

## CAFETERIA COST EFFECTIVENESS

### Math, Science, Social Science, and English/Language Arts

Grades: 4/5

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**Acceleration Approach**

Standard has been accelerated by moving grade level 4/5 up to the standard used for grade level 5 and/or 8.

1	2	3	4	5	6	7	8	9	CIM	CRLS/ CAM yes
			—————▶							

**Organizing Overarching Concept (e.g. systems, patterns of change, models, scales)**

Patterns of Change

**Organizing Higher Order Skills (e.g. Bloom's, Paul's Model of Reasoning)**

Bloom's Taxonomy – Analysis, synthesis and evaluation

**Differentiation Features - Students:**

- Clustered by higher order thinking
- Use multiple higher-level skills
- Conduct original research
- Develop a product
- Design and/or construct a model based on principles or criteria

**COMMON CURRICULUM GOAL****Science—Scientific Inquiry**

Use interrelated processes to pose questions and investigate the physical and living world.

**Forming the Question/Hypothesis**

Formulate and express scientific questions or hypotheses to be investigated.

**Designing the investigation**

Design safe and ethical scientific investigations to address questions or hypotheses.

**Collecting and presenting data**

Conduct procedures to collect, organize, and display scientific data.

**Analyzing and interpreting results**

Analyze scientific information to develop and present conclusions.  
investigated.

**Social Sciences—Economics**

Understand how conditions in an economy influence and are influenced by the decisions of consumers, producers, economic institutions and government

Understand the concept of supply and demand.

**Social Sciences—Analysis**

Design and implement strategies to analyze issues, explain perspectives, and resolve issues using the social sciences.

Define and clarify an issue so that its dimensions are well understood.

**Math—Interpretation of data**

Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.

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#### Archetypal Model

Question must be determined

Collect data

Determine frequency distribution

Display/analyze data graphically

Provide summary statements supported by the collected data

#### TASK DEMAND

##### Sample Task Activity

Teacher will lead a discussion with the students in cost effectiveness.

Students will:

- design a survey to collect data and graph it.
- transform/analyze/present data.
- analyze or develop findings to comprehend supply and demand.

Note: Students will find out from the cafeteria how much waste is produced when different entrees are served (e.g., yakisoba noodles, chicken nuggets, whole wheat wiener wraps, vegetarian lasagna, etc.).

#### Questions

- What do we want to find out?
- What do we think will happen?
- What will we need to observe or measure in order to find out the answer to our scientific question?

#### Teacher note:

##### Part of Inquiry: How will you explain the results?

- If you want to determine cost effectiveness of the cafeteria food, what information would you need?
- How do you find out how much waste there is on entrées?
- Is it important to know what it costs to prepare the entrées?
- What information do you need to get from the people who run the cafeteria?
- What information do you need to collect from the students?
- Which graph represents each summary statement? Explain.

#### Language Arts/English—Reading

Use the structural features of text to increase comprehension of a variety of informational printed and electronic text.

#### CONTENT STANDARDS

##### Science - Scientific Inquiry

Make observations. Formulate and express scientific questions or hypotheses to be investigated based on the observations.

Design scientific investigations to address and explain questions or hypotheses.

Collect, organize and display scientific data.

Analyze scientific information to develop and present conclusions.

#### BENCHMARKS/GRADE LEVEL STANDARDS

##### Science—Scientific Inquiry

8<sup>th</sup> Grade—Based on observations and scientific concepts, ask questions or form hypotheses that can be explored through scientific investigations.

8<sup>th</sup> Grade—Design a scientific investigation to answer questions or test hypotheses.

8<sup>th</sup> Grade—Collect, organize and display sufficient data to support analysis.

8<sup>th</sup> Grade—Summarize and analyze data including possible sources of error. Explain results and offer reasonable and accurate interpretations and implications.

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- In what way might your graph change if you added another variable?
- Based on your results, what suggestions would you make to the people who run the cafeteria (e.g., suggesting which day of the week the entrée was served? Which season)?
- What conditions influence the decisions of consumers, producers, economic institutions and government?

#### Extensions

- Compare cafeteria findings to fast food restaurant findings.

#### Resources

- *Cost Effectiveness Resource*: Quality Measures for Georgia's School Nutrition Programs <http://www.doe.k12.ga.us/nutrition/qmfinmgmt.html>
- EXCEL – Microsoft
- *Graph Club* Software
- Possible Marketing information from a fast food restaurant

#### Implementation Time

- 4 weeks

The editor used the internet for many resources listed in this document. The listed books and internet sites should be reviewed and evaluated by the teacher before using.

#### Social Sciences—Economics

5<sup>th</sup> Grade – Understand how supply and demand influence price, and how price increases or decreases influence the decisions of consumers.

8<sup>th</sup> Grade – Understand how price is an incentive for both buyers and producers/sellers in the marketplace.

#### Social Sciences—Analysis

8<sup>th</sup> Grade – Clarify key aspects of an event, issue or problem through inquiry and research.

8<sup>th</sup> Grade – Gather, interpret, use and document information from multiple sources, distinguishing facts from opinions and recognizing points of view.

