Algebra 2
1.4 – Linear Programming Practice 1

Name: ______________________________

Date: ___________________ Per: ________

1) Farmer Joe can plant up to 8 acres of land with wheat and barley. He can earn $5000 for every acre of wheat and $3000 for every acre of barley. His use of necessary pesticide is limited by federal regulations to 10 gallons for his entire 8 acres. Wheat requires 2 gallons of pesticide for every acre planted and barley requires just 1 gallon per acre. How many acres of each crop should Farmer Joe plant to maximize his profit?

Define the variables:

X = ______________________

Y = ______________________

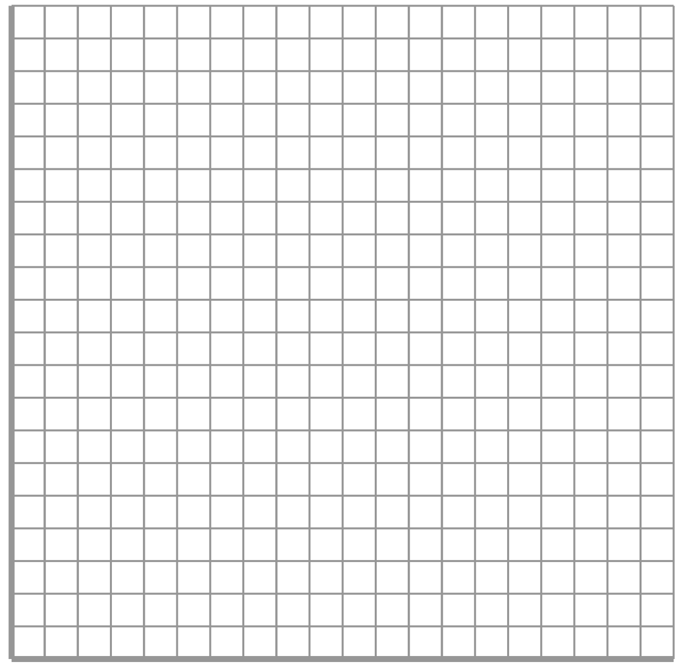
Constraints:

Objective Function: ______________________

Critical Points:

Conclusion: ____

2) As a receptionist for a veterinarian, one of Mrs. Barkman's tasks is to schedule appointments. She allots 20 minutes for a routine office visit and 40 minutes for a surgery. The veterinarian cannot do more than 6 surgeries per day. The office has 7 hours available for appointments. If an office visit costs $55 and most surgeries cost $125, find a combination of office visits and surgeries that will maximize the income the veterinarian practice receives per day.



Define the variables:

X = ______________________

Y = ______________________

Constraints:

Objective Function: ______________________

Critical Points:

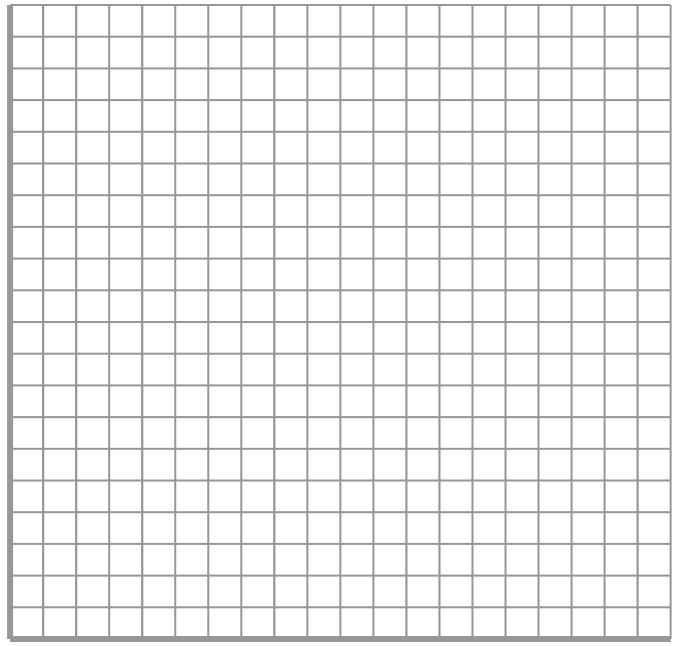
Conclusion: ____

3) Bob the Builder has upgraded to the big league and now builds tool sheds. He uses 10 sheets of dry wall and 15 studs for a small shed and 15 sheets of dry wall and 45 studs for a large shed. He has available 60 sheets of dry wall and 135 studs. If Bob makes $390 profit on a small shed and $520 on a large shed, how many of each type of building should Bob build to maximize his profit?

Define the variables:

X = ________________________

Y = ________________________



Constraints:

Objective Function: ________________________

Critical Points:

Conclusion: ____

4) An agriculture company has 80 tons of type I fertilizer and 120 tons of type II fertilizer. The company mixes these fertilizers into two products. Product X requires 2 parts of type I and 1 part of type II fertilizers. Product Y requires 1 part of type I and 3 parts of type II fertilizers. If each product sells for $2000, what is the maximum revenue and how many of each product should be made and sold to maximize revenue?

Define the variables:

X = ______________________

Y = ______________________

Constraints:

Objective Function: ______________________

Critical Points:

Conclusion: ____