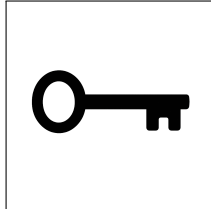
$$U = 10,000$$

$$Y \cap M^C \cap R^C = \boxed{?}$$

2

Discrete Distribution
Set Operations

D



$$Y = 3,000$$

$$M = 4,600$$

$$R = 7,000$$

$$R \cap M = 3,010$$

$$R \cap Y = 1,400$$

$$Y \cap M = 1,320$$

$$Y \cap R \cap M = 600$$

$$U = 10,000$$

$$Y \cap M^C \cap R^C = \boxed{?}$$

$$|Y| = |Y \cap M| + |Y \cap M^C|$$

$$|Y \cap M^C| = |Y| - |Y \cap M| = 3,000 - 1,320 = 1680$$

$$|Y \cap R| = |Y \cap R \cap M| + |Y \cap R \cap M^C|$$

$$|Y \cap R \cap M^C| = |Y \cap R| - |Y \cap R \cap M| = 1400 - 600 = 800$$

$$|Y \cap M^C| = |Y \cap M^C \cap R^C| + |Y \cap M^C \cap R|$$

$$|Y \cap M^C \cap R| = |Y \cap M^C| - |Y \cap M^C \cap R^C| = 1680 - 800 = 880$$