

[1](20) A young investor who has accumulated a large amount of money has sought advice from an investment counselor on how to invest some or all of the money. With the aid of the counselor, the investor has selected the following investment alternatives: common stock, treasury bills, AAA bonds, BBB bonds, income bonds, and negotiable certificates of deposit. After careful analysis, the counselor has determined the estimated yield for each investment alternative.

Investment Alternative	Estimated	
	Annual	Yield (%)
Common stock		12.00
Treasury bills		6.50
AAA bonds		8.00
BBB bonds		10.00
Income bonds		13.00
Negotiable certificates of deposit		7.00

The investor wants the investment in common stock to be no more than \$80,000 and the investment in income bonds to be no more than 10% of the total invested in bonds (AAA, BBB, and income). The amount invested in negotiable certificates of deposit should be at least as much as the amount invested in treasury bills. In the interest of diversification, not more than 25% of the total investment should be invested in any one alternative. The investor wants to know the amount to invest in each alternative to maximize the expected return.

The investor wants up to \$800,000 to be invested, and he would like to have a linear programming model with the total amount.

Formulate a linear programming model for this problem. Make sure you define decision variables clearly. (**Do not attempt to solve.**) Please use the back of this page if necessary.