DAWSON
COLLEGE

In-class Assignment #2 (2% of final grade)

Introduction to Statistical Methods (201-922-DW)
(Laboratory Technology – Analytical Chemistry)
September 18, 2015
Instructor: Émilie Richer

[Question 1] A random sample of 200 students are classified below by sex and favourite subject.

Favourite subject	Male	Female
Humanities	34	23
Mathematics	40	41
French	41	21

If a person is picked at random from this group find the probability that:

a. The person is female given that their favourite subject is mathematics
b. The person is male given that their favourite subject is French.
c. The person is female and humanities ais their favourite subject.
d. The person is male and humanities is their favourite subject.

a. $\frac{41}{81}$

b. $\frac{41}{62}$

c. $\frac{23}{200}$

d. $\frac{34}{200}$

Student Name: SOLUTIONS

[Question 2] The probability that 1st year students pass their mathematics class is 0.7, the probability that 2nd year students pass their mathematics class is 0.5. If a 1st year student has a 0.95 probability of passing his mathematics class if he has a sibling in 2nd year who has passes his mathematics class.

a. Find the probability that a pair of siblings in 1st and 2nd year both pass their mathematics classes given that the 2nd year sibling passed his mathematics class.

b. Find the probability that a 2nd year student passes his mathematics class given that his 1st year sibling has passed his class.

c. At least one member of a pair of siblings passes his mathematics class.

F = First year student passes

S = Second year student passes

$P(F) = 0.7$

$P(S) = 0.5$

$P(F|S) = 0.95$

a. $P(F \cap S) = P(S)P(F|S) = (0.5)(0.95) = \underline{0.475}$

b. $P(S|F) = \frac{P(S \cap F)}{P(F)} = \frac{0.475}{0.7} = \underline{0.679}$

c. $P(F \cup S) = P(F) + P(S) - P(F \cap S)$

$= 0.7 + 0.5 - 0.475$

$= \underline{0.875}$