

Question 4: Financial Measurements in manufacturing.

The PQ Piston Plant makes two sizes of pistons for reciprocating engines. Their plant has four machines. Currently, the demand for their products is 100 "P" pistons per week and 50 "Q" pistons per week.

The financial information for these products is as follows:

Product P: Selling Price \$180 Materials \$90

Product Q: Selling Price \$200 Materials \$80

Fixed Operating Expenses (including all labor) is \$12,000 per week

Three of the machines have enough capacity to produce all units demanded by the market. The fourth machine, Machine B, cannot produce all the demanded units. The B machine must run 15 minutes for each Product P it processes, and 30 minutes for each Product Q it produces. The plant operates 40 hours (2400 minutes) per week.

Please determine the product mix for this plant that produces the greatest net profit per week. Remember: the critical measurement is throughput (selling price minus materials) per minute of B operation. How many P and how many Q pistons will result in the greatest profit for this plant. Please show your calculations in both dollars and quantities.