[IV](20) The Golden Gate Cranberry Company purchases cranberries from local growers and makes cranberry sauce and cranberry juice. It costs $0.70 to produce a can of cranberry sauce and $0.95 to produce a bottle of cranberry juice. In order to present a representative marketing mix to its customers the company has made it a policy that at least thirty percent, but not more than sixty percent, of the items it produces be cranberry sauce.

The company wants to produce up to, but no more than, the demand for each product. The company marketing manager estimates that the demand for cranberry sauce is a maximum of 5,000 cans plus an additional 3 cans for each $1 spent on advertising. The maximum demand for cranberry juice is estimated to be 4,000 bottles plus an additional 5 bottles for every $1 spent to promote cranberry juice. The company has $16,000 to spend on producing and advertising cranberry sauce and cranberry juice. Cranberry sauce sells for $1.45 per can while cranberry juice sells for $1.75 per bottle.

The company wants to know how many units of each cranberry product to produce and how much to spend on advertising for each product in order to maximize profit. Formulate a linear programming model for this problem. Make sure you clearly define decision variables. **Do not attempt to solve this problem.**