Ex. 1:

A toy company manufactures two types of toy vehicles: racing cars and sport-utility vehicles.

- Because the supply of materials is limited, no more than 40 racing cars and 60 sport-utility vehicles can be made each day.
- However, the company can make 70 or more vehicles, in total, each day.
- It costs $8 to make a racing car and $12 to make a sport-utility vehicle.

There are many possible combinations of racing cars and sport-utility vehicles that could be made. The company wants to know what combinations will result in the minimum and maximum costs, and what those costs will be.

Objective Function:
(Optimization Equation)
*Trying to minimize & maximize Cost.

① Assign variables
Racing cars → x

② Write eqn.
Cost = 8x + 12y

③ Write Inequalities

$x \leq 40$

$y \leq 60$

$x + y \geq 70$

*Implicit Inequalities

$x \geq 0$

$y \geq 0$

$C = 8x + 12y$

(10, 60) $C = 8(10) + 12(60) = \$800$

(40, 60) $C = 8(40) + 12(60) = \$1040$

(40, 30) $C = 8(40) + 12(30) = \$680$

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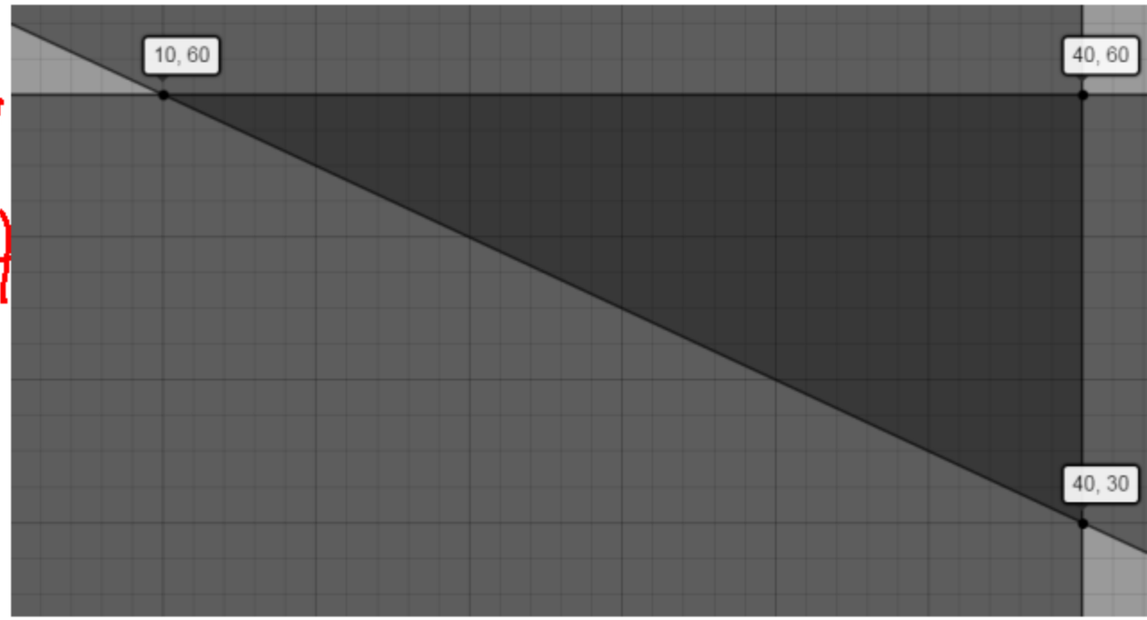

- 40 racing cars and 60 SUV give a max revenue of $104
- 40 racing cars and 30 SUVs give a minimum revenue of $680