



That Was Then, This Is Now

Grades 3-6

Editor
Pamela Emery



California Foundation for
Agriculture in the Classroom

2300 River Plaza Drive
Sacramento, CA 95833
916-561-5625 • 800-700-2482
Web Site: www.cfaitc.org

California Foundation for Agriculture in the Classroom

Vision: An appreciation of agriculture by all.

Mission: To increase awareness and understanding of agriculture among California's educators and students.



California Foundation for
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That Was Then, This Is Now

Purpose

The purpose of this series of lessons is for students to learn about food prices, and how they have changed over time, as they perform mathematical computations, analyze data charts, and compare and contrast statistical information.

Time*

Reading a Chart – I

One 40-minute session

Reading a Chart – II

One 40-minute session

The Price of Food Today

Homework

** Time for the lessons will vary depending on how many activities you perform and how you use this information in the classroom.*

Materials

For each student:

- *Reading a Chart-I* student worksheet
- *Reading a Chart –II* student worksheet
- *The Price of Food Today* homework assignment
- Colored pencils
- Graph paper

Introduction

This series of lessons includes information on how food price data can be used to make mathematical computation practice interesting and informative. The sequence of lessons is designed for a variety of math levels. Review the materials and revise them to meet the needs of your students.

You may choose to customize the lessons to include current and past newspaper grocery ads. Consider comparing commodity prices from one season to the next and from one year to another. Statistics and colorful graphs are available from a variety of sources. See the resource listings in the back of this unit for specific information.

As you use the attached lessons, it is important for students to realize that the United States has the safest, most abundant food supply in the world. Most farmers do not make a lot of money producing the food Americans consume. In fact, people who farm most often do it because they have a passion for it. Today, over 72% of the farmers have income outside of farming. Profit made in agriculture is most often accrued on the marketing end. It may be interesting for your students to meet an actual producer and learn about his/her operation.

Procedure

1. Review the enclosed worksheets and statistics. If necessary, rewrite the worksheets or create math problems that supplement the worksheets.
2. Introduce your students to the series of lessons by having them think about the prices their family pays for specific food items and how they think that price is determined. Possible discussion and/or writing prompts are listed below.
 - If you were to ask you parents, if the price of food is going up or down, what would they say?
 - On the average, is it less expensive, more expensive, or about the same to eat at a restaurant than at home? Explain.
 - How do you think the price of food is determined?
 - Do the farmers who grow the crops make a lot of money on the food you are eating?
 - If you were to compare the price of food in the United States to the price of food in other countries, would it be more or less expensive?

That Was Then, This Is Now

Content Standards

Grade 3

Mathematics

Number Sense • 2.0, 3.3

Algebra and Functions

1.0, 1.4, 2.1

Measurement and

Geometry • 1.4

Mathematical Reasoning

1.0, 1.1, 2.3, 3.3

Grade 4

Mathematics

Number Sense • 1.0, 1.2,
2.0, 2.1

Statistics, Data Analysis
and Probability • 1.0,

1.1

Mathematical Reasoning

1.0, 1.1, 2.1, 2.2, 2.3,
3.3

Grade 5

Mathematics

Number Sense • 2.0, 2.1

Statistics, Data Analysis,
and Probability • 1.0,

1.2

Mathematical Reasoning

1.0, 1.1, 2.1, 2.2, 2.3,
3.3

Grade 6

Mathematics

Number Sense • 1.0, 2.0

Statistics, Data Analysis
and Probability • 1.0,

1.1, 2.0, 2.1, 2.2,
3.2

Mathematical Reasoning

1.0, 1.1, 1.2, 2.4, 3.3

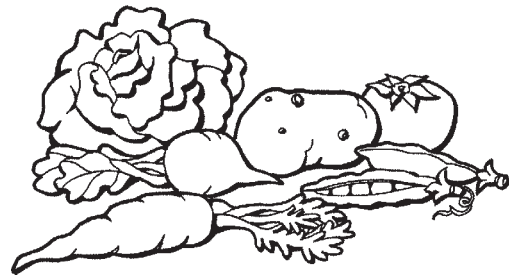
3. Introduce your students to the *Average Prices of Foods—Retail* chart. In general, discuss what the chart shows. Review the meaning of average.
4. Have the students complete the student worksheets and the homework assignment. Part of the homework assignment requires students to make a graph. Be sure they have the rough drafts of their graphs approved before preparing their final copies.
5. Share the graphs the students have created. Display the student graphs in the library, hallways, grocery stores, and at special events such as parent meetings and open houses.

