

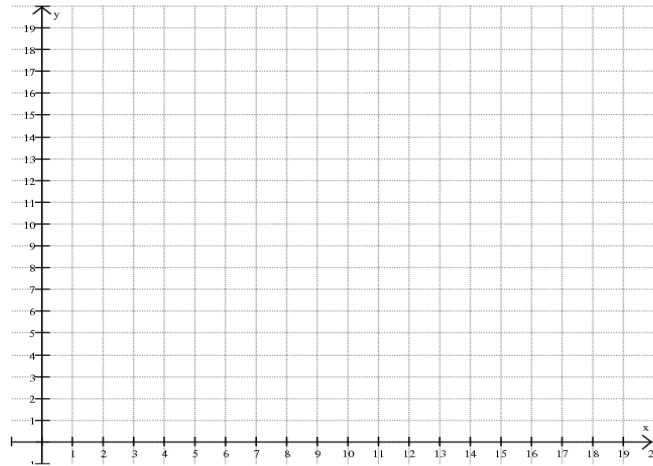
Honors Algebra 3-4 Worksheet

Name: \_\_\_\_\_

Steps to solving Linear Programming problems:

1. Define variables.
2. Write a system of inequalities for the constraints.
3. Write an optimization equation to be maximized or minimized.
4. Graph the system of inequalities.
5. Find the coordinates of the vertices of the feasible region.
6. Substitute the coordinates of the vertices of the feasible region in the optimization equation.
7. Select the greatest or least result to answer the problem.

- 1) A backpack manufacturer produces an internal frame pack and an external frame pack. Let  $x$  represent the number of internal frame packs and let  $y$  represent the number of external frame packs produced in one hour. The inequalities  $x + 3y \leq 18$ ,  $2x + y \leq 16$ ,  $x \geq 0$ , and  $y \geq 0$  describe the constraints for manufacturing backpacks. Use the profit function  $P = 50x + 80y$  to determine the maximum profit for manufacturing both backpacks.



- 2) A delicatessen has 8 pounds of plain sausage and 10 pounds of garlic-flavored sausage. The deli wants to make as much bratwurst as possible. Each pound of bratwurst requires  $\frac{3}{4}$  pound of plain sausage and  $\frac{1}{2}$  pound of garlic-flavored sausage. Find the maximum number of pounds of bratwurst they can make.

