Name_____

Date_____

Advanced Algebra

Unit 7 Probability- Independent Assignment #15

A and B are Independent Events if and only if P(A∩ B) = P(A)*P(B)
A and B are Mutually exclusive if P(A∩ B) = 0

1) Events A and B have probabilities P(A) = .4 , P(B) = .65 and P(AUB) = .85

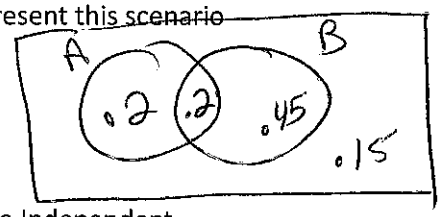
a) Calculate P (A∩B) (2marks)

.2

$.85 = .4 + .65 - x$

$P(A \cap B) = .2$

b) Draw the Venn Diagram to represent this scenario (2 marks)



c) State with support if A and B are Independent (2marks)

$.4 \times .65 \stackrel{?}{=} .2 \quad .26 \neq .2$ NO

d) State with a reason if A and B are mutually exclusive (2marks)

NO

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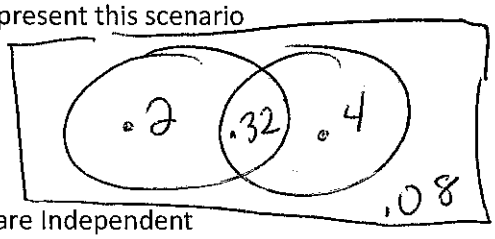
2) Events A and B have probabilities P(A) = .52 , P(B) = .72 and P(AUB) = .92

$.92 = .52 + .72 - x$

a) Calculate P (A∩B) .32 (2marks)

b) Draw the Venn Diagram to represent this scenario (2 marks)



c) State with support if A and B are Independent (2marks)

$.52(.72) \neq .32$

d) State with a reason if A and B are mutually exclusive (2marks)

NO

3) If P(A) = .4 P(AUB) = .9 and P(A∩B) = .1, Find P(B)

$.9 = .4 + P(B) - .1$

Write your answer here P(B)
.6

4) P(X) = .6 P(Y) =.5 and P(XUY) =.9 find P(X∩ Y)

$.9 = .6 + .5 - x$

Write your answer here P(X∩ Y)
.2

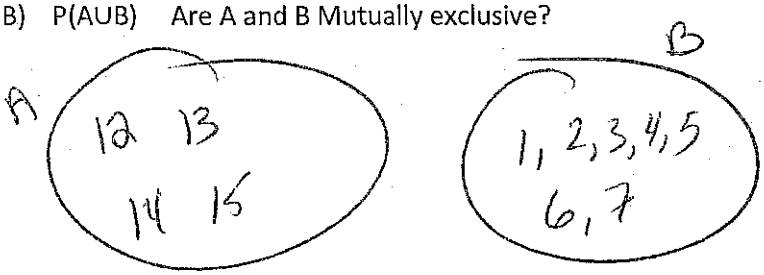
5) Tickets numbered 1 to 15 are placed in a hat, and one ticket is chosen at random. Let A be the event that the number drawn is greater than 11, and B be the event that the number drawn is less than 8.

Draw a Venn Diagram

P(A): 12 13 14 15

P(B): 1, 2, 3, 4, 5, 6, 7

Find P(A) P(B) P(AUB) Are A and B Mutually exclusive?



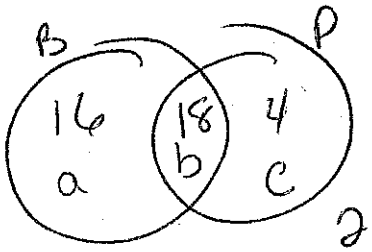
$P(A) = \frac{4}{15}$

$P(B) = \frac{7}{15}$

$P(A \cup B) = \frac{11}{15}$

6) In a class of 40 students, 34 like bananas, 22 like pineapple, and 2 dislike both fruits. A student is randomly selected.

Draw the Venn Diagram



a+b=34
b+c=22
a+b+c=38

Find the probability that

a) the student likes both fruits

Write answer a) here
$\frac{18}{40}$

b) Likes at least one fruit

Write answer b) here
$\frac{38}{40}$

c) Likes bananas given than he or she likes pineapple

Write answer c) here
$\frac{18}{22}$

d) dislikes pineapple given that he or she likes banana

Write answer d) here
$\frac{16}{34}$