

MATH 120: Quantitative Reasoning

Quiz 2

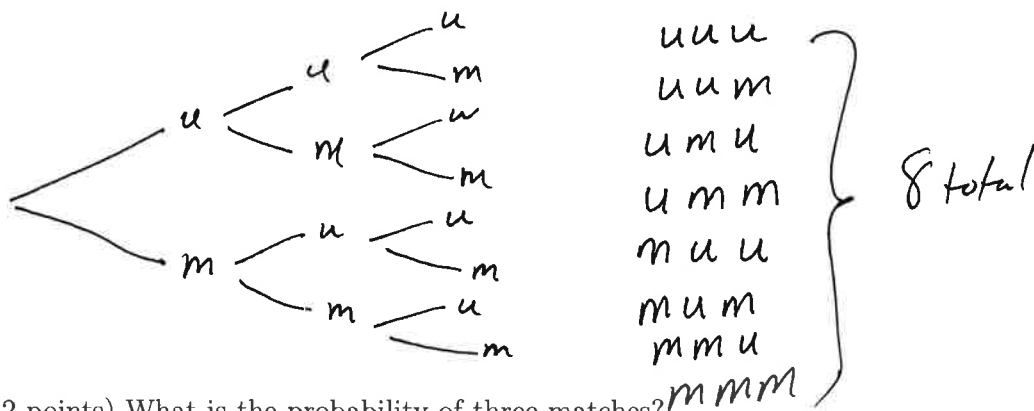
Fall 2011

Name: KEY

Clearly indicate your final answer(s) and follow all instructions. Explain your reasoning where appropriate. Partial credit may be awarded for answers containing only minor mistakes.

1. Two men each toss a coin. They obtain a "match" if either both coins are heads or both are tails. Suppose the tossing is repeated three times. A toss that results in a match is denoted by a "m", and toss that do not match are denoted by an "u" (for unmatched). For example, a member of the sample space is a string of the form umm . Answer the questions which follow.

- (a) (4 points) How many elements are in the sample space? List them.



- (b) (2 points) What is the probability of three matches?

$$P(mmm) = \left(\frac{1}{8}\right)$$

- (c) (2 points) What is the probability that more tosses match than not match?

umu, umu, umu, umu } 4 total $\frac{4}{8} = \left(\frac{1}{2}\right)$

- (d) (2 points) What is the probability at least one of the tosses is a match?

$$\begin{aligned} P(\text{at least one matches}) &= 1 - P(\text{no matches}) \\ &= 1 - \frac{1}{8} \\ &= \left(\frac{7}{8}\right) \end{aligned}$$