

PM Computers is an international manufacturer of computer equipment and software. It is going to introduce a number of new products in the coming year, and it wants to develop marketing programs to accompany the product introductions. The marketing program includes the preparation of printed materials distributed directly by the company and used by the company's marketing personnel, vendors, and representatives; print advertising in regular magazines, trade journals, and newspapers; and television commercials. The program also includes extensive training programs for marketing personnel, vendors, and representatives about the new products. A project management team with members from the marketing department and manufacturing areas has developed the following list of activities for the development of the marketing program:

Activity	Activity Description	Activity Predecessor	Time Estimates (days)		
			<i>a</i>	<i>m</i>	<i>b</i>
a	Preliminary budget and plan approval	—	10	15	20
b	Select marketing personnel for training	—	5	9	12
c	Develop overall media plan	a	15	25	30
d	Prepare separate media plans	c	12	20	25
e	Develop training plan	c	5	8	12
f	Design training course	e	6	14	20
g	Train marketing personnel	b, f	16	20	25
h	Plan TV commercials with agency	d	15	25	35
i	Draft in-house print materials	d	8	15	20
j	Develop print advertising layouts with agency	d	16	23	30
k	Review print advertising layouts	j	4	9	12
l	Review TV commercials	h	3	7	12
m	Review and print in-house materials	i	3	5	7
n	Release advertising to print media	g, i, k	2	4	8
o	Release TV commercials to networks	l	4	7	10
p	Final marketing personnel review	g, i, k	4	5	9
q	Run media advertising, mailings	m, n, o	15	20	30

Construct the network for this project and determine the activity schedule. Identify the critical path and determine the expected project duration time and variance. What is the probability that the program can be completed within 4 months?