

HOMWORK ???

13. Sophie has two summer jobs.

- She works no more than a total of 32 h a week. Both jobs allow her to have flexible hours but in whole hours only.
- At one job, Sophie works no less than 12 h and earns \$8.75/h. x
- At the other job, Sophie works no more than 24 h and earns \$9.00/h. y

What combination of numbers of hours will allow her to maximize her earnings? What can she expect to earn?

Variables
 $x \rightarrow$ # of hrs at job #1 (\$8.75/hr)
 $y \rightarrow$ # of hrs at job #2 (\$9.00/hr)

Constraints
 $x + y \leq 32$ $x \geq 12$ $y \leq 24$

Objective $E = 8.75x + 9.00y$

$x \in W$
 $y \in W$
 Restrictions

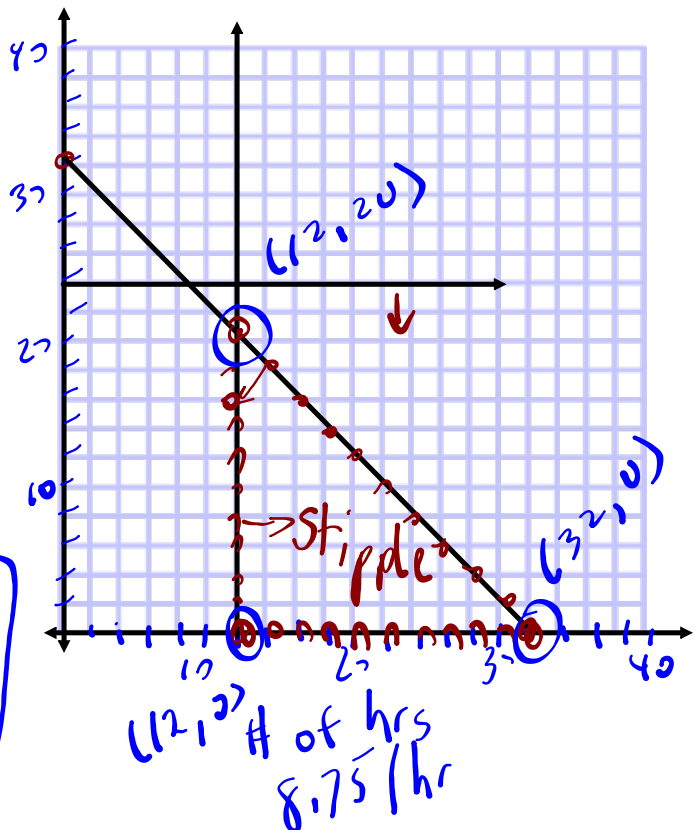
Graph
 sub vertices

$x + y = 32$
 $x + 0 = 32 \rightarrow (32, 0)$
 $0 + y = 32 \rightarrow (0, 32)$

Vertex	Objective
(12, 20)	$8.75 \cdot 12 + 9 \cdot 20 = 285$
(32, 0)	$8.75 \cdot 32 + 9 \cdot 0 = 280$



Work
 12 hrs @ \$8.75/hr
 20 hrs @ \$9.00/hr

Earn \$285



9. Northwest Trail Mix Limited (NTML) is preparing 1 kg bags of nuts to sell.

- NTML decides to make and sell no fewer than 3000 bags of walnuts, and no more than 5000 bags of almonds.
- The marketing department has predicted sales of no fewer than 6000 bags altogether.
- NTML wants to minimize costs.

Type of Nut	Cost
almonds 	\$11.19/kg
walnuts 	\$13.10/kg

The cost per kilogram is shown in the chart.

a) Write a system of linear inequalities to describe these constraints:

- i) the number of bags of almonds $x \leq 5000$
- ii) the number of bags of walnuts $y \geq 3000$
- iii) the total number of bags to be sold $x + y \geq 6000$

b) Describe the restrictions on the domain and range of the variables.

c) Graph the system of linear inequalities.

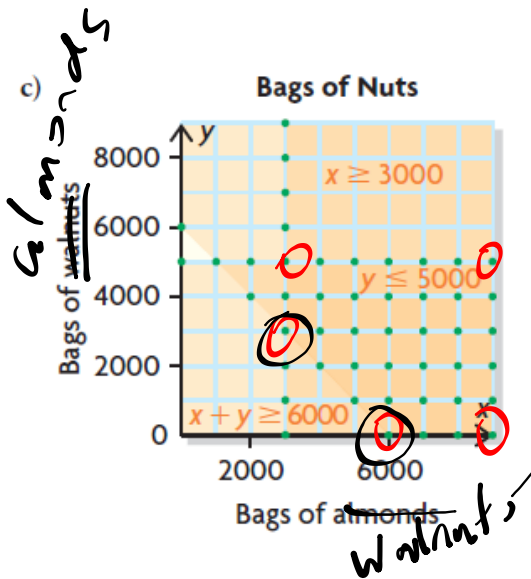
d) Describe the feasible region.

e) Write the objective function to represent the quantity to be minimized.



$$C = 11.19x + 13.10y$$

f) Determine the minimum cost for NTML.

$x \in W$ $y \in W$



$11.19 \cdot 3000 + 13.10 \cdot 3000$	Min
72870	
$11.19 \cdot 0 + 13.10 \cdot 6000$	
78600	

Type of Nut	Cost
almonds 	\$11.19/kg
walnuts 	\$13.10/kg