Assessment

As well as examining the completed work of the students, include questions on your exams that require data analysis.

Variations and Extensions

- Convert the homework activity to a class field trip. Have students work in teams of two as they find information at the grocery store.
- Create large colorful graphs of the information they collected at the grocery store. Display the student graphs at the stores the students visited.
- Use the *Farm Facts Booklet* available from the American Farm Bureau Federation, to illustrate a variety of graphic ideas as well as information on the current agricultural status of American agriculture.
- Use grocery ads to determine the prices of the food items in the homework assignment.



Reading a Chart – I

A Look at Averages

Name _____

Date _____

Instructions

Using the chart provided by your teacher, answer the questions below.

1. For what years does the chart have food prices listed? _____

2. What do the numbers in the columns actually represent? _____

3. How many food items are represented in this charts? _____

4. Why do you suppose the United States decided to have these food items available for price comparison? _____

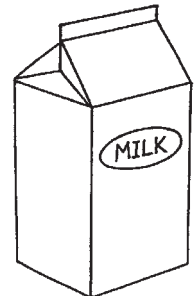
5. Averages:

a) What does average mean in math? _____

b) How much did an average one-half gallon of milk cost in 1989?

c) In 1970, did every dozen eggs cost 61.4 cents? Explain.

d) How do you think the average retail price of food is determined? _____



Reading a Chart – I

A Look at Averages (Page 2)

6. How many cents did an average pound of tomatoes cost in 1960? _____¢. Express that number using a dollar sign and a decimal. _____

7. Did all food items listed in the chart cost more in 1989 than they did in 1988?

Yes No. Explain. _____

8. An Average Meal

Suppose it is 1970. Your family is going to have a hearty meal consisting of one loaf of bread, two pounds of chicken, 3 pounds of potatoes, $\frac{1}{2}$ gallon of milk, and a salad made of $\frac{1}{2}$ pound of tomatoes and one bunch of leaf lettuce (the lettuce cost 29 cents).

a) What would the total average cost be for this meal? _____ Show how you got your answer in the space below.

b) Explain why some families would have paid more for this meal and why some families would have paid less for this meal. _____

c) Using the trends you see in the chart, would the same meal today cost more or less than the meal in 1970? More Less.

9. What is one thing you found interesting about the chart of data? (*Write your answer in a complete sentence.*) _____

Reading a Chart – II

Comparing Data

Name _____

Date _____

Using the chart provided by your teacher, answer the questions below.

1. How much did a dozen eggs cost in 1980? _____ In 1950? _____
2. According to the chart, in what year did five pounds of sugar cost the most? _____
What was that price in cents? _____¢. Rewrite that price using a decimal and a \$ sign.

3. Name two items that were more expensive in 1960 than they were in 1950.

4. In what year(s) was the average price of a pound of potatoes less than a dime? _____
5. Name one item whose average price was less expensive in 1980 than it was in 1970.

Discuss one possible reason why this happened. _____

6. Look at the average prices of tomatoes in the years 1970 and 1990. How much increase was there in the price per pound of tomatoes over this twenty-year period? _____
7. In 1950, about how much would it cost for two pounds of apples? _____
8. Pretend it is 1960 and you have three one-dollar bills. If you bought one pound of bacon, how many dollar bills would you give the cashier? _____ How much change would you get back? _____
9. It is 1970 and you plan to make cookies. You have all the supplies you need except the sugar, eggs, and butter. How much money would you need to buy a five-pound bag of sugar, one dozen eggs, and one pound of butter? _____

Reading a Chart – II

Comparing Data (Page 2)

10. How much would you have left over if, in 1989, you gave a grocery clerk two dollars for one-half gallon of milk? _____

11. In 1950, how many one-pound loaves of bread could you buy with two dollars?

12. Write one problem of your own using information from the chart. Include the answer and show how you determined the answer.

<p>Problem: _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Answer: _____</p>
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13. Farmers produce the food we eat. Since on the average, most food prices have increased over the years, do you suppose the farmers are making more money on the food we eat?

