

Math 206 - Quiz 2

January 31, 2018

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (1 point) Suppose X and Y are events with $P(X) = 0.4$ and $P(Y) = 0.3$. Must it be true that $P(X \cup Y) = 0.7$. Briefly explain.

No, $P(X \cup Y) = P(X) + P(Y) - P(X \cap Y)$.

$P(X \cup Y) = 0.7$ IS ONLY TRUE IF X & Y ARE EXCLUSIVE.

2. (1 point) Suppose A and B are events such that $P(A) = 0.46$, $P(B) = 0.68$, and $P(A \cup B) = 0.92$. Determine $P(A \cap B)$.

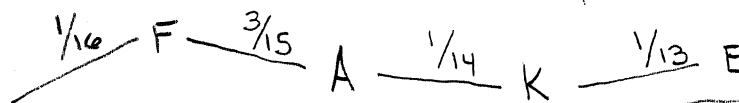
$$0.92 = 0.46 + 0.68 - P(A \cap B)$$

$$0.92 = 1.14 - P(A \cap B)$$

$$\Rightarrow P(A \cap B) = 0.22$$

3. (1 point) Four letters are selected at random without replacement from the word XYJAXJALLAJOKULL. What is the probability of spelling the word *FAKE*?

16 LETTERS



Prob is $\frac{3}{43680}$

4. (2 points) A letter is selected at random from the first box and placed into the second box. Then a letter is selected at random from the second box.

F O O

O X X

Sketch the complete tree diagram for this experiment. Include the probabilities of each path.

