Graphing Inequalities

- Graph the line representing the boundary
  - use the x and y-intercepts
  - use the slope and y-intercept
  - use any two points that satisfy the line

  Decide on the boundary:

  $<$ $>$ use a dashed line

  $\leq$ $\geq$ use a solid line

- Shade the solution set (if $x \in R, y \in R$) continuous

  Test a point to see if it satisfies the original inequality.

  If it does, the shade the region containing that point

- Stipple the solution set (if $x \in I$ or $x \in W$, $y \in I$ or $y \in W$) discrete

- With a system of inequalites, shade the the overlap darker <u>OR</u> stipple only the points the overlap.

§6.4 Optimization Problems I : Creating the model (p324)

Example 1 (p325)

Let x be the number of cars $(x \in W)$

y be the number of minivans $(y \in W)$

Constraints

$x \le 12$

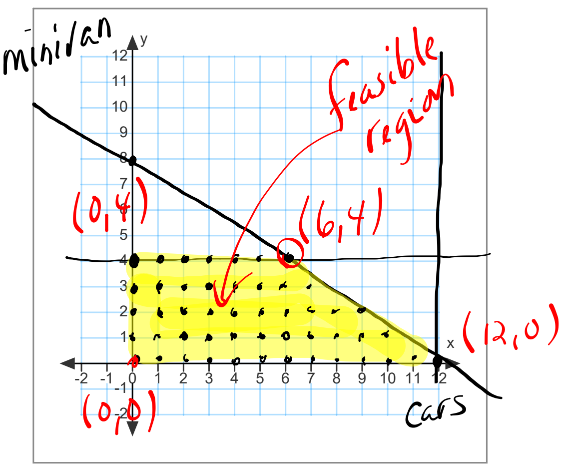
$y \le 4$

$4x + 6y \le 48$

3 teams
(each with 2 coaches, 14 athletes) 16 people
$\times 3$
48 people.

Objective Function (what we are trying to maximize or minimize)

$V = x + y$ where V is the total # of vehicles used.



$4x + 6y = 48$ (boundary line)

xint: $\boxed{4x = 48 \quad x = 12}$ $(12, 0)$

yint: $\boxed{6y = 48 \quad y = 8}$ $(0, 8)$

Optimization Problem

A problem where a quantity must be maximized or minimized following a set of guidelines or conditions.

Constraint (graphed)

A limiting condition of the optimization problem being modelled, represented by a linear inequality.

Objective Function (not graphed)

The equation that represents the relationship between the two variables in the system of linear inequalities and the quantity that is to be optimized.

Feasible Region

The solution region for a system of linear inequalities that is being modelled in an optimization problem.

TODO

1. Read over p329
2. QUIZ - Graphing Systems of Inequalities.