**Manufacturing Furniture**

**Your furniture company is expanding business! Instead of just selling sofas, you are going to be producing tables and chairs.**

**Today we are going to use Legos to represent the materials needed to produce each piece of furniture. Because of budget constraints, your company can only afford to buy a certain amount of materials. You have 12 large Legos and 16 small Legos. To make a table it will take 2 large Legos and 2 small Legos. To make a chair it will take one large Lego and 2 small Legos. The table will make the company a profit of $16 and the chair will make the company a profit of $10.**

**Find possible combinations for the number of tables and chairs you can make with the given materials. For each combination, calculate the total profit that it would produce.**

|  |  |  |
| --- | --- | --- |
| **# of tables** | **# of chairs** | **Total profit** |
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**Which combination would produce the most profit?**

**What is a constraint? Were you faced with any while building the furniture?**

**We often express constraints using inequalities in mathematics. Complete the table below to write the constraints algebraically.**

|  |  |  |  |
| --- | --- | --- | --- |
| **LEGO PIECE** | **Tables****(Blocks per table “multiplied by” tables)** | **Chairs(Blocks per chair “multiplied by” chairs)** | **Pieces Available** |
| **Large** |  |  |  |
| **Small** |  |  |  |

**Four constraints (as inequalities):**

**Graph each of the inequalities, shading appropriate regions.**