Yes No. Explain your reasoning. _____

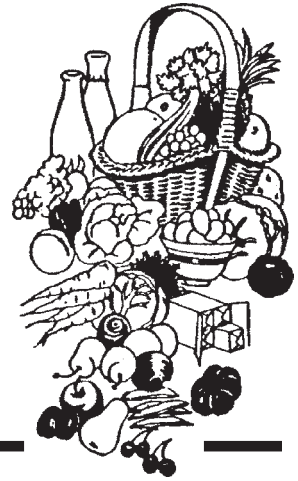
The Price of Food Today

Name _____

Date _____

Dear Parent/Guardian:

As part of a math lesson, your student will need to spend some time at the grocery store. Please include your child in one of your grocery store shopping trips so that he/she can complete the assignment below by the following date: _____. He/she will be doing a graphing assignment using this information.



Thank you!

1. Go grocery shopping with a parent this week or make a special trip to the grocery store for this assignment. *As you travel throughout the store, remember to be courteous and respectful. You are representing your school, as well as yourself.*
2. Go to the appropriate section of the store and examine the prices of several brands of the items listed in the chart below.
3. Complete the following chart:

Item	Least Expensive Price	Most Expensive Price	Estimated Average Price
1 pound bacon			
5 pounds sugar			
1 dozen eggs			
1 pound butter			
1 pound tomatoes			
1 pound apples			
1 loaf standard white bread			
½ gallon of whole milk			
1 item of your choice			

The Price of Food Today *(Page 2)*

4. How did you decide what to write in the “estimated average price” column?

5. Do you suppose that the price of tomatoes is always about the same price? Why/Why not?

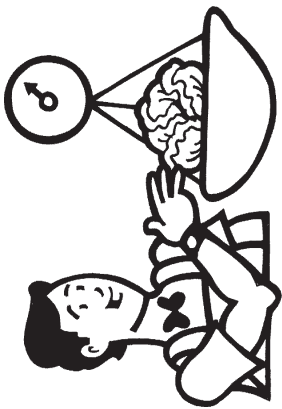
6. Name one item in the store that you think will not be in the store three months from now.

_____ Why do you think this? _____

7. In one well-written paragraph, explain what you learned from doing this exercise.

8. Graphs often show information in a clear and simple way. Pick one of the ideas below and make a creative and colorful graph that represents your information. **Be sure to have a rough draft of your graph approved by your teacher before preparing your final copy.**

- Show how one item’s price has changed over time (ex. The price of bread in 1950, 1960, 1989, etc.)
- Show today’s current average prices (as you have determined them) of different food items.
- Using your own idea, make a graph showing how prices change over time. Obtain permission from your teacher before beginning your graph.



Average Prices of Food – Retail*

(Prices are in cents per pound, unless otherwise indicated)

esYear	Apples	Bread	Whole Milk 1/2 Gallon	Tomatoes	Bacon	Potatoes	Chicken	Sugar (5 lbs.)	Eggs (Dozen)	Butter	Corn Flakes
1950	12.0	14.3	38.6	24.3	63.7	4.6	59.5	48.7	60.4	72.9	18.5
1960	16.2	20.3	49.4	31.6	65.5	7.2	42.7	58.2	57.3	74.9	25.8
1970	21.9	24.3	57.4	42.0	94.9	90.0	40.8	64.8	61.4	86.6	31.5
1980	63.0	51.0	87.3	67.0	146.0	20.4	70.9	215.0	93.0	188.0	79.7
1988	73.0	61.0	116.0	83.0	188.0	26.0	85.0	182.0	79.0	216.0	N/A
1989	69.0	66.0	126.9	91.0	178.0	30.6	92.7	185.0	100.0	213.0	N/A
1990	72.0	70.0	142.0	53.0	213.0	33.8	90.0	200.0	101.0	N/A	146.0
1995	76.0	78.0	117.0	89.0	221.0	36.1	107.0	214.0	175.0	222.0	204.0
2000	81.0	83.1	123.0	99.0	247.0	37.9	109.0	222.0	189.0	232.0	209.0

* Obtained from the United States Department of Agriculture and the California Department of Food and Agriculture.



Teacher Resources and References

California Agricultural Resource Directory

Includes facts and figures, county-by-county statistics, and an extensive directory of industry resources and contacts. Also contains production and export statistics, key facts about California agriculture, information on California Department of Food and Agriculture services, and marketing trends.

