

## LT: Create, read, and use a two-way table

Here is some data gathered about men and women who own or do not own pets. Fill in the rest of the chart and answer the following questions.

	Have Pets	No Pets	Total
Male	27	5	32 (males)
Female	31	5	36 (F)
<u>Total</u>	58 (pet)	10 (no pet)	68 (ppl)

a) What is the probability that a randomly chosen person has a pet?

$$\frac{58 \text{ (Pet)}}{68 \text{ (Ppl)}} = \frac{29}{34}$$

b) What is the probability that a randomly chosen person is female?

$$\frac{36}{68} = \frac{9}{17}$$

c) What is the probability that a randomly chosen person is male OR has a pet?

$$\frac{32}{68} + \frac{58}{68} - \frac{27}{68} = \frac{63}{68}$$

Subtract Overlap

d) What is the probability that a randomly chosen person does not have a pet AND is female?

$$\frac{5}{68}$$

According to the National Center for Health Statistics, in December 2012, 60% of US households had a traditional landline telephone, 89% of households had cell phones, and 51% had both. Suppose we randomly selected a household in December...

	Cell	No Cell	Total
Landline	51	9	60
No Landline	38	2	40
Total	89	11	100

Fill in the chart!

a) What is the probability that a randomly chosen household has cell phones?

$$\frac{89}{100}$$

b) What is the probability that a randomly chosen household has no landline?

$$\frac{40}{100} \rightarrow \frac{2}{5}$$

c) What is the probability that a randomly chosen household has a landline and no cell phones?

$$\frac{9}{100}$$

d) What is the probability that a randomly chosen household has no landline or has no cell phone?

$$\frac{40 + 11 - 2}{51 - 2} = \frac{49}{49} = \frac{49}{100}$$

In a group of 160 sports car buyers, 64 bought alarm systems, 48 purchased bucket seats, and 32 purchased an alarm system and bucket seats. Set up the two-way table and answer the following questions:

	buckets	No Buckets	Total
Alarm	32	32	64
No Alarm	16	80	96
Total	48	112	160

a)  $P(\text{bucket seats}) = \frac{48}{160} = \frac{3}{10}$

b)  $P(\text{no bucket seats or no alarm system})$

$$\frac{112}{160} + \frac{96}{160} - \frac{80}{160} \rightarrow \frac{128}{160} = \frac{4}{5}$$

c)  $P(\text{no alarm system})$

$$\frac{96}{160} = \frac{24}{40} = \frac{3}{5}$$

d)  $P(\text{no alarm system and has bucket seats})$

$$\frac{16}{160} = \frac{1}{10}$$

What is the relationship between educational achievement and home ownership? A random sample of 500 people who participated in the 2000 census was chosen. Each member of the sample was identified as a high school graduate (or not) and as a home owner (or not). Overall, 340 were homeowners, 310 were high school graduates, and 221 were both homeowners and high school graduates.

(a) Create a two-way table that displays the data

Suppose we choose a member of the sample at random. Find the probability that the member

(b) is a high school graduate

(c) owns a home

(d) is a high school graduate and owns a home

(e) is a high school graduate or owns a home

