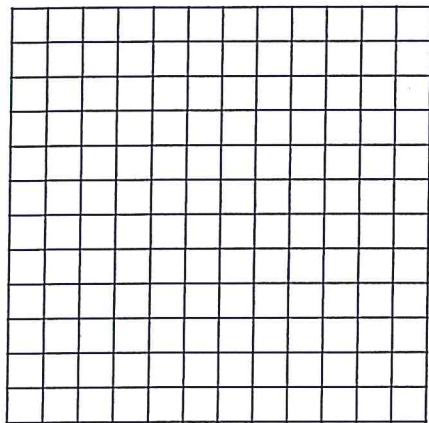


Bellwork Alg 2A Wednesday, December 7, 1941

Suppose you make and sell skin lotion. A quart of regular skin lotion contains 2 c oil and 1 c cocoa butter. A quart of extra-rich skin lotion contains 1 c oil and 2 c cocoa butter. You will make a profit of \$10/qt on regular lotion and a profit of \$8/qt on extra-rich lotion. You have 24c oil and 18c cocoa butter.

1. Write a system of 4 inequalities to model this situation.
2. Graph this system of constraints and find the coordinates of the solution region.

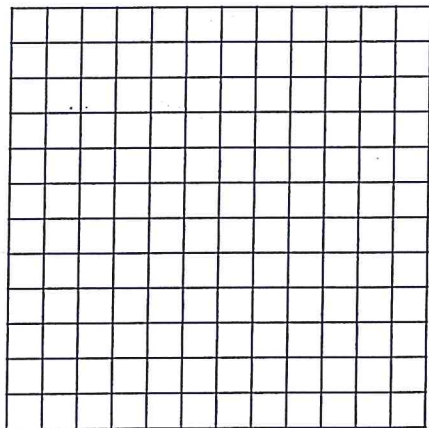


3. Find the number of quarts of each type of lotion you should make and sell in order to maximize your profit. What is the maximum profit?

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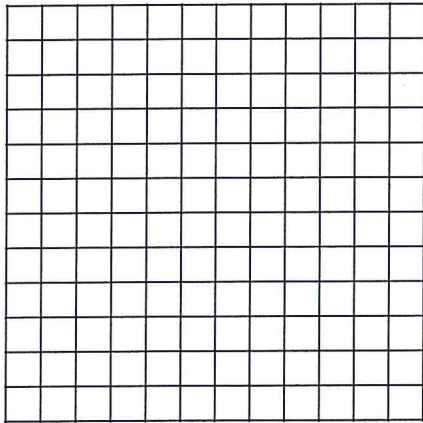
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ANSWERS

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1. Write a system of 4 inequalities to model this situation.

$R = \# \text{ QTS REG LOTION}$

$E = \# \text{ QTS EXTRA RICH LOTION}$

$$\left. \begin{array}{l} R \geq 0 \\ E \geq 0 \end{array} \right\} \text{1ST QUADRANT}$$

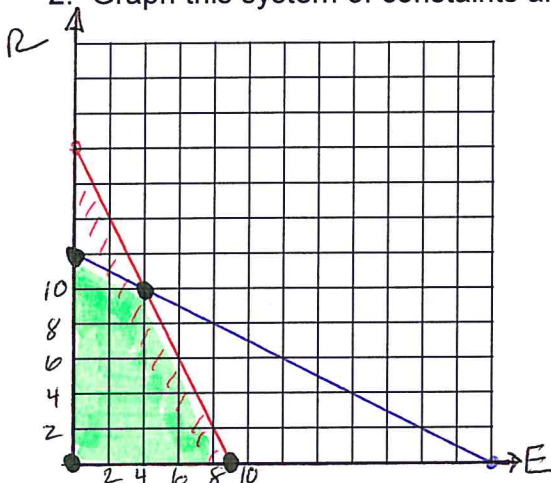
OIL: $E + 2R \leq 24$

COCOA: $2E + R \leq 18$

$E - \text{INT} = 9$
 $R - \text{INT} = 18$

$E - \text{INT} = 24$
 $R - \text{INT} = 12$

2. Graph this system of constraints and find the coordinates of the solution region.



coordinates of vertices:

(0,0)

(9,0)

(4,10)

(0,12)

OBJECTIVE FUNCTIONS

(E, R)	$10R + 8E = P$
(0,0)	\$0
(9,0)	\$72
(4,10)	\$132
(0,12)	\$120

3. Find the number of quarts of each type of lotion you should make and sell in order to maximize your profit. What is the maximum profit?

max profit of \$132 will occur when you make 10 qts of Regular lotion & 4 qts of Extra Rich lotion