California Department of Food and Agriculture
California Agricultural Statistics Service
Post Office Box 1258
Sacramento, CA 95812-1258
(916) 498-5161
Fax: (916) 498-5186
E-mail: nass-ca@nass.usda.gov
Web site: www.nass.usda.gov/ca

California Department of Food and Agriculture

The CDFA flyer *California Agriculture* includes California agriculture statistics including information on acreage, ranking of counties by agriculture value, and ranking of commodities. The California Department of Food and Agriculture Web site includes information on California agriculture including current statistics which can be used for math problems.

California Department of Food and Agriculture
Communications Office, External Affairs
1220 N Street, Suite 427
Sacramento, CA 95814
(916) 654-0462
Fax: (916) 657-4240
E-mail: cdfapublicaffairs@cdfa.ca.gov
Web site: www.cdfa.ca.gov

California Farm Bureau Federation

This organization provides current information and articles on California's agriculture industry. Statistics that can be used with this lesson can be obtained from this organization's Web site.

Web site: www.cfbf.com

Edible Numbers

This comprehensive unit, for students grades two through eight, provides numerous lessons on nutrition, graphing, and the analysis of grocery advertisements. Grocery ad scavenger hunts are the highlight of this unit and teach children about the food they purchase and eat. This unit is available for purchase or can be downloaded from CFAITC's Web site. A teacher packet of commodity and natural resource fact sheets, teacher conferences, and a resource guide is available free to California educators.

California Foundation for Agriculture in the Classroom
2300 River Plaza Drive
Sacramento, CA 95833
(800) 700-2482
Fax: (916) 561-5697
E-mail: cfaitc@cfbf.com
Web site: www.cfaitc.org

Farm Facts Booklet

This booklet of charts, graphs, and posters of agriculture information, complement this unit. Also contains a pullout map of the America the Bountiful.

American Farm Bureau Federation
Attn: Rita Walaszek
225 Touhy Avenue
Park Ridge, IL 60068
(847) 685-8858
Fax: (847) 685-8950
E-mail: ritaw@fb.org
Web site: www.fb.org

GEMS- Great Explorations in Math and Science

Teacher guides and handbooks encourage activity-based science and mathematics.

University of California, Berkeley
GEMS, Lawrence Hall of Science, #5200
Berkeley, CA 94720-5200
(510) 642-7771
Fax: (510) 643-0309
E-mail: gems@uclink.berkeley.edu
Web site: www.lhsgems.org

Student Literature

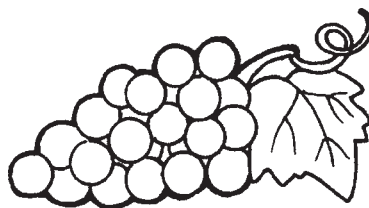
Charles, N.N. *What Am I? Looking Through Shapes at Apples and Grapes*. Blue Sky Press, 1994. Illustrations with cut-out shapes and rhyming questions have children think of fruit as geometric shapes.

Demi. *One Grain of Rice*. Scholastic Inc., 1997. This mathematical folktale illustrates the concept of doubling using rice as the example.

McMillan, Bruce. *Eating Fractions*. Scholastic Press, 1991. Food is cut into halves, thirds, and fourths to illustrate how parts make a whole. An enjoyable book that shows two youngsters eating their way through the edible fractions.

Pinczes, Elinor. *One Hundred Hungry Ants*. Houghton Mifflin Company, 1993. One hundred hungry ants in rows of various sizes march to sample the delights of a picnic.

Tang, Greg. *The Grapes of Math*. Scholastic Press, 2001. Encourage the use of few problem-solving techniques to solve the math puzzles in this book. Many have themes of fruits, vegetables, and insects.



Content Standard Details

Content Standards for California Public Schools Addressed in *That Was Then, This Is Now**

Obtained from the California Department of Education

Grade 3	
Standard	Standard Description
Mathematics	
Number Sense 2.0	Students calculate and solve problems involving addition, subtraction, multiplication, and division.
Number Sense 3.3	Solve problems involving addition, subtraction, multiplication, and division of money amounts in decimal notation and multiply and divide money amounts in decimal notation by using whole-number multipliers and divisors.
Algebra and Functions 1.0	Students select appropriate symbols, operations, and properties to represent, describe, simplify, and solve simple number relationships.
Algebra and Functions 1.4	Express simple unit conversions in symbolic form.
Algebra and Functions 2.1	Solve simple problems involving a functional relationship between two quantities (e.g. find the total cost of multiple items given the cost per unit).
Measurement and Geometry 1.4	Carry out simple unit conversions within a system of measurement.
Mathematical Reasoning 1.0	Students make decisions on how to approach problems.
Mathematical Reasoning 1.1	Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.
Mathematical Reasoning 2.3	Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.
Mathematical Reasoning 3.3	Develop generalizations of the results obtained and apply them in other circumstances.

