- A kitchen manager at ABC Hospital must decide the mix of food provided to 100 patients. Dietary instructions require that each patient must get at least
  - 1 gram of protein
  - 1 gram of fat
  - 3 grams of carbohydrates
- Furthermore, the carbohydrate content should never exceed 6 grams per patient.
- The availability of protein, fat, and carbohydrate in grams per kilograms of chicken, rice, and bread is given below:

	Protein (gr)	Fat (gr)	Carbohydrates (gr)	Cost /kg
Chicken	10	2	0	30
Rice	2	1	15	5
Bread	2	0	10	4

- Formulate a suitable mathematical model for the above diet mix to minimize cost.

Solution:

Solution:

Let x_1 - Quantity in kg of chicken to be used

$\quad$ x_2, - Quantity in " " Rice " "
used

$\quad$ x_3, Quantity " " " bread " "
used

objective function
$$100*(30x_1 + 5x_2 + 4x_3) = Z$$

Non negative function,
$$x_1, y_1, z \geq 0$$

Constraints:

$10x_1 + 2x_2 + 2x_3 \geq 100$		Protein
$2x_1 + x_2.$	≥ 100	fat
$15x_2 + 10x_3$	≥ 300	Carbo
$15x_2 + 10x_3$	≤ 600	Carbo.

HW 2