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Lesson Title: 2-6 Breakeven Analysis

This lesson is taught concurrently with 2-7 The Profit Equation

Date: April/May

Text: FA 2014 pg 91-86

Lesson 2-6 Length:

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|---|--|
| Domain: Algebra: Creating Equations, Reasoning with equations and inequalities. Functions: Interpreting Functions | |
| Big Idea (Cluster): Create equations that describe numbers or relationships. Solve equations and inequalities in one variable solve systems of equations. Represent and solve equations and inequalities graphically. Analyze functions using different representations | |
| Common Core State Standards: Algebra: CED2, 3;REI4b, 7, 10, 11; Functions IF 7a, 8 | |
| Mathematical Practice(s): All | |
| Content Objectives: Determine the break-even prices and amounts using technology or algebra | Language Objectives: Interpreting data through the use a visual representations using mathematics and quadratic equations |
| Vocabulary: Zero net difference, quadratic formula | Connections Prior to Learning 2.1 - 2.4: quadratic equations: revenue (income) expense |
| Questions to Develop Mathematical Thinking: How would you explain breaking even in mathematical terms to a non-business person? How would you show it to a banker? | Common Misconceptions: The purpose of zero net difference (or neutral revenue/expense) revenue over cost = 0 is to predict when you are going to begin making profit or losing capital |

Assessment (Formative and Summative):

Formative: Exit slip: Explanation of the purpose of zero net difference

Summative: Vocabulary quiz 2-2. Quantitative assessment lessons 2.5-7

Materials:

graphs, excel (spreadsheets), formulae, data

Instruction Plan:

Launch: Warmup exercise: Graph the following on the same set of axes
 $y=x^2$ & $y=-2x$

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Explore: Examine data for zero net gain from product information. Turn and talk: What value does zero have? Write your conclusions as a group. Share out.

Read and complete sample exercises together as a group. Turn and talk Complete exercises on pg 95 When you are finished partner share your work. Explain your process to your partner.

When I observe students: They will be studying text and visual representations of profit/loss graphs and asking questions/making inferences about how to formulate an equation to predict profit margins and maximum profit based on the data.

Questions to Develop Mathematical Thinking as you observe: Why do you need to be concerned with break-even points? What does this knowledge and the ability to determine a break-even point tell you and anyone else you need to explain it to? How does it explain it?

Answers: Ummmmm.....

Summarize: Students will perform a partner talk describing/comparing their answers to the exercise and how the exercises met/did not meet the goals for the day.

Career Application(s):

Profit/Loss, Viability, Financial assessment and trends in business practices

21st Century Skills and Interdisciplinary Themes:

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| 21st Century Interdisciplinary themes (Check those that apply to the above activity.) | | | |
| Global Awareness | Financial/Economic/Business/Entrepreneurial Literacy | | Civic Literacy |
| Health/Safety Literacy | Environmental Literacy | | |
| LEARNING AND INNOVATION | INFORMATION, MEDIA & TECHNOLOGY SKILLS | LIFE & CAREER SKILLS | Productivity and Accountability |
| <u>Creativity and Innovation</u> | <u>Information Literacy</u> | <u>Flexibility and Adaptability</u> | Produce Results |
| Think Creatively | Access and Evaluate | Adapt to Change | <u>Leadership and Responsibility</u> |
| Work Creatively with Others | Information | Be Flexible | <u>Responsibility</u> |
| Implement Innovations | Use and manage Information | <u>Initiative and Self-Direction</u> | Guide and Lead Others |
| <u>Critical Thinking and Problem Solving</u> | Information, Communications and Technology (ICT Literacy) | Manage Goals and Time | Be Responsible to others |
| Reason Effectively | Apply Technology Effectively | Work Independently | |
| Use Systems Thinking | | Be Self-Directed | |
| Make Judgments and Decisions | | Learners | |
| Solve Problems | | <u>Social and Cross-Cultural</u> | |
| <u>Communication and Collaboration</u> | | Interact Effectively with Others | |
| Communicate Clearly | | Work Effectively in Diverse Teams | |
| Collaborate with Others | | | |

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