Content Standard Details

Grade 4	
Standard	Standard Description
Mathematics	
Number Sense 1.0	Students understand the place value of whole numbers and decimals to two decimal places and how whole numbers and decimals relate to simple fractions. Students use the concepts of negative numbers.
Number Sense 1.2	Order and compare whole numbers and decimals to two decimal places.
Number Sense 2.0	Students extend their use and understanding of whole numbers to the addition and subtraction of simple decimals.
Number Sense 2.1	Estimate and compute the sum or difference of whole numbers and positive decimals to two places.
Statistics, Data Analysis and Probability 1.0	Students organize, represent, and interpret numerical and categorical data and clearly communicate their findings.
Statistics, Data Analysis and Probability 1.1	Formulate survey questions; systematically collect and represent data on a number line; coordinate graphs, tables, and charts.
Mathematical Reasoning 1.0	Students make decisions about how to approach problems.
Mathematical Reasoning 1.1	Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.
Mathematical Reasoning 2.1	Use estimation to verify the reasonableness of calculated results.
Mathematical Reasoning 2.2	Apply strategies and results from simpler problems to more complex problems.
Mathematical Reasoning 2.3	Use a variety of methods such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.
Mathematical Reasoning 3.3	Develop generalizations of the results obtained and apply them in other circumstances.

Content Standard Details

Grade 5	
Standard	Standard Description
Mathematics	
Number Sense 2.0	Students perform calculations and solve problems involving addition, subtraction, and simple multiplication and division of fractions and decimals.
Number Sense 2.1	Add, subtract, multiply, divide with decimals; add with negative integers; subtract positive integers from negative integers; and verify the reasonableness of the results.
Statistics, Data Analysis and Probability 1.0	Students display, analyze, compare, and interpret different data sets, including data sets of different sizes.
Statistics, Data Analysis and Probability 1.2	Organize and display single-variable data in appropriate graphs and representations and explain which types of graphs are appropriate for various data sets.
Mathematical Reasoning 1.0	Students make decisions about how to approach problems.
Mathematical Reasoning 1.1	Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.
Mathematical Reasoning 2.1	Use estimation to verify the reasonableness of calculated results.
Mathematical Reasoning 2.2	Apply strategies and results from simpler problems to more complex problems.
Mathematical Reasoning 2.3	Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to explain mathematical reasoning.
Mathematical Reasoning 3.3	Develop generalizations of the results obtained and apply them in other circumstances.

Content Standard Details

Grade 6	
Standard	Standard Description
Mathematics	
Number Sense 1.0	Students compare and order positive and negative fractions, decimals, and mixed numbers. Students solve problems involving fractions, ratios, proportions, and percentages.
Number Sense 2.0	Students calculate and solve problems involving addition, subtraction, multiplication, and division.
Statistics, Data Analysis and Probability 1.0	Students compute and analyze statistical measurements for data sets.
Statistics, Data Analysis and Probability 1.1	Compute the range, mean, median, and mode of data sets.
Statistics, Data Analysis and Probability 2.0	Students use data samples of a population and describe the characteristics and limitations of the samples.
Statistics, Data Analysis and Probability 2.1	Compare different samples of a population with the data from the entire population and identify a situation in which it makes sense to use a sample.
Statistics, Data Analysis and Probability 2.2	Identify different ways of selecting a sample and determine which method makes a sample more representative for a population.
Statistics, Data Analysis and Probability 3.2	Use data to estimate the probability of future events.
Mathematical Reasoning 1.0	Students make decisions about how to approach problems.
Mathematical Reasoning 1.1	Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.
Mathematical Reasoning 1.2	Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.
Mathematical Reasoning 2.4	Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.
Mathematical Reasoning 3.3	Develop generalizations of the results obtained and the strategies used and apply them in new problem situations.

* For a complete listing of the Content Standards for California Public Schools, contact CDE Press, Sales Office, California Department of Education, Post Office Box 271, Sacramento, CA 95812-0271; (916) 445-1260; www.cde.ca.gov.