7. **Large scale:** Suppose that the decision variables of a mathematical programming model are $x_{i\,l\,t}$ … amount of product i produced on manufacturing line l during week t where i=1,…,17; l=1,…,5; t=1,…,7. Use summation and indexed notation to write expressions for each of the following systems of constraints in terms of these decision variables, and determine how many constraints belong to each system:

   - Total production on any line in any week should not exceed 200.
   - The total 7-week production of product i=5 should not exceed 4000.
   - At least 100 units of each product should be produced each week.

8. **Evaluation:** Five car salespeople had the following sales for the past two months:

Salesperson	Luxury Cars	SUV's	Mid-sized
Fred	3	6	12
Mary	7	4	15
John	1	4	18
Jane	2	3	24
Chris	5	5	16

   The general manager believes that total dollar sales doesn't adequately capture performance and would like to use a weighted average of luxury car, SUV, and mid-sized sales instead. The manager asks each salesperson to come up with a (positive) weight for each car category, but stipulates that weights cannot allow anyone's total weighted score to exceed 100. For example, defining w1 = luxury weight, w2 = SUV weight, and w3 = mid-sized weight, Fred's weighted score would be: 3 w1 + 6 w2 + 12 w3. Develop an LP model that will find a set of weights that will make John's weighted score as large as possible.

9. **Verschnittproblem:** Ein Baumarkt steht folgendem Problem gegenüber: ein Kunde hat 30 Stück 4m x 3m, 50 Stück 4m x 5m, sowie 20 Stück 4m x 6m Schalungsplatten bestellt. Diese Platten müssen aus Standardplatten mit den Maßen 4m x 9m geschnitten werden, wobei jede Standardplatte 70 Euro kostet und hinreichend viele davon auf Lager sind. Zusätzlich kostet das Schneiden einer Platte 5 Euro. Die 4m x 3m Platten kauft der Kunde um 70 Euro, die 4m x 5m Platten zu 90 Euro, und die 4m x 6m Platten zu 100 Euro. Geschnittene Platten vom Format 4m x 3m, 4m x 5m und 4m x 6m können zusätzlich um 2 Euro pro Quadratmeter Fläche an normale Laufkundschaft verkauft werden. Verschnittene Teile werden von dem Standardplattenlieferanten um 50 Cent pro Quadratmeter zurückgenommen. Formulieren Sie ein Modell der mathematischen Programmierung, welche dem Management des Baumarktes angibt, wie die 4m x 9m Platten geschnitten werden sollen um den Profit zu maximieren.