EXAMPLE 4 Finding an Experimental Probability

A fast-food restaurant performs the following market research before adding a broiled chicken sandwich to its menu.

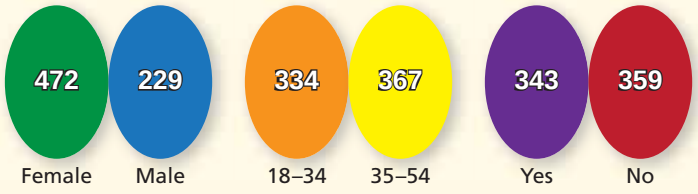
Description of Sample

836 consumers, recruited at malls

10 geographic locations

Gender:	543	Female	293	Male
Age:	418	18–34	418	35–54
Current customer:	418	Yes	418	No

Numbers in Sample Who Would "Definitely" Buy the Sandwich



Assume that the sample of 836 consumers is representative of the general population of people who are between the ages of 18 and 54. Describe the probability that a female buys the sandwich. Describe the probability that a male buys the sandwich.

SOLUTION

Female: 472 of the 543 women sampled said they would buy the sandwich.

$$\text{Probability} = \frac{472}{543} \approx 0.87 = 87\%$$

So, a female is *very likely* to buy the sandwich.

Male: 229 of the 293 men sampled said they would buy the sandwich.

$$\text{Probability} = \frac{229}{293} \approx 0.78 = 78\%$$

So, although the sandwich appears to be somewhat less appealing to men than to women, you can still conclude that a male is *likely* to buy the sandwich.

Finding samples of people who are truly representative of the general population is the major challenge to market research and polling companies. The saying, "Will it play in Peoria?" is often used to ask whether a product will appeal to a broad demographic.

Checkpoint

Help at Math.andYOU.com

Describe the probability of each person buying the sandwich. Explain your reasoning.

a. A person in the 18–34 age group

b. A person who is not a current customer