8<sup>th</sup> Grade – Examine controversial event, issue, problem from more than one perspective.

8<sup>th</sup> Grade – Examine the various characteristics, causes, and effects of an event, issue, or problem.

8<sup>th</sup> Grade – Identify a response or solution and support why it makes sense, using support form research.

#### Math

5<sup>th</sup> Grade–Collect and record data from observations and surveys to collect relevant data.

7<sup>th</sup> Grade–Formulate questions and design experiments to collect relevant data.

CIM–Determine appropriate designs for simulations (e.g., surveys, observational studies, and experiments) and modeling to study a problem then construct empirical probability distributions to represent results.

#### Language Arts/English–Reading

6<sup>th</sup> grade–Identify and analyze text that uses the comparison-and-contrast organization patterns.

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Scoring Guides:	6 Exemplary	5 Proficient	4 Strong	3 Developing	2 Emerging	1 Beginning
<b>5th and 8th Grade—See 2002-2003 Scientific Inquiry Benchmark (See Standards and Assessments Section VII.)</b>						
<b>Students will be able to:</b>						
Identify resources of where to collect relevant information.						
Design a survey to collect relevant information.						
Collect and analyze data.						
Write an analytical statement using collected data for support.						
Understand how economy is influenced by the decisions of consumers, producers, economic institutions and government.						
Understand the concept of supply and demand.						

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#### Georgia Department of Education School & Community Nutrition Program

**Quality Measures: for Georgia's School Nutrition Programs** <http://www.doe.k12.ga.us/nutrition/qmfinmgt.html>

COST EFFECTIVENESS RESOURCE . BOLD ITEMS MAY RELATE TO THIS LESSON.

**Quality Measure - Food costs are managed to control the cost of the meal served or sold to customers and to reach financial goals.**

#### Successful programs...

1. Allocate a percentage, for example 40%, of revenue for food costs.
2. Operate at each site within an established daily, weekly, and monthly food budget.
3. Evaluate actual versus budgeted food costs daily, weekly, monthly and year-to-date.
4. Establish an average food cost per plate based on the food budget.
5. Allocate an average food cost to each menu item based on the food budget.
6. Budget garnishes into food costs.
7. Budget condiments into food costs.
8. Precost and postcost recipes including pre-prepared food items and menus and subsequently update precost figures.
9. Follow cycle menus.
- 10. Compare the quality, judged by student preferences, nutritional content, and costs, of school-prepared menu items to convenience items prior to purchasing.**
- 11. Consider historical data such as weather, school activities, and number of portions of menu items recorded as served on the production record in determining (forecasting) quantities to produce in the next menu cycle.**
12. Order food based on current inventory levels and the amount forecast to be prepared for the time period covered by the order.
13. Avoid overproduction by scheduling the preparation of food just prior to serving and checking food availability at scheduled intervals throughout the serving period.
14. Conserve food by preparing food according to the standardized recipe.
15. Use portioning equipment specified in the standardized recipe to ensure

accurate and consistent serving sizes of menu items.

16. Follow procedures in the kitchen manual for handling and storing all foods, including unserved portions at the end of the serving period.
17. Include unserved portions in subsequent days' production planning according to established standards for use.
18. Evaluate and reduce kitchen waste by observing discarded foods and analyzing reasons for loss.
- 19. Evaluate and reduce customer food waste by observing discarded foods and analyzing reasons for loss, such as appropriate portion sizes, customer preferences, temperature, method of preparation or service.**
20. Purchase foods of the highest quality possible consistent with the budget, the district's procurement plan and customer expectations.
21. Plan portion sizes based on customers' nutritional needs, food preferences, the school's chosen menu planning option, and the food budget.
22. Keep all equipment in good working order and accurately calibrated to minimize food loss.
23. Prohibit the removal of food and containers from the premises.
24. Maintain a perpetual inventory of all foods and reconcile to a physical inventory at regular intervals.
25. Follow procedures for receiving foods to ensure that only items ordered and items that meet specifications are accepted.
26. Establish a turnover rate to minimize the amount of food in inventory at any point in time.
27. Maintain a daily inventory of food items sold separately from meals and reconcile to reported sales.
28. Periodically, through a second party review, verify food reported as used against observed and reported sales.
29. Control the purchase of emergency or specialty foods or off-bid items.
30. Encourage competition among food vendors through communication with both broad-line and specialty vendors.
31. Decrease food expenses through the maximum use of USDA commodities.
32. Evaluate the cost of reprocessing USDA commodities to determine potential food cost savings and compatibility with cycle menus.
33. Maximize food usage by distributing excess inventory or older items among schools.

