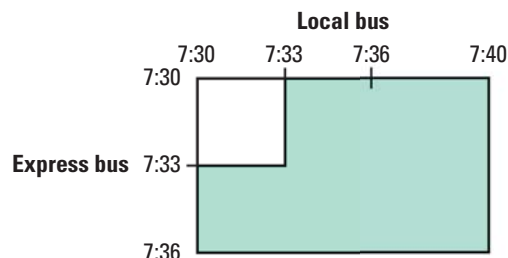


METHOD 2

Using Geometry Another approach is to use geometry. Use the formula for the area of a rectangle to find the number of possible outcomes and the number of favorable outcomes.

STEP 1 Draw a rectangle whose side lengths represent the number of minutes that each bus could arrive.

STEP 2 Draw a square within the rectangle to represent the number of minutes that you are *not* at the bus stop.



STEP 3 Calculate the area of the rectangle that represents the time a bus could arrive. Also calculate the area of the square that represents the time that you are *not* at the bus stop.

$$\begin{aligned} \text{Time a bus could arrive:} \\ A = 6 \cdot 10 = 60 \end{aligned}$$

$$\begin{aligned} \text{Time you are not at bus stop:} \\ A = 3 \cdot 3 = 9 \end{aligned}$$

STEP 4 Find the probability that you miss both buses by forming the ratio of the areas from step 2.

$$P(\text{miss both buses}) = \frac{9}{60} = \frac{3}{20}$$

PRACTICE

- WHAT IF?** In the problem on page 868, suppose you arrive at 7:34. What is the probability that you miss both buses?
- VISITING FRIENDS** Two friends are planning to visit you this evening. You expect one friend to arrive at your house between 7:00 and 7:30 P.M. You expect the other friend to arrive between 7:10 and 7:20 P.M. You have to run an errand from 7:00 until 7:15 P.M. What is the probability that you are home when both friends arrive? Solve this problem using two different methods.
- WHAT IF?** In Exercise 2, suppose a third friend plans to visit you this evening. This friend plans to arrive at your house between 7:00 and 7:20 P.M. What is the probability that you are home when all three of your friends arrive? *Explain* how you found your answer.
- RAFFLE** You enter two different raffles during your neighborhood's street fair. The winner of the first raffle will be announced between 6:00 and 6:30 P.M. The winner of the second raffle will be announced between 6:15 and 6:45 P.M. You leave the fair at 5:00 P.M. and return at 6:20 P.M. What is the probability that you hear the winner of each raffle announced? Solve this problem using two different methods.
- ERROR ANALYSIS** A student solved the problem in Exercise 4 as shown. *Describe* and correct the error.

$$\begin{aligned} P(\text{hear both winners}) &= \frac{\text{Favorable time}}{\text{Total time}} \\ &= \frac{10 \text{ minutes}}{30 \text{ minutes}} = \frac{1}{3} \end{aligned}$$

