## Problem 1

**Answer:** 3

There are three decision variables, one for each type of product.

## Problem 2

**Answer:**

$$\max \quad Z = 75x_1 + 50x_2 + 35x_3$$

The profit per TV set is \$75. Since $x_1$ TVs are produced, the profit related to this product is $75x_1$. The same logic allows us to determine the profit related to stereos and speakers. The stereos generate a profit of $50x_2$, and the speakers generate a profit of $35x_3$. Therefore, the total profit can be expressed as

$$Z = 75x_1 + 50x_2 + 35x_3. \tag{1}$$

For this problem, this is the objective function. Since it represents profit, we obviously want to maximize this function. In other words, we want to find $\max Z$.

## Problem 3

**Answer:** $x_1 + x_2 \leq 450$

Each TV set requires 1 chassis. The same is true for each stereo. On the other hand, speakers don't require a chassis. Then the total number of chassis the company needs is given by $x_1 + x_2$. Since it's not possible to use more than 450 chassis, the following must hold:

$$x_1 + x_2 \leq 450. \tag{2}$$

## Problem 4

**Answer:** $2x_1 + x_2 + x_3 \leq 600$

Each TV set requires 2 electronic parts. For each stereo/speaker, we need a single electronic part. Then the total number of such parts the company needs is given by $2x_1 + x_2 + x_3$. Since it's not possible to use more than 600 electronic parts, the following must hold:

$$2x_1 + x_2 + x_3 \leq 600. \tag{3}$$

## Problem 5

**Answer:** `SUMPRODUCT($D$5:$F$5,D7:F7)`

## Problem 6

**Answer:** `SUMPRODUCT(D5:F5,D12:F12)`

## Problem 7

**Answer:** 200 units of TV sets, 200 units of stereos, and none of speakers

## Problem 8

**Answer:** Chassis, Picture tubes, and Power supply

## Problem 9

**Answer:** $25000

## Problem 10

**Answer:** All of the above.