The Carpenter Problem

A carpenter makes tables and bookcases. The carpenter realizes a net unit profit of $25.00 per table and $30.00 per bookcase. He has up to 200 board feet of lumber to devote weekly to the project, and up to 40 hours of labour. He can use the lumber and labour productively elsewhere if they are not used in the production of tables and bookcases. He estimates that it requires 20 board feet of lumber and 5 hours of labour to complete a table, and 30 board feet of lumber and 4 hours of labour for a bookcase. Moreover, he has signed a contract to deliver 4 tables and 2 bookcases every week.

The carpenter wishes to determine a weekly production schedule for tables and bookcases that maximizes his profit.