

Assignment #4 (solve in the space provided) – Submission Deadline: Wed. May 6, 2015

1. [2 pts.] At KFUPM, 5% of all students play football and basketball, 32% of all students play football. What is the probability that a student plays basketball given that he plays football?

2. [3 pts.] Compute the probability that the number 3 appears 5 times when a fair die is rolled 7 times.

3. Let E be the event “**exactly 2 heads appear when a fair coin is flipped four times**” and F be the event “**the first flip from the four flips is a head**”.
 - (a) [3 pts.] Compute the conditional probability $P(E|F)$. In your solution, show the sample space for the events E , F and $E \cap F$.

 - (b) [2 pts.] Are the events E and F independent? Justify your answer.

4. Consider a die in which the outcome 1 is twice as likely to occur as any other outcome.
Let X be the random variable that is the outcome of rolling this die.
 - (a) [3 pts.] Compute the ***expected value of X*** and ***variance of X*** .

 - (b) [2 pts.] Let Z be the random variable that is the sum of the outcomes when the die is rolled 10 times. Use Linearity of Expectation to compute the expected value of Z .