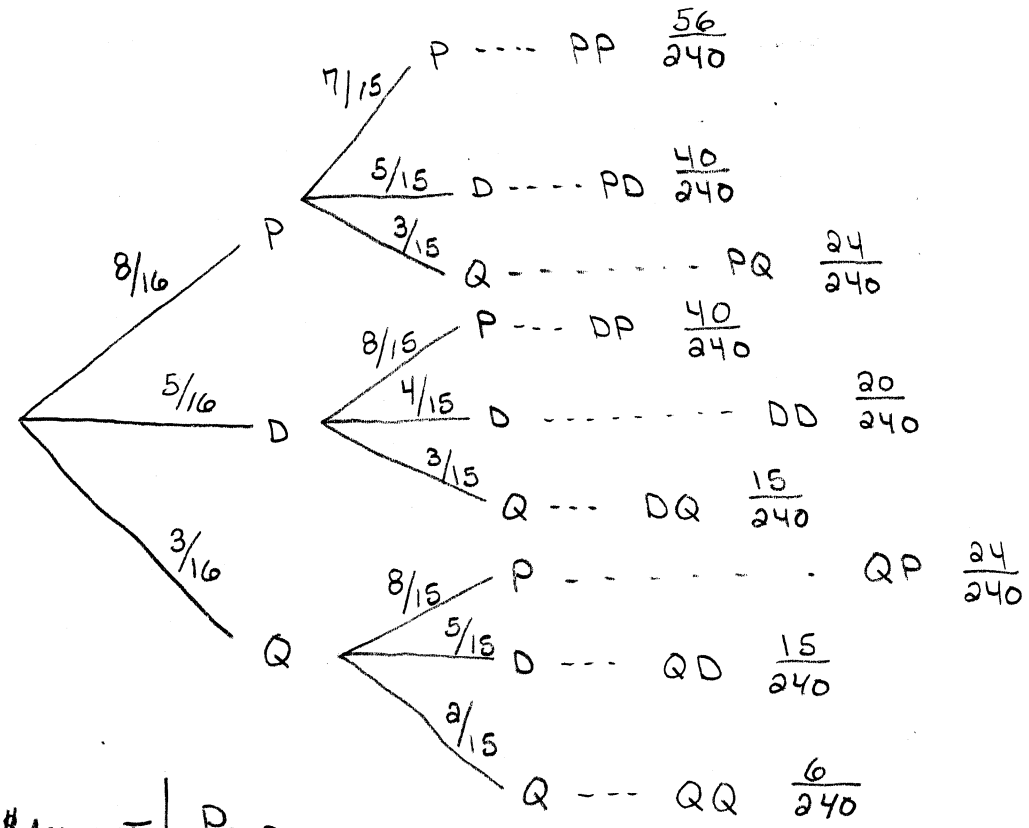
Math 206 - Quiz 4
February 18, 2015

Name key

Score _____

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

1. (2.5 points) A jar contains 8 pennies, 5 dimes, and 3 quarters. Two coins are selected at random without replacement. Find the expected value. (Hint: You may want to sketch a tree to help you find the probabilities.)



$ Amount	Prob
0.02	56/240
0.11	80/240
0.26	48/240
0.20	20/240
0.35	30/240
0.50	6/240

Expected value =

$$0.02\left(\frac{56}{240}\right) + 0.11\left(\frac{80}{240}\right) + 0.26\left(\frac{48}{240}\right) + 0.20\left(\frac{20}{240}\right) + 0.35\left(\frac{30}{240}\right) + 0.50\left(\frac{6}{240}\right)$$

$$= 0.16625 \approx \$0.17 \text{ or } 17¢$$

2. (2.5 points) Marie has a 61% chance of getting an A on a chemistry test. Design a simulation that will help you estimate the probability that Marie gets at least three A's on her next five chemistry tests. Do ten trials, and use the results to estimate the probability.

GENERATE RANDOM NUMBERS BETWEEN 00 & 99 (OR USE A RANDOM DIGIT TABLE). A NUMBER BETWEEN 00 & 60 (INCLUSIVE) REPRESENTS AN A ON A TEST. ANY OTHER NUMBERS REPRESENT NOT A. GENERATE 5 NUMBERS TO REPRESENT 5 TESTS. COUNT THE NUMBER OF "A"s. A SUCCESSFUL TRIAL HAS 3 OR MORE "A"s. DO MANY TRIALS.

TEN TRIALS ARE SHOWN ON THE ATTACHED SHEET.

THERE ARE 5 SUCCESSFUL TRIALS. EACH IS MARKED WITH A ★. THIS MAKES OUR PROBABILITY ESTIMATE BE $\boxed{\frac{5}{10}}$.

RESEARCH RANDOMIZER

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Research Randomizer Results

10 Sets of 5 Non-unique Numbers Per Set
Range: From 0 to 99 -- Unsorted

Job Status: **Finished**

Set #1:

68, 85, 62, 93, 57

Set #2:

64, 93, 39, 56, 92

Set #3:

13, 7, 72, 62, 13

Set #4:

42, 53, 17, 84, 56

Set #5:

10, 70, 83, 81, 80

Set #6:

55, 72, 81, 71, 31

Set #7:

20, 32, 98, 92, 28

Set #8:

30, 79, 54, 77, 16

Set #9:

78, 46, 40, 51, 94

Set #10:

92, 73, 99, 67, 15
