

Exercise 16.9**Question****16.9 Sonny's PV's**

Sonny Reyes (see Problem 15.6) must decide how to manufacture the PV panels. He has three choices:

- Develop a new method
- Alter existing methods
- Get an outside firm to produce them

Developing the new method would yield a profit of \$11 million if successful, and if it cannot be developed, the outside firm must be used for a profit of \$2M. There is a 70% chance that the new method will be successfully developed.

Altering the existing method successfully will yield a profit of \$7M, and there is a 90% chance of the alterations being successful. If not successful, the outside firm must be used for a profit of \$3M. If used immediately, the outside firm will definitely be able to produce the panels and this would lead to a profit of \$5M.

Neglecting any time considerations,

- (a) Structure the decision tree.
- (b) Solve and select the best strategy.

Problem 15.6:**15.6. Sonny Reyes**

Sonny Reyes, the famous photovoltaic (PV) manufacturer, is testing a new PV panel. If a panel does not meet specifications it has a 80% chance of failing the test. A panel that does meet specifications has a 20% chance of failing the test. Overall, four in five panels meet specifications.

- (a) Define the formula for the prior likelihood ratio for this problem.
- (b) Define the conditional likelihood ratios for this problem.
- (c) Write the formula for the posterior likelihood ratio, if a panel first fails and then passes a second test.
- (d) Solve for the posterior probability of a panel meeting specifications.

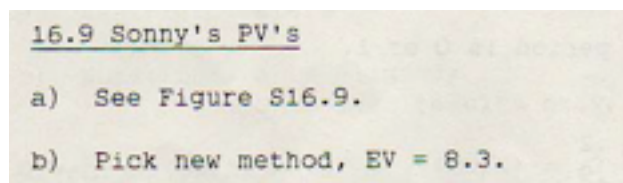
Solution from Manual

Figure S16.9

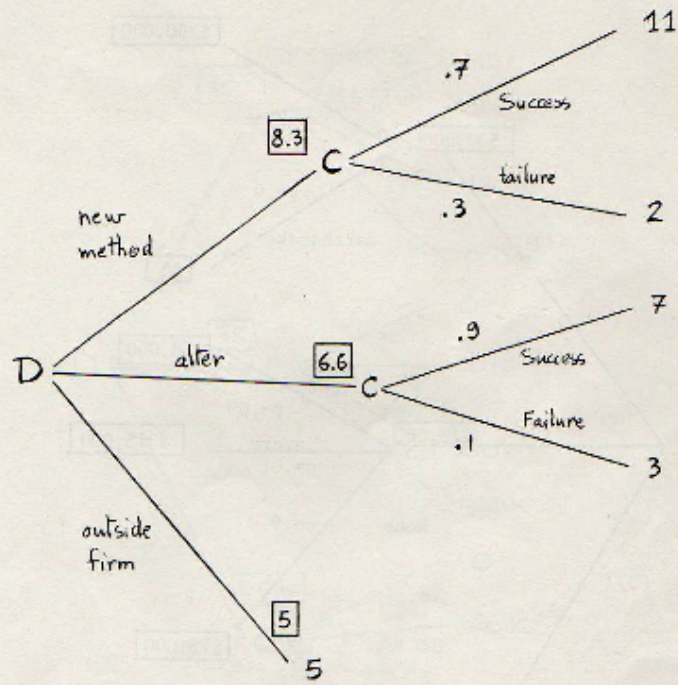


Figure S16.9

Sonny's PVs