

E	17	18	20
F	16	19	22



•• **3.14** Kelle Carpet and Trim installs carpet in commercial offices. Peter Kelle has been very concerned with the amount of time it took to complete several recent jobs. Some of his workers are very unreliable. A list of activities and their optimistic completion time, the most likely completion time, and the pessimistic completion time (all in days) for a new contract are given in the following table:

ACTIVITY	TIME (DAYS)			IMMEDIATE PREDECESSOR(S)
	<i>a</i>	<i>m</i>	<i>b</i>	
A	3	6	8	—
B	2	4	4	—
C	1	2	3	—
D	6	7	8	C
E	2	4	6	B, D
F	6	10	14	A, E
G	1	2	4	A, E
H	3	6	9	F
I	10	11	12	G
J	14	16	20	C
K	2	8	10	H, I

- Determine the expected completion time and variance for each activity.
- Determine the total project completion time and the critical path for the project.
- Determine ES, EF, LS, LF, and slack for each activity.

MANAGEMENT

d) What is the probability that Kelle Carpet and Trim will finish the project in 40 days or less? **Px**

• • **3.15** The following is a table of activities associated with a project at Rafay Ishfaq's software firm in Chicago, their durations, and what activities each must precede:

ACTIVITY	DURATION (WEEKS)	PRECEDES
A (start)	1	B, C
B	1	E
C	4	F
E	2	F
F (end)	2	—

a) Draw an AON diagram of the project, including activity durations.

b) Define the critical path, listing all critical activities in chrono

- b) Assuming no other paths become critical, what action would you take to reduce the critical path one additional day?
- c) What is the total cost of the 2-day reduction? **Px**

... **3.20** Development of Version 2.0 of a particular accounting software product is being considered by Jose Noguera's technology firm in Baton Rouge. The activities necessary for the completion of this project are listed in the following table:

ACTIVITY	NORMAL TIME (WEEKS)	CRASH TIME (WEEKS)	NORMAL COST	CRASH COST	IMMEDIATE PREDECESSOR(S)
A	4	3	\$2,000	\$2,600	—
B	2	1	2,200	2,800	—
C	3	3	500	500	—
D	8	4	2,300	2,600	A
E	6	3	900	1,200	B
F	3	2	3,000	4,200	C
G	4	2	1,400	2,000	D, E

- a) What is the project completion date?
- b) What is the total cost required for completing this project on normal time?
- c) If you wish to reduce the time required to complete this project by 1 week, which activity should be crashed, and how much will this increase the total cost?
- d) What is the maximum time that can be crashed? How much would costs increase? **Px**

... **3.21** The estimated times and immediate predecessors for the activities in a project at Howard Umrah's retinal scanning company are given in the following table. Assume that the activ-