

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

Date: \_\_\_\_\_

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## MA 162

Week 10 Recitation Worksheet (Tuesday)

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**You must show all work to receive full credit.**

1. Consider the following minimization problem:

Cheapskate Electronics Store needs to update its inventory of home theater systems, plasma TVs, and Blu-ray players. There are two suppliers it can buy from: Samsung and Suny. Samsung offers a bundle consisting of 10 home theater systems, 10 plasma TVs, and 12 Blu-ray players for \$4,300. Suny offers a bundle consisting of 16 home theater systems, 10 plasma TVs, and 8 Blu-ray players for \$5,700. Cheapskate Electronics needs at least 240 home theater systems, 180 plasma TVs, and 160 Blu-ray players. How many bundles should Cheapskate Electronics purchase from each supplier so that it can update its inventory at the least possible cost?

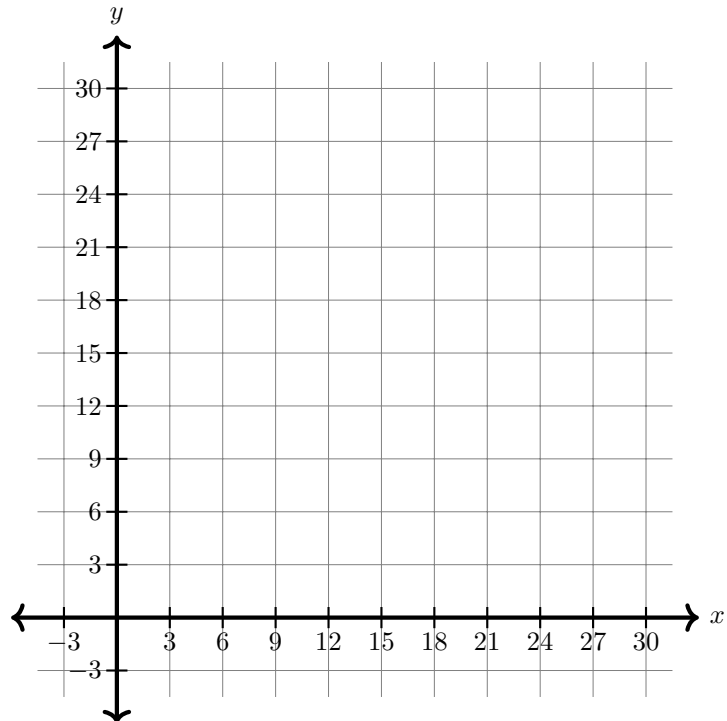
Complete the steps below to solve this problem.

- (a) Assign variables in order to set up the minimization problem.
- (b) What is the objective function?
- (c) In addition to the non-negativity constraints, there are three other constraints that must be satisfied. What are the other three constraints? [Your answer here should be three separate inequalities.]
- (d) Write the associated linear programming problem.

Minimize  
subject to

$$x \geq 0, y \geq 0$$

(e) Graph the system of inequalities from part (d) and shade the feasible region.



(f) Find the corner points of the feasible region from part (e). **Do not round any values.**

(g) Note that an optimal solution exists, which must occur at a corner point of the feasible region (see slides 14 (second bullet point) and 15 from the course notes). At which corner point is the cost minimized? What is the minimum cost?