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**TAG NEEDS ADDRESSED**

INTELLECTUALLY GIFTED	ADVANCED SCIENCE KNOWLEDGE/ SKILLS	ACADEMICALLY TALENTED MATH	ACADEMICALLY TALENTED ENG/LA	ADVANCED SOCIAL SCIENCE KNOWLEDGE/SKILLS	CAREER RELATED LEARNING STANDARDS FOR CAM - Certificate of Advanced Mastery	TEACHER CHECKS THE BENCHMARK LEVEL STUDENT IS PURSUING
<input type="checkbox"/> Advanced Critical Reasoning <input checked="" type="checkbox"/> Scholarly Interaction <input checked="" type="checkbox"/> Continuous Progress for Level and Rate* <input type="checkbox"/> Challenging Resources <input type="checkbox"/> Effecting Change <input checked="" type="checkbox"/> Decision Making; Ethical Use of Influence <input type="checkbox"/> Leadership Training/ Career <input type="checkbox"/> Realistic Goal Setting <input type="checkbox"/> Regular Interaction with Intellectual Peers <input type="checkbox"/> Social-Emotional Issues; Support; Coping Strategies <input type="checkbox"/> Advanced Academic Planning <input type="checkbox"/> Opportunity for Competition/Failures/Successes <input checked="" type="checkbox"/> Creative Problem Solving with Real Problems/ Audiences <input type="checkbox"/> Pursuit of Advanced Level Research <input type="checkbox"/> Advanced Vocabulary Development	<input type="checkbox"/> Advanced Critical Thinking in Science <input checked="" type="checkbox"/> Continuous Progress/ Level and Rate* in Science <input type="checkbox"/> Challenging Science Resources <input checked="" type="checkbox"/> Creative Problem Solving Strategies in Science <input type="checkbox"/> Science Advanced Vocabulary Development <input type="checkbox"/> Leadership Training/ Career <input checked="" type="checkbox"/> Decision Making; Ethical Use of Influence <input type="checkbox"/> Regular Interaction with Talented Science Peer <input type="checkbox"/> Realistic Goal Setting <input type="checkbox"/> Opportunity for Competition/Failures/ Successes <input type="checkbox"/> Advanced Academic Planning in Science	<input type="checkbox"/> Advanced Critical Thinking in Math <input checked="" type="checkbox"/> Continuous Progress/ Level and Rate* in Math <input type="checkbox"/> Challenging Math Resources <input type="checkbox"/> Creative Problem Solving Strategies in Math <input type="checkbox"/> Math Advanced Vocabulary Development <input type="checkbox"/> Leadership Training/ Career <input type="checkbox"/> Decision Making; Ethical Use of Influence <input type="checkbox"/> Regular Interaction with Talented Math Peers <input type="checkbox"/> Realistic Goal Setting <input type="checkbox"/> Opportunity for Competition/Failures/Successes <input type="checkbox"/> Advanced Academic Planning in Math	<input type="checkbox"/> Advanced Critical Thinking in LA <input checked="" type="checkbox"/> Continuous Progress/ Level and Rate* in LA <input type="checkbox"/> Challenging LA Resources <input type="checkbox"/> Creative Problem Solving Strategies in LA <input type="checkbox"/> Advanced Vocabulary Development <input type="checkbox"/> Leadership Training/ Career <input type="checkbox"/> Decision Making; Ethical Use of Influence <input type="checkbox"/> Regular Interaction with Talented LA Peer <input type="checkbox"/> Realistic Goal Setting <input type="checkbox"/> Opportunity for Competition/Failures/Successes <input type="checkbox"/> Advanced Academic Planning in LA	<input type="checkbox"/> Advanced Critical Thinking in Soc Science <input checked="" type="checkbox"/> Continuous Progress/Level and Rate* in Soc Science <input type="checkbox"/> Challenging Soc Science Resources <input type="checkbox"/> Creative Problem Solving Strategies in Soc Science <input type="checkbox"/> Soc Science Advanced Vocabulary Development <input type="checkbox"/> Leadership Training/Career <input type="checkbox"/> Decision Making; Ethical Use of Influence <input type="checkbox"/> Regular Interaction with Talented Soc Science Peer <input type="checkbox"/> Realistic Goal Setting <input type="checkbox"/> Opportunity for Competition/Failures/Successes <input type="checkbox"/> Advanced Academic Planning in Social Studies	<input type="checkbox"/> Personal Management <input checked="" type="checkbox"/> Problem Solving <input checked="" type="checkbox"/> Communication <input type="checkbox"/> Teamwork <input type="checkbox"/> Employment Foundations <input type="checkbox"/> Career Development	<p><b>Science:</b></p> <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> CIM <input type="checkbox"/> CAM <p><b>Math:</b></p> <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> CIM <input type="checkbox"/> CAM <p><b>English/LA:</b></p> <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> CIM <input type="checkbox"/> CAM
<p>Student _____ Grade _____</p> <p>Teacher _____ School _____</p> <p>Date Initiated _____ Date Completed _____</p> <p><b>Check TAG Identification category:</b></p> <p><input type="checkbox"/> Intellectual    <input type="checkbox"/> Academic Math    <input type="checkbox"/> Academic LA</p>						<p><b>Social Science:</b></p> <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> CIM <input type="checkbox"/> CAM
<p>* Rate requires monitoring to ensure that the student was allowed to move ahead upon acquiring concepts.</p>						