|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | Total / Limits | inequality / constraints |
| # of (what is being produced?) |  |  |  |  |
| limitation #1 |  |  |  |  |
| limitation #2 |  |  |  |  |
| objective function |  |  |  |  |

Baking a tray of corn muffins takes 4 cups milk and 3 cups wheat flour. A tray of bran muffins takes 2 cups milk and 3 cups wheat flour. A baker has 16 cups of milk and 15 cups of flour. He makes $3 profit per tray of corn muffins and $2 profit per tray of bran muffins. How many trays of each type of muffin should the baker make to maximize profit?

1. Fill in the columns of what it being made.
2. The constraints are what the baker is limited by. What ingredients limit his baking?
3. What are the amounts of ingredients used in each type of muffin?
4. What is the profit on each type of muffin?
5. Write the inequalities from the information on your table.
6. Graph the constraints. Then find the coordinates of each vertex.
7. Evaluate the objective function at each vertex.
8. At which vertex is the objective function maximized?
9. How many trays of each muffin should the baker make?
10. What is the maximum profit?

Vertex points

Substitute the vertex points in the objective function to find the maximum profit.

Now try this problem:

A manufacturer is producing skateboards. Each standard skateboard costs $9 for parts and $15 for labor and each long board costs $6 for parts and $20 for labor. The manufacturer’s budget is $810 for parts and $1800 for labor. If the income per unit is $150 for a standard skateboard and$175 for a long board, how many of each type of skateboard should be manufactured to maximize income?