Name KEY Date _____ Period _____

Two – Way Frequency Tables Notes

A **two-way frequency table** is a table of data that separates responses by a characteristic of the respondents. Two – way frequency tables show categorical data.

Joint Frequency: is the number of responses for a given characteristic. The entries in the cells of a two-way frequency table are joint frequencies. (in the middle)

In the sample table, *a*, *b*, *c*, and *d* are each joint frequencies.

Type of Characteristic	Type of Response		
	Response 1	Response 2	TOTAL
Characteristic 1	a	b	a + b
Characteristic 2	c	d	c + d
TOTAL	a + c	b + d	a + b + c +d

Marginal Frequency: The total number of times a response was given, or the total number of respondents with a given characteristic. (in the "margins")

This is the sum of either a row or a column in a two-way frequency table.

In the sample table, *a* + *b* would be the marginal frequency of people with Characteristic 1.

Type of Characteristic	Type of Response		
	Response 1	Response 2	TOTAL
Characteristic 1	a	b	a + b
Characteristic 2	c	d	c + d
TOTAL	a + c	b + d	a + b + c +d

Practice Problem 1: Cameron surveys students in his school who play sports and asks them which sport they prefer. He records the responses in the table below.

Gender	Preferred sport			total
	Baseball	Soccer	Basketball	
Male	49	52	16	117
Female	23	64	33	120
total	72	116	49	237

a) What is the joint frequency of male students who prefer soccer?

52

b) What is the joint frequency of female students who prefer baseball?

23

c) How many total students were surveyed?

237

d) Calculate the marginal frequencies:

males: 117

females: 120

baseball: 72

soccer: 116

Practice Problem 2: Mr. Chang surveys his students about the time they spend studying. He creates a table showing the amount of time students studied and the score each student earned on a recent test.

Time spent studying in hours	Test score				total
	0–25	26–50	51–75	76–100	
0–2	2	8	12	2	24
2–4	0	10	8	24	42
4–6	1	0	2	9	12
6+	0	0	1	4	5
total	3	18	23	39	83

a) Find the total number of students surveyed.

83 students

b) What is the joint frequency of students who spent 4 – 6 hours studying and made a test score of 76 -100. 9

c) Calculate the marginal frequencies.

shown above