There are 17 customers who have entered the drawing. 4 live in the town of Gaston, 7 live in Pike, and 6 live in Wells. In the drawing the first customer will be selected random, and then the second customer will be selected at random from the remaining customers. What is the probability that both customers selected are wells residents?

Solution

The probability that the first customer lives in Wells is

$$P_1 = \frac{6}{4 + 6 + 7} = \frac{6}{17}.$$

Now if the first customer lives in Wells there are 16 customers who have entered the drawing. 4 live in the town of Gaston, 7 live in Pike, and 5 live in Wells.

The probability that the second customer lives in Wells is

$$P_2 = \frac{5}{4 + 5 + 7} = \frac{5}{16}.$$

The probability that both customers selected are wells residents is

$$P = P_1 \cdot P_2 = \frac{6}{17} \cdot \frac{5}{16} = \frac{15}{136} \approx 0.11.$$