Two-way Frequency Charts

Conditional Probabilities, or frequencies, can be calculated using two-way frequency charts. These are not usually in the body of the chart, but can be readily calculated from the cell contents. **One conditional frequency would be the percent of females that are in the chorus out of the total number of females in some type of club**. 17 of the 57 females are in the chorus, so **29.8%.** This could also be stated as "Given that a female in a club is selected, what is the probability that she is in the chorus?"

Participation in School Activities

School Club	Gender		
	Male	Female	Totals
Band	12	21	33
Chorus	15	17	32
Chess	16	3	19
Latin	7	9	16
Yearbook	28	7	35
Totals	78	57	135

Practice #1:
Jamie investigated hair and eye color.

	Fair hair	Dark hair	TOTAL
Blue eyes	8		13
Other		10	
TOTAL	15	15	

a) Complete the table above.

One of the people is chosen. Calculate the probability of choosing...

b) someone with blue eyes.

c) someone with fair hair and blue eyes.

A person with dark hair is chosen. Calculate the probability of...

d) them having blue eyes.

e) them not having blue eyes.

Practice #2:
Carol records some cars that pass by her house.

	Jeep	Chevy	Ford	TOTAL
Grey		9	14	31
Red	4	11		23
Blue				
TOTAL	12		25	60

a) Complete the table above.

One of the cars is chosen. Calculate the probability of choosing

b) a red car.

c) a grey Jeep.

A Ford is chosen. Calculate the probability of

d) it being blue.

Practice #3:
The following two-way table has information regarding possible math classes 11th grade students have chosen for their 12th grade year.

	AFM	Pre-Calculus	Calculus	Total
Male	45			85
Female			14	
Total		43	22	160

a) Complete the two-way table.

b) What is the probability of choosing a male student?

c) What is the probability of choosing a student who will take AFM?

d) Given that a female is selected, find the probability that she chose to take Calculus.

e) Given that a student taking Calculus is selected, find the probability that the student is female.

f) Find the probability that a male student chooses Pre-Calculus or Calculus.

Two-way tables can also show the probabilities of events.

EX: What is the probability that a person chosen who prefers HGTV is female?

P(Female given HGTV is their preferred station) $= \frac{femal\ and\ HGTV}{Total\ HGTV} = \frac{0.24}{0.28} = \boxed{0.86}$

	HISTORY	ESPN	HGTV	TOTAL
Male	0.17	0.29	0.04	0.5
Female	0.12	0.14	0.24	0.5
TOTAL	0.29	0.43	0.28	1

Practice #4:
A group of people where asked about their vacations.

	Family Home	Camper	Rental House	Hotel	TOTAL
Beach	0.06	0.14		0.04	0.44
Mountains				0.1	0.34
Other	0.1	0			
TOTAL	0.24	0.2		0.26	1

a) Complete the table above.

b) What is the probability of choosing a person who stays in a rental house?

c) What is the probability of choosing a person who does not go to the beach or mountains?

d) If the person chosen vacations in the mountains, find the probability that they stay in a camper.

e) If the person chosen stays in a rental house, find the probability that they vacation at the beach.

f) Find the probability of a person staying in a hotel or a rental house.