## Activity 1.1.7 The Farmer

Solve the following problem using the linear programming procedure.
A Connecticut farmer grows corn and apples on his farm. He ships both items in the samesized box and his truck can carry at most 500 boxes per trip. Past records indicate that each shipment should contain at least 100 boxes of each product. Also, the number of boxes of apples should not exceed the number of boxes of corn. If this farmer receives a profit of $\$ 6$ for each box of apples and $\$ 4$ for each box of corn, how many boxes of each should he load on his truck to maximize his profit?

1. Identify the variables for this problem.
2. Write four inequalities that constrain the problem.
3. Graph the inequality constraints on the coordinate plane below. Label and scale the axes. Identify and shade in the feasible region.

4. Find the coordinates of the corner points of the feasible region.
5. Write the objective function.
6. Enter the corner points in the table below and find the objective function value for each corner point. Identify the corner point that maximizes the objective function.

| $x=c$ | $y=a$ | Objective Function Value $=$ Profit |
| :--- | :--- | :--- |
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7. State the solution and verify that it makes sense. Summarize your result in a statement using a complete sentence.
