Lab Assignment 3.2, 3.3, 3.4

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Lab Assignment 3.2, 3.3, 3.4

1. The table below describes the distribution of a random sample *S* of 100 individuals, organized by gender and whether they are right- or left-handed.

	Right-handed	Left-handed
Male	43	9
Female	44	4

Let's denote the events *M* = the subject is male, *F* = the subject is female, *R* = the subject is right-handed, *L* = the subject is left-handed. Compute the following probabilities:

1. $P(M)$
2. $P(F)$
3. $P(R)$
4. $P(L)$
5. $P(M \text{ AND } R)$
6. $P(F \text{ AND } L)$
7. $P(M \text{ OR } F)$
8. $P(M \text{ OR } R)$
9. $P(F \text{ OR } L)$
10. $P(M')$
11. $P(R|M)$
12. $P(F|L)$
13. $P(L|F)$

2. The table below shows a random sample of musicians and how they learned to play their instruments.

Gender	Self-taught	Studied in School	Private Instruction	Total
Female	12	38	22	72
Male	19	24	15	58
Total	31	62	37	130

1. Find P(musician is a female).
2. Find P(musician is a male AND had private instruction).
3. Find P(musician is a female OR is self taught).
4. If three musicians are randomly selected, with replacement, find the probability they are all self-taught.
5. If three musicians are randomly selected, without replacement, find the probability they are all males.

3. At a college, 72% of courses have a final exam. If we randomly select 5 courses, find the probability that they all have a final exam.
4. The casino game, roulette, allows the gambler to bet on the probability of a ball, which spins in the roulette wheel, landing on a particular color, number, or range of numbers. The table used to place bets contains of 38 numbers, and each number is assigned

to a color and a range.

1. List the sample space of the 38 possible outcomes in roulette.
2. You bet on red. Find P(red).
3. You bet on -1st 12- (1st Dozen). Find P(-1st 12-).
4. You bet on an even number. Find P(even number).
5. Is getting an odd number the complement of getting an even number? Why?

3

5. The table below identifies a group of children by one of four hair colors, and by type of hair.

Hair Type	Brown	Blond	Black	Red	Totals
Wavy	20		15	3	43
Straight	80	15		12	
Totals		20			215

1. Complete the table.
2. What is the probability that a randomly selected child will have wavy hair?
3. What is the probability that a randomly selected child will have either brown or blond hair?
4. What is the probability that a randomly selected child will have wavy brown hair?
5. What is the probability that a randomly selected child will have red hair, given that he or she has straight hair?
6. If B is the event of a child having brown hair, find the probability of the complement of B.
7. If two children are randomly selected **with replacement**, find the probability that they both have red hair?
8. If two children are randomly selected **without replacement**, find the probability that they both have red hair?
