

Name _____

Topic 4 enVision™ STEM Project

Systems of Linear Equations and Inequalities

BLM 1

Plan Your Farm

Suppose you have a farm in the United States. You will be growing two of corn, wheat, and soybeans on your farm.

Name of farm: _____

Number of acres of farmland: _____

Research corn, wheat, and soybeans. Use your research to complete the table below.

Crop	Corn	Wheat	Soybeans
Cost per acre to plant (dollars)			
Time per acre to plant (hours)			
Price per bushel (dollars)			
Expected yield (bushels per acre)			

Crops chosen (two) _____

Allocation of farmland (50/50 or 25/75): _____

Money invested for the year (dollars): _____



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BLM 2

Develop Your Farm

Your goal is to make your farm as profitable as possible.

Let c represent a crop of corn.

Let w represent a crop of wheat.

Let s represent a crop of soybeans.

Write a system of equations and inequalities to match the choices you made about your farm.

(Hint: Decide which will be equations and which will be inequalities.)

- Assume your farmland (number of acres) will be planted with two crops. The maximum number of acres you can plant is 100% of your farmland. The minimum number of acres you can plant is 70% of your farmland.

- Assume the time it takes to plant an acre of corn is 2.9 hours, the time to plant an acre of wheat is 2 hours, and the time to plant an acre of soybeans is 1.9 hours. Assume you have 48 daylight hours for planting.

- Assume your cost per acre to plant corn is \$390, to plant wheat is \$200, and to plant soybeans is \$200.

- Assume your farm generates revenue of \$820 per acre of corn, \$370 per acre of wheat, and \$625 per acre of soybeans.

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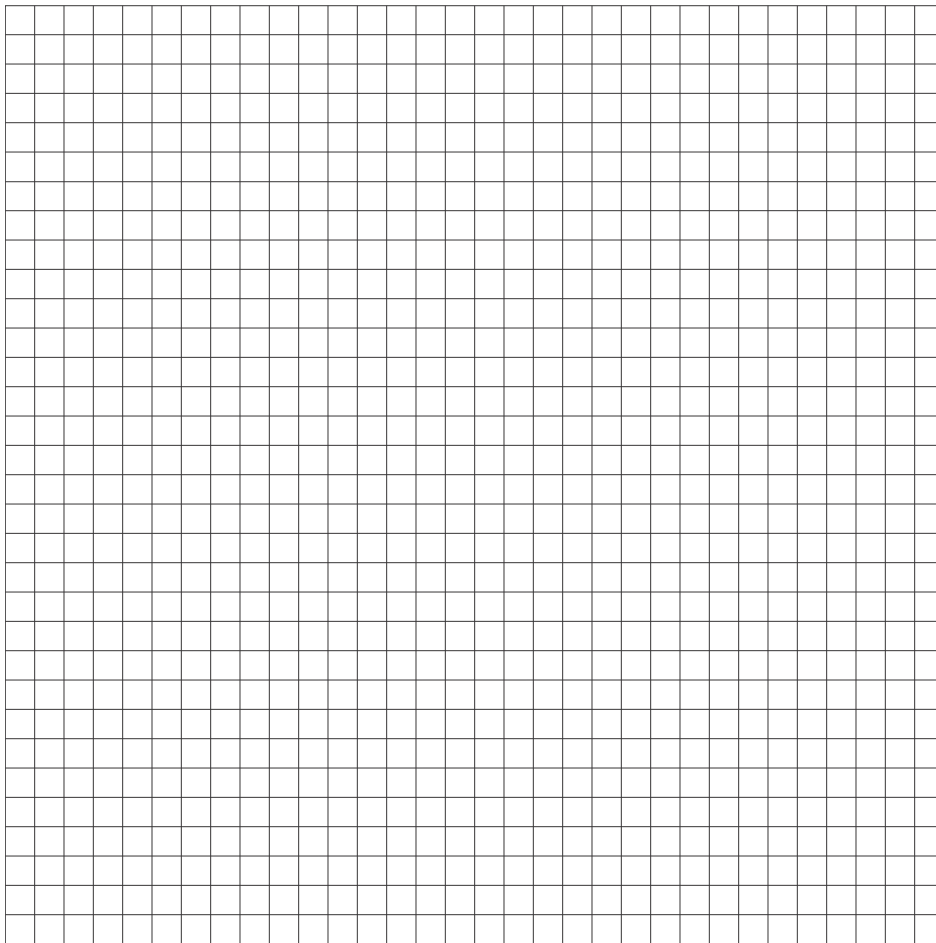
BLM 3

Maximize Your Profit

$$\text{Profit} = \text{Income} - \text{Expenses}$$

Your goal: Maximize your profit.

Graph the system of equations and inequalities you wrote.



Find and explain the point that maximizes your profit.