

Note on Q1 in Exercise #4

$P(M \cap W) = P(M)P(W) \Leftrightarrow M \text{ and } W \text{ indep.}$

$$P(M \cap W) = \frac{0}{1024} = 0$$

$$P(M)P(W) = \frac{345}{1024} \cdot \frac{679}{1024} = 0.22340$$

$\therefore M \text{ and } W \text{ not indep. (} M \text{ and } W \text{ dep.)}$

$P(M \cup W) = 1 \Leftrightarrow M \text{ and } W \text{ exhaustive}$

$$P(M \cup W) = P(M) + P(W) - P(M \cap W) = \frac{345}{1024} + \frac{679}{1024} - \frac{0}{1024} = 1$$

$\therefore M \text{ and } W \text{ are exh.}$

$P(M \cap W) = 0 \Leftrightarrow M \text{ and } W \text{ disjoint}$

$$P(M \cap W) = \frac{0}{1024} = 0$$

$\therefore M \text{ and } W \text{ are disjoint}$

Note on Q2 in Exercise #4

$P(M \cap N) = P(M) P(N) \Leftrightarrow M \text{ and } N \text{ indep.}$

$$P(M \cap N) = \frac{324}{1021} = 0.31734$$

$$P(M) P(N) = \frac{673}{1021} \frac{452}{1021} = 0.29181$$

$\therefore M \text{ and } N \text{ not indep. (} M \text{ and } N \text{ dep.)}$

$P(M \cup N) = 1 \Leftrightarrow M \text{ and } N \text{ exhaustive}$

$$P(M \cup N) = P(M) + P(N) - P(M \cap N) = \frac{673}{1021} + \frac{452}{1021} - \frac{324}{1021} = 0.78452$$

$\therefore M \text{ and } N \text{ are not exh.}$

$P(M \cap N) = 0 \Leftrightarrow M \text{ and } N \text{ disjoint}$

$$P(M \cap N) = \frac{324}{1024} = 0.31734$$

$\therefore M \text{ and } N \text{ are not disjoint (} M \text{ and } N \text{ are joint)}$

$$P(C \cap N) = P(C) P(N) \Leftrightarrow C \text{ and } N \text{ indep.}$$

$$P(C \cap N) = \frac{2}{12} =$$

$$P(C) P(N) = \frac{3}{12} \frac{8}{12} =$$

$$P(C \cup N) = 1 \Leftrightarrow C \text{ and } N \text{ exhaustive}$$

$$P(C \cup N) = P(C) + P(N) - P(C \cap N) = \frac{3}{12} + \frac{8}{12} - \frac{2}{12} =$$

$$P(C \cap N) = 0 \Leftrightarrow C \text{ and } N \text{ disjoint}$$

$$P(C \cap N) = \frac{2}{12} =$$