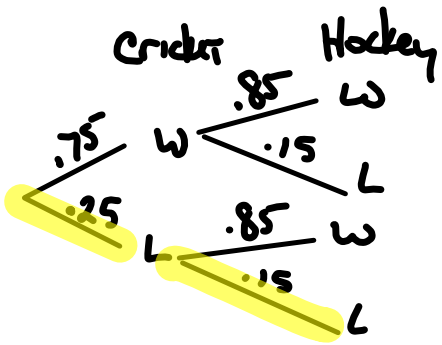
Name: _____ **Show work needed to justify your answer.** Date: _____

HW: # 33: Math IBSL - Standard 32 - Independent and Dependent Events and Conditional Probability 5 points

3 Millie is playing in a cricket match and a game of hockey at the weekend. The probability that her team will win the cricket match is 0.75 and the probability of her team winning the hockey match is 0.85. What is the probability that Millies' team loses both matches?



$P(\text{Lose Both}) = (.25)(.15) = \boxed{0.0375}$

4 Three events A, B and C are such that A and B are mutually exclusive and $P(A) = 0.2$, $P(C) = 0.3$, $P(A \cup B) = 0.4$ and $P(B \cup C) = 0.34$.

a Calculate $P(B)$ and $P(B \cap C)$.

b Determine whether B and C are independent.

on next Page.

7 Given that $P(E') = P(F) = 0.6$ and $P(E \cap F) = 0.24$:

a Write down $P(E)$.

b Explain how you know E and F:

i are independent

ii are not mutually exclusive.

c Find $P(E \cup F')$.

a) $P(E) = 0.4$

b) (i) $P(E \cap F) = P(E) \cdot P(F)$

$0.24 = (0.4)(0.6)$

$0.24 = 0.24$ ✓

(ii) There is an intersection [$P(E \cap F) = 0.24$]

(c) (Next Page)

9 A and B are independent events such that $P(A) = 0.9$ and $P(B) = 0.3$.

Find:

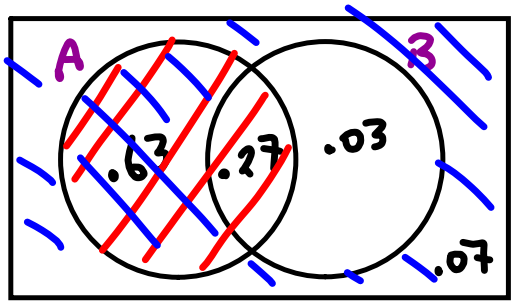
a $P(A \cap B)$ **b** $P(A \cap B')$ **c** $P(A \cup B')$

a) $P(A \cap B) = P(A) \cdot P(B)$

$= (0.9)(0.3) = \boxed{0.27}$

b) $P(A \cap B') = P(A) \cdot P(B')$

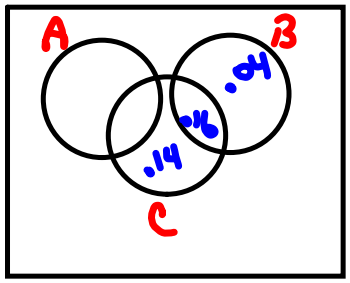
$= (0.9)(0.7) = \boxed{0.63}$



(c) $P(A \cup B') = .63 + .27 + .07$

$= \boxed{.97}$

4.



a) $P(B) = 0.2$

$P(B \cap C) = 0.16$

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

$0.34 = 0.2 + 0.3 - P(B \cap C)$

$-0.16 = -P(B \cap C)$

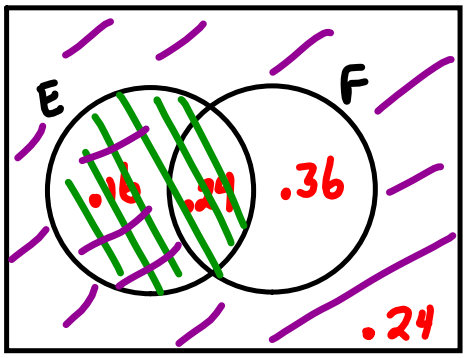
$P(B \cap C) = 0.16$

b) $P(B \cap C) = P(B) \cdot P(C)$

$0.16 = (0.2)(0.3)$

$0.16 \neq 0.06$ NOT independent.

7.



c. $P(E \cup F') = .16 + .24 + .24$

$P(E \cup F') = .64$