

Application

A furniture manufacturer can make from 30 to 60 tables a day and from 40 to 100 chairs a day. It can make at most 120 units in one day. The profit on a table is \$150, and the profit on a chair is \$65. How many tables and chairs should they make per day to maximize profit? How much is the maximum profit?



Solve.

1.
$$\begin{aligned}5x - 4y + 2z &= 21 \\ -x - 5y + 6z &= -24 \\ -x - 4y + 5z &= -21\end{aligned}$$

2.
$$\begin{aligned}4r - 4s + 4t &= -4 \\ 4r + s - 2t &= 5 \\ -3r - 3s - 4t &= -16\end{aligned}$$

3. An airplane flying with a head wind traveled 1000 miles from one city to another in 2 hours and 12 minutes. On the return flight, flying with a tail wind, the total time was only 2 hours. Find the air [speed](#) of the [plane](#) and the [speed](#) of the wind.

4. A boat travels upstream for 32 miles in 2 hours. The return trip at the same constant speed with the same current only takes 1 hour and 36 minutes. What is the speed of the boat and the current?