# Shoes manufacturing

A manager has to plan the shoes production for his firm for a single day. 5 models of shoes can be produced, exploiting the handwork of 3 artisans. The time needed by each artisan to manufacture a pair of shoes of each model is indicated in the following table (hours/unit)

| Model/Artisan | 1 | 2 | 3 |
|:---:|:---:|:---:|:---:|
| 1 | 1.5 | 3.5 | 4 |
| 2 | 1.8 | 2 | 3 |
| 3 | 2 | 1 | 2.5 |
| 4 | 2.5 | 1.5 | 3.5 |
| 5 | 3.5 | 3.5 | 4.2 |

Due to production constraints imposed by the unions, each artisan must work no less than 8 hours a day, but no more than 10.

The next table indicates, for each model of shoes, the selling price and an estimation of the maximal market demand

| Model | Price | Demand |
|:---:|:---:|:---:|
| 1 | 56 | 4 |
| 2 | 86 | 3 |
| 3 | 45 | 3 |
| 4 | 42 | 5 |
| 5 | 65 | 8 |

Given an integer linear programming formulation to the problem of maximizing the revenue, subject to production and demand constraints.