

## Math-in-CTE Lesson Plan Template

Lesson Title: Break Even Point		Lesson #1
Author(s):	Phone Number(s):	E-mail Address(es):
Joanne Eaton		
Mark Hannibal		
Occupational Area: Culinary Arts and Restaurant Operations		
CTE Concept(s):		
Math Concepts: Percentages , graphs,		
Lesson Objective:	To provide an overall awareness of business cost and financial obligations, exceeding the cost of the food	
Supplies Needed:		

THE "7 ELEMENTS"	TEACHER NOTES (and answer key)
<p><b>1. Introduce the CTE lesson.</b></p> <p><b>What Factors affect the retail price of a food item?</b></p> <p><b>What are the important factors in determining the selling price?</b></p> <p><b>What does the term 'Break Even' mean to you?</b></p>	<p>Discuss with the students in a brainstorming type session, everything one has to consider that costs money in a food service establishment that need to be covered by the sales price.</p> <p>Present concepts like perceived value, what the market will bear, lost leader, total menu item average%,</p> <p>Discuss breaking even, compared to profit-</p> <p>What's better, making money or staying solvent.</p>

<p><b>2. Assess students' math awareness as it relates to the CTE lesson.</b></p> <p><b>Fixed cost compared to variable costs?</b></p> <p><b>Portion control</b></p> <p><b>Time = money- payroll</b></p>	<p>Define Fixed Costs –give examples- ask for contributions</p> <p>Define Variable Costs- give examples- ask for contributions</p> <p>Portion control- how could this impact profit or loss?</p> <p>How are people paid? Tips, hourly, salary.</p> <p>Discuss suggestive selling and its impact on bottom line-focus on high profit items.</p>
<p><b>3. Work through the math example <i>embedded</i> in the CTE lesson.</b></p> <p>Basic Math Problems-</p> <p>Rent- monthly -expanded to yearly and reduced to daily</p> <p>Payroll- hourly-minimum wage x hours worked</p> <p>-discuss overtime- time and a half</p> <p>Salary dollars per week vs hours worked</p> <p>Portions recipe cost divided by portions – change portions</p>	<p>Open guided discussion of working and making money</p> <p><a href="http://home.ubalt.edu/ntsbarsh/Business-stat/otherapplets/BreakEven.htm">http://home.ubalt.edu/ntsbarsh/Business-stat/otherapplets/BreakEven.htm</a></p> <p><a href="http://www.restaurantowner.com/public/511.cfm">http://www.restaurantowner.com/public/511.cfm</a></p>
<p><b>4. Work through <i>related, contextual</i> math-in-CTE examples.</b></p> <p><math>\\$400 \times 12\text{months} = \\$4,800/\text{year}</math></p> <p><math>\\$400/30\text{days} = \\$13.30/\text{day}</math></p> <p><math>\\$7.50 \times 20\text{hrshrs} = \\$150</math></p> <p><math>\\$7.50 \times 30\text{hrs} = \\$225</math></p> <p><math>\\$7.50 \times 40\text{hrs} = \\$300</math></p> <p><math>\text{ot} = \\$7.50 \times 1.5 = \\$11.25</math></p> <p>Salary-<math>\\$550/\text{week}</math> divided by 40 hours = <math>\\$13.50/\text{hr}</math></p>	<p>Develop a spread sheet and have the students fill in the blanks and add up the columns</p> <p>Include all the areas discussed and found on the spread sheets in the links</p> <p>Papers goods, uniforms, insurance, advertising, etc eventually arriving at a total cost of operations for the month, week, day, extrapolate into yearly</p>

<p><b>5. Work through <i>traditional math</i> examples</b></p> <p>Basic Math multiplication and division problems</p> <p>Phrased to reflect costs (money out) and sales (money in)</p> <p>Plot on line graph sales vs costs to determine break even point</p>	
<p><b>6. Students demonstrate their understanding.</b></p> <p>Given a variety of sales and costs figures, students will be able to fill out the spreadsheet then transfer to line graph to determine the break even point</p>	
<p><b>7. Formal assessment.</b></p>	

NOTES: