1. - Newcor’s steel mill has received an order for 25 tons of steel. The steel must be 5% carbon and 5% molybdenum by weight. The steel is manufactured by combining three types of metals; steel ingots, scrap steel and alloys. Steel ingots can only be purchased in lot sizes of 1 at the specified weights given in the table below. The ingot can be cut to the desired amount needed in the process. The weight, cost per ton and chemical contents of each ingot is:

INGOT WEIGHT COST PER TON CARBON% MOLYBDENUM%

1 5 tons $350 5 3

2 3 tons $330 4 3

3 4 tons $310 5 4

4 6 tons $280 3 4

Unlimited amounts of alloys and scrap steel can be purchased. Scrap steel cost $100 per ton and contains 3% carbon and 9% molybdenum. The cost per ton and chemical make up of the alloys is:

ALLOY COST PER TON CARBON% MOLYBDENUM%

1 $500 8 6

2 $450 7 7

3 $400 6 8

Determine the appropriate mixture of the steel components to minimize the cost of fulfilling the requirements.