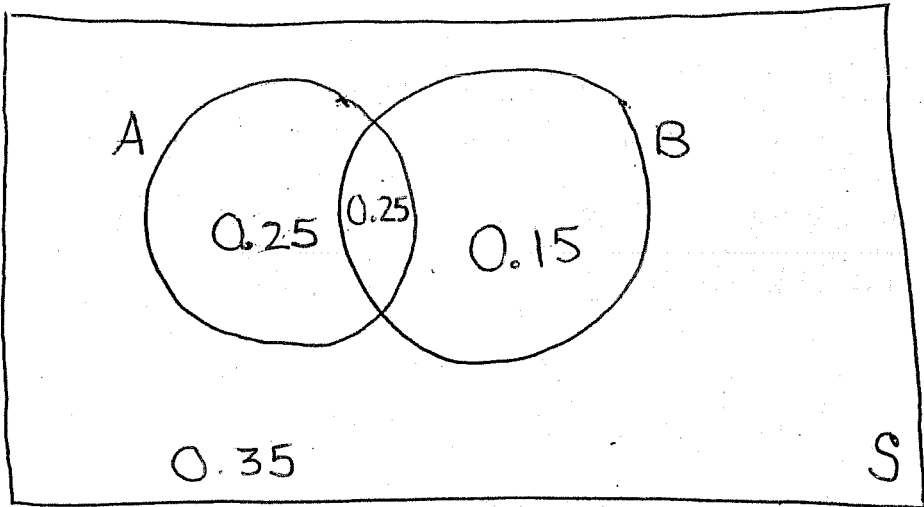


ASSIGNMENT 2  
 SOLUTIONS  
 BZS PROB & STATS

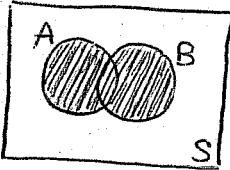
QUESTION 1

Here is a diagram that summarizes the data

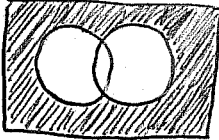


A 50%    B 40%     $A \cap B$  25%

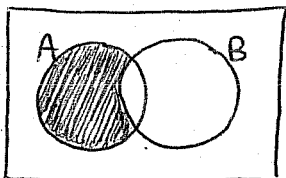
(a)  $P(A \cup B) = P(A) + P(B) - P(A \cap B)$   
 $= 0.5 + 0.4 - 0.25$   
 $= 0.65$



(b)  $1 - P(A \cup B) = 1 - 0.65 = 0.35$



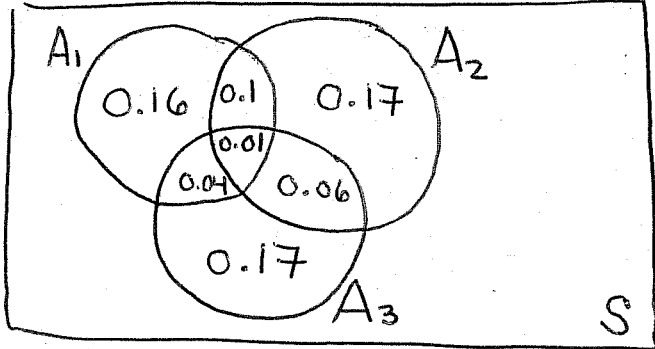
(c) EVENT IS  $A \cap B'$



$P(A \cap B') = 0.25$

QUESTION 2

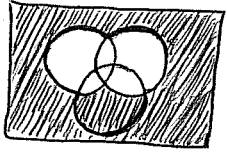
SUMMARY OF DATA



- $P(A_1) = 0.22$
- $P(A_2) = 0.25$
- $P(A_3) = 0.28$
- $P(A_1 \cap A_2) = 0.11$
- $P(A_1 \cap A_3) = 0.05$
- $P(A_2 \cap A_3) = 0.07$
- $P(A_1 \cap A_2 \cap A_3) = 0.01$

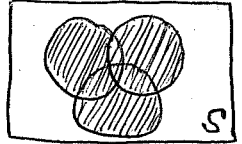
(a) Awarded project 1 OR 2 or both  
 $P(A_1 \cup A_2) = P(A_1) + P(A_2) - P(A_1 \cap A_2) = 0.36$

(b) Awarded project 3 only or no project AT ALL



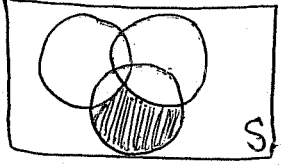
$P(A_1' \cap A_2') = P(A_1 \cup A_2)' = 1 - P(A_1 \cup A_2) = 1 - 0.36 = 0.64$

(c) Awarded at least 1 project



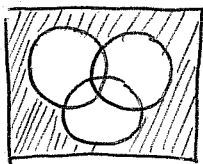
$P(A_1 \cup A_2 \cup A_3) = 0.22 + 0.25 + 0.28 - 0.11 - 0.05 - 0.07 + 0.01 = 0.53$

(e) Awarded only project 3



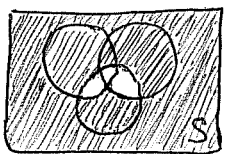
$P(A_1' \cap A_2' \cap A_3) = 0.17$

(d) NOT AWARDED ANY project



$1 - P(A_1 \cup A_2 \cup A_3) = 1 - 0.53 = 0.47$

(f) Awarded project 3 only & Any other scenario



$P((A_1' \cap A_2') \cup A_3) = 1 - 0.05 - 0.07 + 0.01 = 0.89$

QUESTION 3

(a)  $9 \cdot 27 = 243$  ways

(b)  $9 \cdot 27 \cdot 15 = 3645$  ways

$\frac{3645}{365} \approx 9.99$  years