Stat - 205 - CT-1 (Section-A)

1. $A = \{$ people having medical test $\}$

$B = \{$ people having a referral $\}$

$P(A) = 0.37$

$P(B) = 0.54$

$P(A' \cap B') = P(A \cup B)' = 0.19$

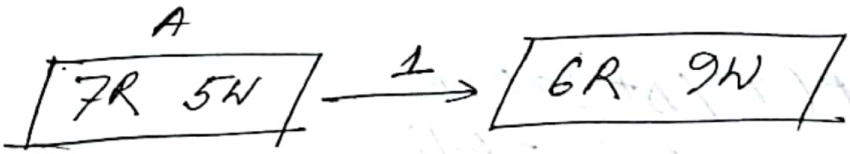
$\Rightarrow P(A \cup B) = 0.81$ 3.0

$P(A \cap B) = P(A) + P(B) - P(A \cup B)$

$= 0.32 + 0.54 - 0.81$

$= 0.10$

2.



$P(RA \cap WB) + P(WA \cap RB)$

$= P(RA)\,P(WB/RA) + P(WA)\,P(RB/WA)$

$= \frac{7}{12} \times \frac{9}{16} + \frac{5}{12} \times \frac{6}{16}$

$= \frac{93}{192}$ 2.0

$= \frac{31}{64}$

$= 0.484375$

3. $P(A) = 0.44$

$P(B) = 0.52$

(i) $P(A' \cup B') = P(A \cap B)'$

$= P(A)' \times P(B')$

$= 0.44 \times 0.52$

$= 0.2288$

2.0

(ii) $P(A' \cup B') = P(A \cap B)'$

$= 1 - P(A \cap B)$

$= 1 - 0$

$= 1$

3. $P(T^+/D^+) = 0.90$

$P(T^-/D^+) = 0.10$

$P(T^+/D^-) = 0.05$

$P(T^-/D^-) = 0.95$

$P(D^+) = 0.025$

$P(D^-) = 0.975$

3.0

$$P(D^+/T^+) = \frac{P(D^+)P(T^+/D^+)}{P(D^+)P(T^+/D^+) + P(D^-)P(T^+/D^-)}$$

$$= \frac{0.025 \times 0.90}{0.025 \times 0.90 + 0.975 \times 0.05}$$

$= 0.3158$