

1. What is the probability that a participant did not get a headache if they took the medicine?

2. What is the probability that a participant took medicine given they did not have a headache?

3. What is the probability that a participant took medicine given they did have a headache?

4. Calculate the joint and marginal frequencies from the table above.

	Took Medicine	Did NOT Take Medicine	TOTAL
Headache	.12	.15	.27
No Headache	.48	.25	.73
TOTAL	.60	.40	1.00

5. What is the probability that a participant ~~who~~ did not get a headache took the medicine?

decimal

$$\frac{.48}{.60} = .8 \text{ or } .80$$

given that they

6. What is the probability that a participant took medicine given they did not have a headache?

$$\frac{.48}{.73} = .66$$

7. What is the probability that a participant took medicine given they did have a headache?

$$\frac{.12 \leftarrow \text{took medicine + headache}}{.27 \leftarrow \text{headache}} = .44$$

8. What do you notice about the answers from problems 1 – 3 and problems 5 – 7?

they are the same
 answers # 1 → # 5
 # 2 → # 6
 # 3 → # 7

Example 5: Students were surveyed about whether or not they have a pet and if they are allergic or not to animals. The results are below:

	Has a Pet	Does Not Have a Pet	Total
Allergic to Animals	32	192	224
Not Allergic to Animals	213	63	276
Total	245	255	500

a. What percent of those surveyed who are allergic to animals have a pet?

$$\frac{32}{224} = .14 = 14\%$$

b. What percent of those surveyed who are not allergic to animals have a pet?

$$\frac{213}{276} = .77 = 77\%$$

c. What percent of those who have a pet are allergic to animals?

$$\frac{32}{245} = .13 = 13\%$$

d. What percent of those who have a pet are not allergic to animals?

$$\frac{213}{245} = .87 = 87\%$$

Example 6: The following contains the scores of the latest math project. Use the table to answer the following questions:

PROJECT SCORES			
	Male	Female	Total
A	9	12	21
B	18	14	32
C	8	11	19
D	2	3	5
F	1	2	3
Total	38	42	80

a. What percentage of males earned a score of an "A"?

$$\frac{9}{38} = .24 = 24\%$$

b. What percentage of those who earned an "A" were male?

$$\frac{9}{21} = .43 = 43\%$$

c. What percentages of females earned a score of a "B"?

$$\frac{14}{42} = .33 = 33\%$$

d. What percentage of those who earned an "F" were female?

$$\frac{2}{3} = .67 = 67\%$$