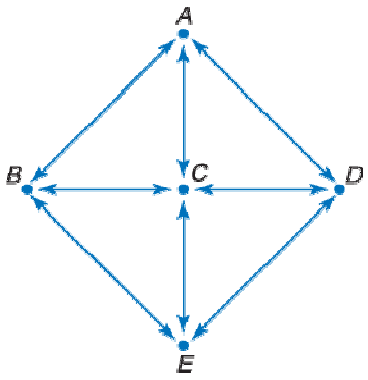
Lesson 8-6

Problem

TRANSPORTATION The directed graph shown represents the connections between five train stations.



a. Use a matrix to find the total number of ways in which the trains can travel from one station to another without traveling through a third station.

b. What is the sum of the elements in the first row of the matrix? What does this number represent?

c. How many ways can a train travel directly to Station C from another station?

Solve the Problem

a. Create a 5 ☎ 5 matrix using the letter of each train station. Label the rows *From* and the columns *To*.

Use the directed graph to complete the matrix. Write the number of ways you can travel directly from one station to another.

From \ To	A	B	C	D	E
A	–	–	–	–	–
B	–	–	–	–	–
C	–	–	–	–	–
D	–	–	–	–	–
E	–	–	–	–	–

b. The sum of the elements in the first row is 3. This represents the number of ways a train can travel from Station A directly to another station.

c. Find the sum of the elements in the column labeled C.

$1 + 1 + 0 + 1 + 1 = 4$

There are four ways a train can travel directly to Station C from another station.

From \ To	A	B	C	D	E
A	0	1	1	1	0
B	1	0	1	0	1
C	1	1	0	1	1
D	1	0	1	0	1
E	0	1	1	1	0