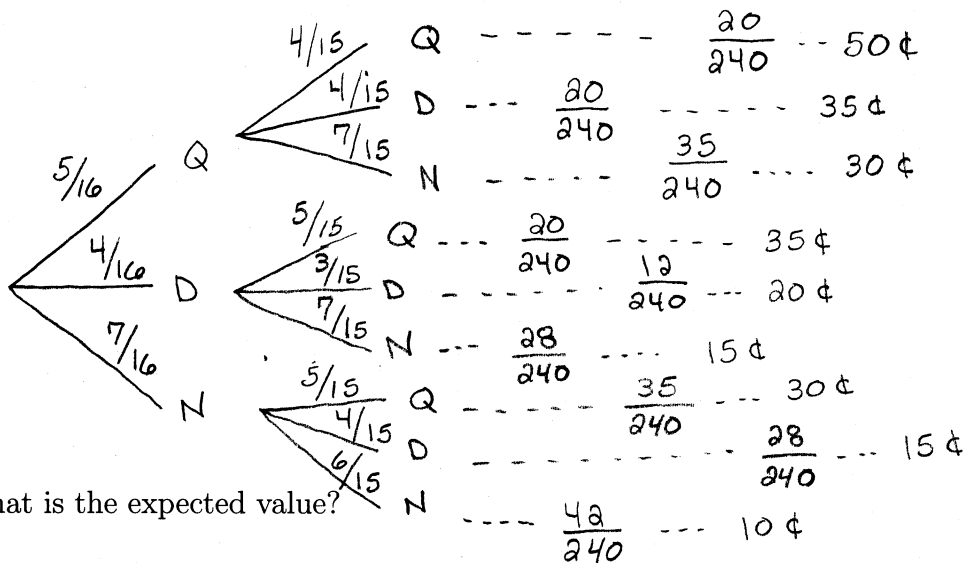


Show all work to receive full credit. Supply explanations when necessary.

1. (3 points) Five quarters, four dimes, and seven nickels are placed into a bag. Two coins are selected at random (without replacement).

(a) Sketch the complete tree diagram (with probabilities) for the experiment.



(b) What is the expected value?

$$50 \left(\frac{20}{240} \right) + 35 \left(\frac{40}{240} \right) + 30 \left(\frac{70}{240} \right) + 20 \left(\frac{12}{240} \right) + 15 \left(\frac{56}{240} \right) + 10 \left(\frac{42}{240} \right) = \frac{6000}{240} = \underline{\underline{25¢}}$$

(c) What are the odds in favor of selecting 45 cents or more?

GOTTA BE 50¢

Prob is $\frac{20}{240} \Rightarrow$ Odds are $\frac{20}{220} = \underline{\underline{\frac{1}{11}}}$

2. (2 points) The probability that a Homewood driver is wearing a seatbelt is 75%. In a sample of 5 drivers, what is the probability that 2 or more are not wearing seatbelts? Design and use a simulation to answer the question.

Put 3 red chips and 1 blue chip into a bag. Select a chip at random to simulate selecting a single driver. Red chip \Rightarrow Driver wearing belt.

Blue chip \Rightarrow Driver not wearing belt.

A trial is to select 5 chips with replacement.

Success if 2 or more blue chips are selected.

Do several trials. Prob $\approx \frac{\text{\# of successes}}{\text{\# of trials}}$

- #1 - BRRRR - Failure
 - #2 - BRBBR - Success
 - #3 - RRRRB - Failure
 - #4 - BRBRB - Success
 - #5 - RRBBR - Failure
- Prob $\approx \frac{2}{5}$