

Take your time and make sure you follow all instructions. Where necessary, work must be shown in order to receive partial credit. Include input into the calculator in order to receive partial credit.

1. Which of the following probability assignments are possible for the distribution of colors for a type of candy? If an assignment is not possible give a reason why it is not. [6 pts]

	Blue	Red	Green	Purple
a)	0.1	0.25	0.35	0.3
b)	0.2	0.3	0.4	0.2
c)	0.4	0.4	0.4	-0.2
d)	0	0	1	0

2. The probability model below gives the amount a student pays each year at a university based on whether the student is an instate resident or not and lives in campus housing or not. [14 pts]

Payment	\$6000	\$10,000	\$11,000	\$15,000
Probability	0.22	0.32	?	0.29

a) What is the probability a randomly selected student pays at most \$11,000?

b) What is the average payment for a student attending this university?

c) If the Board decides to raise all payments by 10% what will be the new average payment?

3. In a certain country 42% of the people have type O blood, 20% have type AB blood, and 14% have type B blood, with the rest having type A blood.

a) If a person from the country is randomly selected what is the probability that [4 pts each]
i. The person has type A blood?

ii. The person either has type O or B blood?

iii. The person does not have type AB blood?

b) If 5 people from the country are randomly selected what is the probability that [5 pts each]
i. All 5 have Type O?

ii. None have type B?

iii. At least one has type AB?

4. An American university surveyed its students and found that 65% have flown, 40% have taken trips out of the country, and 25% have flown out of this country.

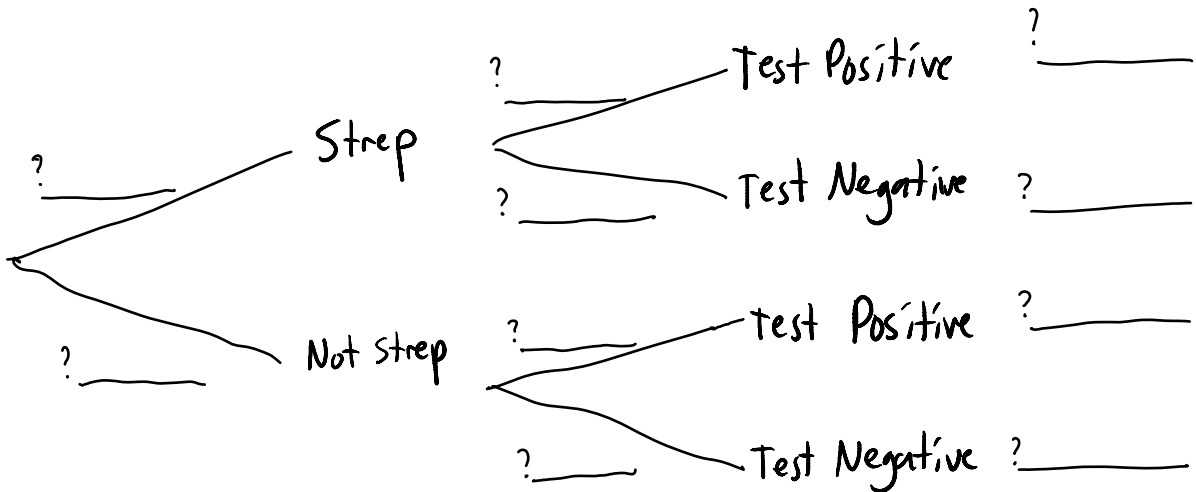
a) What is the probability a randomly selected student has flown or been out of the country? [5 pts]

b) What is the probability that a randomly selected student who has flown has been out of the country? [9 pts]

5. A new less intrusive test is developed for testing if a patient has strep throat. The tests uses the saliva of a patient as opposed to the traditional swabbing of the patient's throat. As with all tests there it is still the chance the tests gives the wrong results. The manufacture performs a trial of the new test with a group containing 40% with confirmed strep throat. In the group that had strep throat 85% tested POSITIVE for strep while of those that did not have strep throat 80% tested NEGATIVE for strep.

[10 pts]

a) Finish the following tree by filling in all of the blank probabilities.



b) What is the probability a randomly selected participant tested positive for strep? [4 pts]

c) If a randomly selected participant tested positive what is the probability that person had strep? [5 pts]

6. An area is forecasted to have a 80% chance of rain over the next 8 days. (Show work and calculator inputs to receive partial credit) [5 pts each]
- What is the expected number of days of rain and the standard deviation?
 - What is the probability that it rains on exactly 4 of the days?
 - What is the probability that it rains on at most 5 of the days?
 - What is the probability that it rains on more than 6 of the days?
 - What is the probability that it does not rain on less than 4 of the days?