

34. The Skimmer Boat Company manufactures the Water Skimmer bass fishing boat. The company purchases the engines it installs in its boats from the Mar-gine Company, which specializes

in marine engines. Skimmer has the following production schedule for April, May, June, and July:

Month	Production
April	60
May	85
June	100
July	120

Mar-gine usually manufactures and ships engines to Skimmer during the month the engines are due. However, from April through July, Mar-gine has a large order with another boat customer, and it can manufacture only 40 engines in April, 60 in May, 90 in June, and 50 in July. Mar-gine has several alternative ways to meet Skimmer's production schedule. It can produce up to 30 engines in January, February, and March and carry them in inventory at a cost of \$50 per engine per month until it ships them to Skimmer. For example, Mar-gine could build an engine in January and ship it to Skimmer in April, incurring \$150 in inventory charges. Mar-gine can also manufacture up to 20 engines in the month they are due on an overtime basis, with an additional cost of \$400 per engine. Mar-gine wants to determine the least costly production schedule that will meet Skimmer's schedule.

- Formulate a linear programming model for this problem.
- Solve this model by using the computer.
- If Mar-gine were able to increase its production capacity in January, February, and March from 30 to 40 engines, what would the effect be on the optimal solution?