## Probability: Contingency Tables

## Objectives:

- Finding probability using tables
- Making tables


## Exercises:

1. Use the information in the table to answer the following questions. State the probabilities as fractions and round to the nearest hundredth.

|  | Voted | Did not Vote | Totals |
| :--- | :---: | :---: | :---: |
| Democrat | 35 | 23 | 58 |
| Republican | 57 | 28 | 85 |
| Totals | 92 | 51 | 143 |

a. What is the probability someone chosen at random is a Democrat?
b. What is the probability someone chosen at random is a Democrat who voted?
c. What is the probability someone chosen at random did not vote and is a Republican?
d. What is the probability someone chosen at random did not vote or is a Republican?
e. What is the probability someone chosen at random is a Republican or is a Democrat?
f. Given that someone is a Democrat, what is the probability they did not vote?
2. Use the information in the table to answer the following questions. State the probabilities as fractions and round to the nearest hundredth.

|  | Have <br> Instagram | Don't Have <br> Instagram | Totals |
| :--- | :---: | :---: | :---: |
| Have Facebook | 37 | 13 | 50 |
| Don't Have Facebook | 65 | 10 | 75 |
| Totals | 102 | 23 | 125 |

a. What is the probability someone has Facebook?
b. What is the probability someone does not have any of the accounts?
c. What is the probability someone has Facebook $U$ Instagram?
d. What is the probability someone has Facebook $\cap$ Instagram?
e. Given that someone does not have Facebook, what is the probability they have Instagram?
f. Given that someone has Instagram, what is the probability they don't have Facebook?
3. Use the given information below to make and complete a 4 by 4 table that displays all the information, including the total.

We surveyed 200 people. We asked them two questions: Do you support Trump? Are you a Republican? Here are the results:

- A total of 110 people supported Trump, 90 did not.
- A total of 75 people are Republican, the rest are not.
- 50 people who are Republican supported Trump.



## Answers:

1a. $\frac{58}{143} ; 0.41$
1b. $\frac{35}{143} ; 0.24$
1c. $\frac{28}{143} ; 0.2$
1d. $\frac{108}{143} ; 0.76$
1e. 1
1f. $\frac{23}{58} ; 0.4$
2a. $\frac{50}{125} ; 0.4$
2b. $\frac{10}{125} ; 0.08$
2c. $\frac{115}{125} ; 0.92$
2d. $\frac{37}{125} ; 0.3$
2e. $\frac{65}{75} ; 0.87$
2f. $\frac{65}{102} ; 0.64$
3.

|  | Support <br> Trump | Not Support <br> Trump | Total |
| :--- | :---: | :---: | :---: |
| Republican | 50 | 25 | 75 |
| Not Republican | 60 | 65 | 125 |
| Total | 110 | 90 | 200 |

