Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Problem Set 7.3***

1.) Thunderstorms involve rain and lightning, but those events can happen without each other. Technically dry lightning rain that evaporates before it hits the ground. It’s also associated with causing wildfires.

Source: Dry Lightning. Wikipedia, n.d. Web. 26 May 2013. <http://en.wikipedia.org/wiki/Dry_lightning>.

This problem is based on Illustrative Mathematics Commo Core State Standards Illustration Source: S-CP Rain and Lightning. Illustrative Mathematics, n.d. Web.26 May 2013.

<http://www.illustrativemathematics.org/illustrations/1112>.

a) If today’s weather report states a 60% chance of rain, 15% chance of lightning, and 20% chance of lightning if it is raining, then what is the chance of rain AND lightning today?

b) Given a 55% chance of rain, 20% chance of lightning, and 15% chance of lightning and rain, then what is the chance of rain OR lightning today? What’s the chance of neither?

Chance of rain OR lightning: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Chance of neither: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) Given a 50% chance of rain, 60% chance of rain or lightning, and 15% chance of rain and lightning, then what’s the chance of lightning today?

2.) This problem is based on a similar problem from Floyd Bullard’s handout “Some Short Probability Lessons”.

Suppose a random sample of 1000 college students was polled on their magazine readership.

a) The table below gives a possible breakdown for readership of Sports Illustrated. The numbers are given for both women and men.



Who is more likely to read SI: women or men? How do you know?

b) During the same time period, those students bought an equal number of copies of National Geographic as copies of Sports Illustrated. However, unlike SI, **men were just as likely as women to read National Geographic**. Complete the table below with numbers that are consistent with that fact.



c) With the data in these tables, can you calculate the relative frequency of women that read SI and NG? If so, calculate it. If not, explain why you cannot.

3.) According to 2007 US Census data, approximately 13.1% of all babies born to residents of the US that year were born in CA and approximately 5.9% in NY. In CA, approximately 52.5% of babies born were Hispanic, and approximately 27.5% were white. In NY, approximately 23.7% were Hispanic and approximately 49.6% were white.

Source: Births, Deaths, Marriages, and Divorces – Table 82. US Census Bureau, n.d. Web. 1 Mar. 2013. <http://www.census.gov/prod/2011pubs/11statab/vistat.pdf>.

a) Fill in the relative frequencies from the information above on the following tree: (note: a complete tree would have a branch at the first level for each state, but this page isn’t that big!)

b) If 0.059 represents RF(NY), what does 0.496 represent? Answer in notation.

c) If you were to trace the leftmost path down the tree and multiply the numbers 0.131 and 0.525, what have you calculated? Answer in notation.

d) Calculate the relative frequency of U.S. babies born in CA or NY.

e) Calculate the relative frequency of U.S. babies that are White New Yorkers.

f) Can we use this table to calculate the relative frequency of Hispanic babies? Why or why not?