

Math 206 - Quiz 4

February 23, 2011

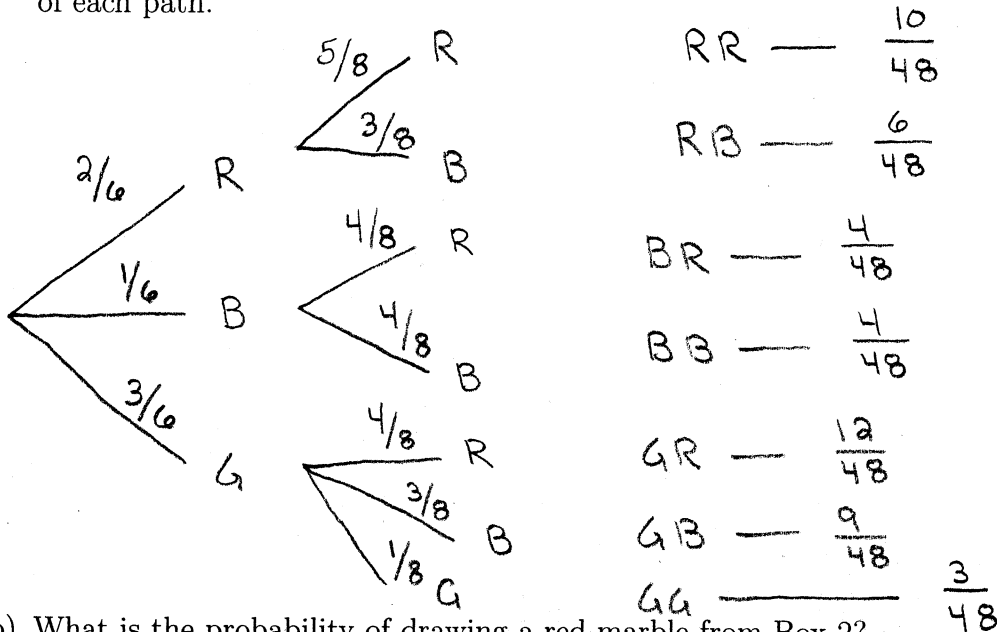
Name key

Score _____

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

1. (3 points) Box 1 contains 2 red marbles, 1 blue marble, and 3 green marbles. Box 2 contains 4 red marbles and 3 blue marbles. A marble is selected at random from Box 1 and placed into Box 2. Then a marble is selected at random from Box 2.

- (a) Sketch the complete probability tree for this experiment. Include the probabilities of each path.



- (b) What is the probability of drawing a red marble from Box 2?

$$P(\{RR, BR, GR\}) = \frac{10}{48} + \frac{4}{48} + \frac{12}{48} = \frac{26}{48}$$

2. (2 points) In a certain town, the probability of a driver wearing a seat belt is 70%. Design a simulation that could help you determine the probability that at least 6 out of 10 randomly chosen drivers are wearing seat belts.

Roll a 10-sided die to simulate choosing a single driver.

$\{1, 2, 3, 4, 5, 6, 7\}$ for wearing seatbelt. $\{8, 9, 10\}$ for not wearing

seatbelt. Roll 10 times to simulate choosing 10 drivers --- this

is one trial. If you get 6 or more rolls in $\{1, 2, 3, 4, 5, 6, 7\}$

it counts as a success. Estimate for prob will be

$$\frac{\# \text{ of successes}}{\# \text{ of trials}}$$