

College of the Redwoods  
Mathematics Department

Math 15 — Quiz #7

**Instructions.** Please place the solution of each of the following questions on your own paper. You must show all supporting work to receive credit for your solution. If you are asked to write a response, grammar, spelling, punctuation, and style are important.

EXERCISE 1. Suppose that you toss a “fair coin” four times and note the number of heads.

- (a) Use a tree diagram to help list each outcome in the sample space for this experiment.
- (b) Define a random variable  $X$  which assigns to each outcome the number of heads noted. List the possible values of the random variable and their probabilities in a table such as the following. Complete the remaining entries in each column of the table.

$x$	$p$	$xp$	$x^2p$

- (c) State the appropriate formula for finding the mean or expectation of the random variable  $X$ , then use the formula to find the mean of the random variable  $X$ .
- (d) State the appropriate formula for finding the variance of the random variable  $X$ , then use the formula to find the variance of the random variable  $X$ .
- (e) Find the standard deviation of the random variable  $X$ .
- (f) Create a “stick graph” for the probability distribution of the random variable  $X$ . Mark the mean or expectation on your graph.