Name _____ Date _____

Take It to the Max . . . or Min

Linear Programming

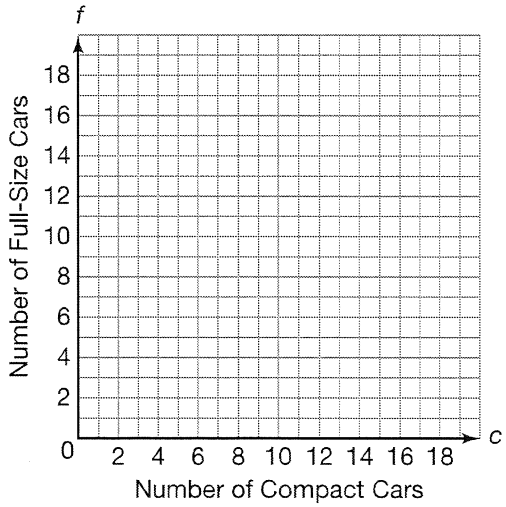
The Smartway Rental Car Company has $180,000 to invest in the purchase of at most 16 cars of two different types, compact and full-size.

	Purchase Price	Rental Fee	Maintenance Cost
Compact Car	$9000	$30	$8
Full-Size Car	$15,000	$48	$10

1. Due to demand, Smartway needs to purchase at least 5 compact cars.

a. Identify the constraints as a system of linear inequalities. Define your variables.

b. Graph the solution set for the system of linear inequalities. Label all points of the intersection of the boundary lines.

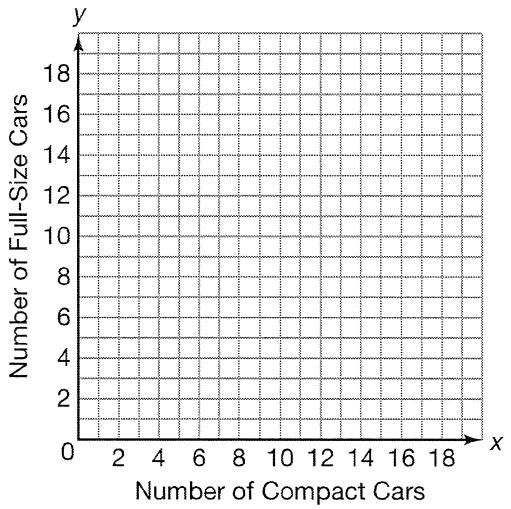


c. Smartway Rental Car's income comes from renting out their cars. How many of each type of car should they purchase if they want to maximize their income? What is the maximum income?

d. In order to keep up with their competitors, Smartway must purchase at least 3 full-size cars and at least 5 compact cars.

Identify the constraints as a system of linear inequalities. Define your variables.

e. Graph the solution set for this system of linear inequalities.



Name _____ Date _____

f. Smartway Rental is still unable to keep up with their competitors so they are going to try and cut their maintenance fees to save money. How many of each type of car should they purchase to minimize their maintenance fees?