Name: _____ Period: _____

Date: _____

Last visit each group tested the boiling point of either a salt or sugar solution. Data from each class was collected, averaged, and appears in the table below.

1. Before you can go back to the lab tables you need to first plot the two sets of data.
- x-axis = Concentration
- y-axis = Boiling Point

SALT Solutions

Msoulte	Msolution	Concentration	Tboil
0.0	200.0	0.0	220.4
5.0	204.1	2.5	221.6
15.0	204.7	7.3	223.9
30.0	226.8	13.2	228.0
45.0	244.7	18.4	234.0
65.0	262.1	24.8	238.0
80.0	275.5	29.0	238.0

SUGAR Solutions

| Msoulte	Msolution	Concentration	Tboil
0.0	200.0	0.0	220.4
20.0	207.6	9.6	221.0
45.0	243.6	18.5	221.8
80.0	280.0	28.6	222.3
115.0	311.4	36.9	223.0
140.0	339.8	41.2	224.0
180.0	379.6	47.4	225.0
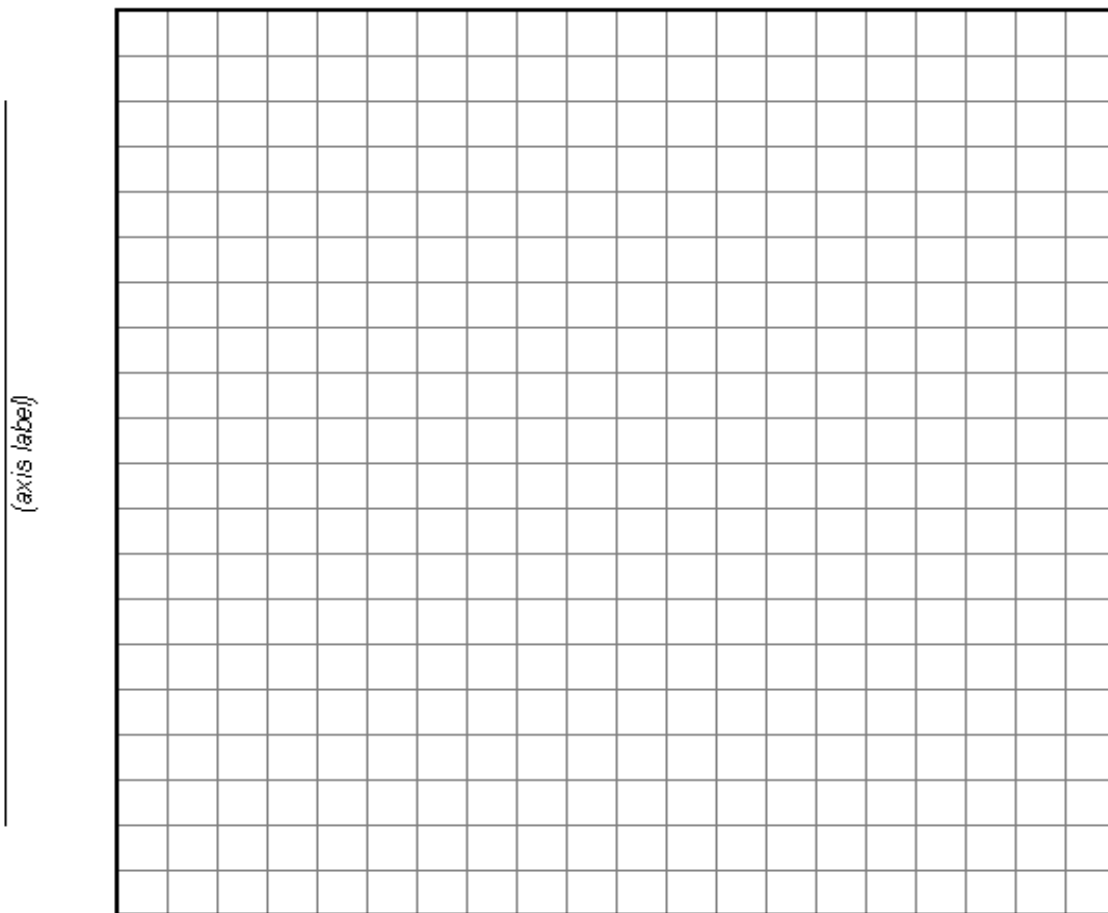
(axis label)

