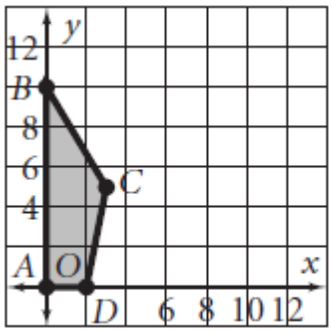
Name _____ Date _____

# 3-4 Linear Programming Homework

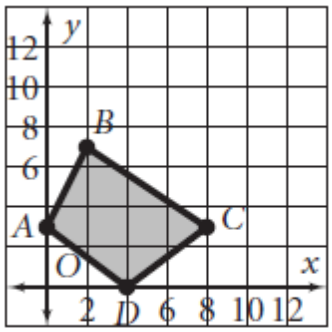
**For #1 –2, find the values of x and y that maximize or minimize the objective function for each graph. Then find the maximum or minimum value.**

**1.**




Maximize for $P = 2x + 3y$

**2.**

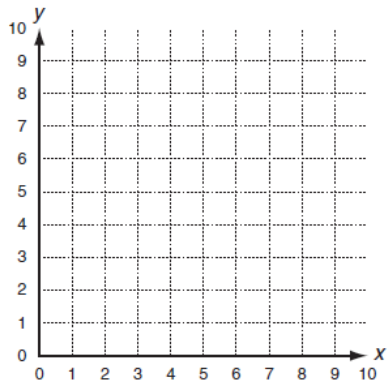



Minimize for $C = x + 2y$

**Maximize or minimize each objective function.**

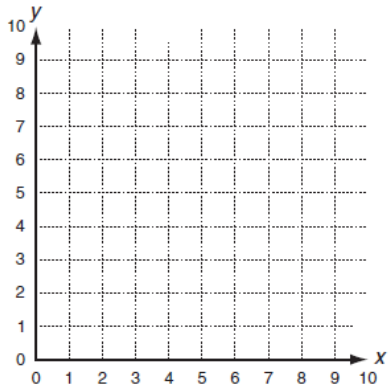
**3.** Maximize $P = 5x + 2y$

for the constraints $\begin{cases} y \geq 0 \\ x \geq 0 \\ y \leq -x + 10 \\ y \leq 2x + 1 \end{cases}$




**4.** Minimize $P = 4x + 6y$

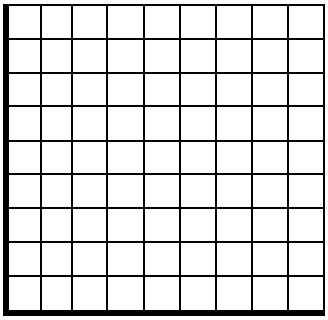
for the constraints $\begin{cases} 0 \leq x \leq 4 \\ y \geq 1 \\ y \geq -x + 4 \end{cases}$



**5.** You are going to make and sell bread. A loaf of Irish soda bread is made with 2 cups of flour and 1 cup of sugar. Kugelhopf cake is made with 4 cups of flour and 1 cup of sugar. You will make a profit of $1.50 on each loaf of Irish soda bread and a profit of $4 on each Kugelhopf cake. You have 16 cups of flour and 5 cups of sugar.

Write a system of constraints, and an objective function.

Then graph your constraints, and determine <u>how many of each type of bread will maximize profit</u>.



**6.** A calculator company produces a scientific calculator and a graphing calculator. Long-term projections indicate an expected demand of at least 100 scientific and 80 graphing calculators each day. Because of limitations on production capacity, no more than 200 scientific and 170 graphing calculators can be made daily. To satisfy a shipping contract, a total of at least 200 calculators much be shipped each day. Each scientific calculator results in a $2 loss, and each graphing calculator results in a $5 profit.

Write a system of constraints, and an objective function.

Then graph your constraints, and determine <u>how many of each type of calculator will maximize profit</u>.