Using ALTERNATIVE METHODS

TEKS a.6; 8.11.A, 8.11.C

Another Way to Solve Example 3, page 863

MULTIPLE REPRESENTATIONS In Example 3 on page 863, you saw how to solve the problem about a bus schedule by using a number line and a formula. You can also solve the problem by performing a simulation or using geometry.

PROBLEM

BUS SCHEDULE You take a city bus from your neighborhood to a location within walking distance of your school. The express bus arrives at your neighborhood between 7:30 and 7:36. The local bus arrives at your neighborhood between 7:30 and 7:40. You arrive at the bus stop at 7:33. Find the probability that you have missed both the express bus and the local bus.

METHOD 1

Performing a Simulation One alternative approach is to perform a simulation.

STEP 1 **Read** the problem. Notice that there is a 6 minute interval when the express bus could arrive and a 10 minute interval when the local bus could arrive. Let 1 represent the first minute, from 7:30 to 7:31, that a bus could arrive. Let 2 represent the second minute, from 7:31 to 7:32, that a bus could arrive. Continue to number the minutes when a bus could arrive.

STEP 2 **Generate** random integers. Use a graphing calculator to generate a random integer from 1 to 6. This number represents the minute that the express bus arrives. Then generate a random integer from 1 to 10. This number represents the minute that the local bus arrives. Perform this simulation 10 times.

```
randInt(1,6)
                    5
randInt(1,10)
                    9
```
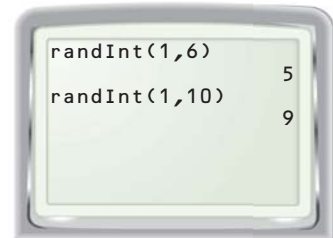
You are not at the bus stop until the fourth minute, so if both numbers that you generate are less than 4, then you miss both buses.

First number	5	4	2	5	2	1	2	3	3	1
Second number	9	1	1	8	4	7	9	10	6	2
Miss both buses?	No	No	Yes	No	No	No	No	No	No	Yes

STEP 3 **Find** the experimental probability that you miss both buses.

$$P(\text{miss both buses}) = \frac{2}{10} = \frac{1}{5}$$