(axis label)

2. Draw a single line (best fit line) to represent the salt solutions

3. Draw a single line (best fit line) to represent the sugar solutions.

4. Draw a horizontal line across your graph at a boiling temperature = 224°F. (should cross both solute lines)
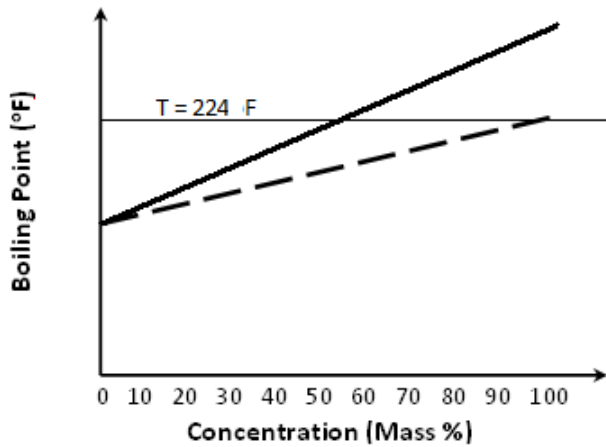
5. Draw a vertical line down from where your horizontal line crosses each solute line

These are the two concentrations you have to choose from to achieve the desired boiling temperature.
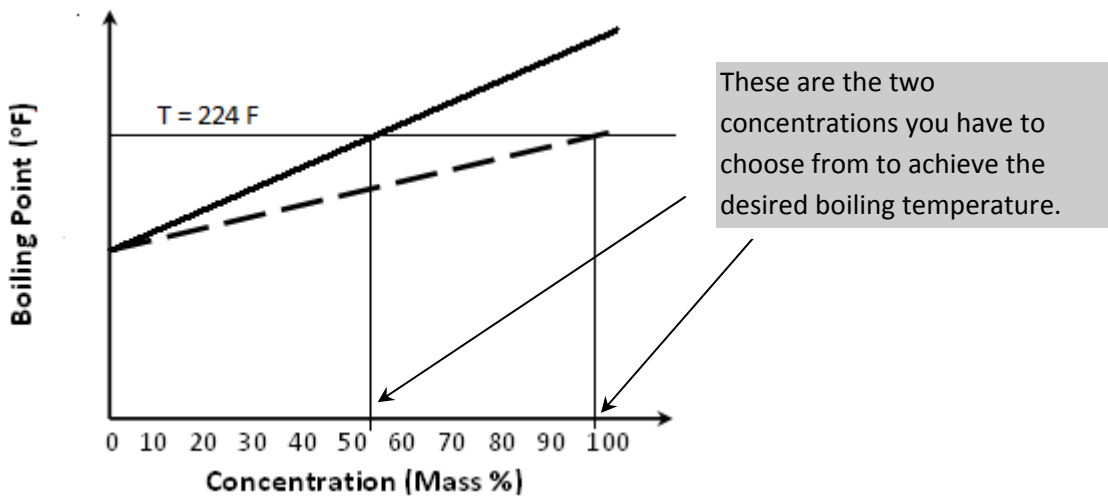
6. Record the two concentrations from your graph that will yield a solution with a boiling point of 224°F

       SALT Concentration = _____ %

       SUGAR Concentration = _____ %

7. Determine mass required for making each solution. Use the following equation to calculate the solute mass required.

$$\text{Mass Solute} = \frac{\frac{\text{Concentration \%}}{100} \times 200}{\left(1 - \frac{\text{Concentration \%}}{100}\right)}$$

       Mass Salt = _____ g

       Mass Sugar = _____ g

8. Determine cost of each <u>solution</u>: **Salt** = $0.0006/gram salt & **Sugar** = $0.002/gram sugar

Cost Salt Solution = _____

Cost of Sugar Solution = _____