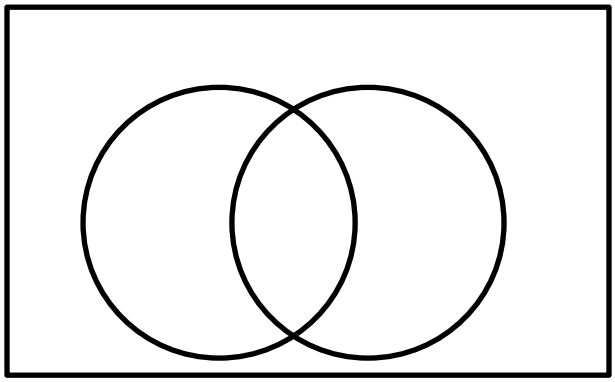
G9-3 Assignment Name_____ Per_____

Two-Way Tables and Mutually Exclusive Events

1. Pham is conducting a survey for the school newspaper. He surveyed 200 students at his school and found that 78 students had the new π-phone, 54 students had a laptop computer, and 80 students had neither.

a. Draw a Venn Diagram for this data.



b. Make a two-way table for the data.

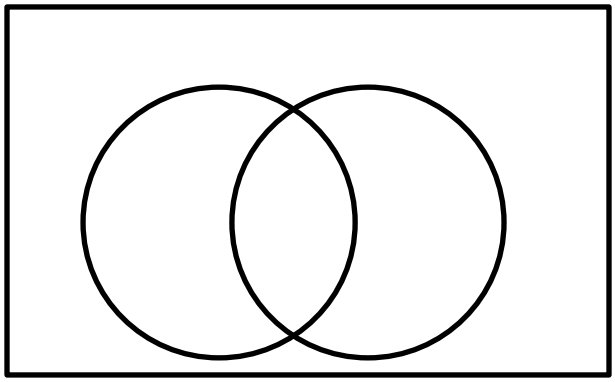
			Total
Total			200

c. If we assume that Pham's sample is a random sample of students in his school:

i. P(π-phone U a laptop) ii. P(π-phone $\cap$ a laptop) iii. P(π-phone $\cap$ no laptop)

2. In a recent survey of college freshman, 35% of students checked the box next to "Exercise regularly," 33% checked the box next to "Eat five servings of fruits and vegetables a day," and 57% checked the box next to "Neither."

a. Draw a Venn Diagram for this data.



b. Make a two-way table for the data.

c. What is the probability that a freshman exercises regularly <u>and</u> eats 5 servings of fruits and vegetables each day?

d. What is the probability that a freshman exercises regularly <u>or</u> eats 5 servings of fruits and vegetables each day

3. The two-way table shows the distribution of members of the audience at a play.

a. Finish the two-way table.

	Stalls	Circle	Balcony	TOTAL
Adults	36	39		112
Children	41		31	
Total		60		

b. Find the probability for a randomly chosen member of the audience.

i. P(adult) = ii. P(child) = iii. P(balcony) =

iv. P(child ∩ balcony) = v. P(adult U balcony) = vi P(not child ∩ not balcony) =

vii. P(child U not balcony) = viii. P(adult U child) = ix. P(adult ∩ child) =

4. At a small East Coast college, the following data is collected:

	Engr major	Other major	Total
Freshman	30	170	200
Sophomore	0	163	163
Junior	25	84	109
Senior	28	140	168
Total	83	557	640

Find the following probabilities, if a student at the college was randomly selected:

a. P(Freshman)= c. P(Sophomore)= e. P(Sophomore U Engineering)=

b. P(Engineering)= d. P(Freshman U Engineering)= f. P(Sophomore ∩ Engineering)=

Looking Ahead:

Two events are **mutually exclusive** (or, disjoint) if they cannot both occur at the same time. That is, two events are mutually exclusive if P(A and B) = 0. Therefore, {Sophomore} and {engineering} are mutually exclusive events because P(Sophomore ∩ Engineering)=0, which also means that there are no Sophomores that are also engineering majors.

a.. Are {Freshman} and {Engineering} mutually exclusive events? Explain.

b. Are {Junior} and {Senior} mutually exclusive events? Explain.

b. Give three examples of *any* events that would be considered mutually exclusive. Explain.

i.

ii.

iii.