

# MATHEMATICS & ECONOMICS

CONNECTIONS FOR LIFE



National Council on Economic Education

► GRADES 3-5

GRADES 6-8

GRADES 9-12

## Part 3: Conducting the Workshop

### Sample Agendas

This section contains agendas for an after-school (one-hour) teacher workshop, a half-day teacher workshop and a 30-minute presentation to supervisors and curriculum directors. You can combine elements from all three formats and create a great experience for teachers that fits their needs and location.

Elementary teachers generally teach all subjects for one grade level or specialize in two or three subjects for a specific grade level. In the upper elementary curriculum, where MECL is targeted, students learn best by engaging in hands-on activity rather than lecture. The workshops should involve teachers in activities rather than content lectures. Review the entire book and select lessons to demonstrate that match the grade level(s) of the teachers attending the workshop. If the local math curriculum fits better with lessons other than those highlighted in these sample agendas, substitute the more appropriate lessons in the demonstrations. If you are not familiar with the local elementary math curriculum, review the local district or state math standards before you select the lessons that match the math grade levels to teachers attending the workshop. Invite a local teacher to conduct the workshop with you and ask him or her to review the book and match lessons to the local math curriculum.

Remember that no teachers will use the entire book. Three or four lessons at most will fit the curriculum at each grade. Teachers of different grades often work together and plan curriculum for the year. Helping the teachers to see how MECL can be used with several grades at the school should be an important goal of the workshop.

Besides the sample agendas, this section contains links to the Visuals and Activities for each of the 12 lessons. Suggestions for ice breakers, literature connections and a sample evaluation form are included.

## Sample Agenda for an After-School (One-Hour) Workshop

This agenda works best for workshops in a single school setting where teachers from grades three through five are introduced to MECL as a faculty group. Since no teachers can use all the lessons in the guide because of the math skills needed, the workshop should be organized to have teachers grouped by grade level. Locating the appropriate lessons for their own grade should be a part of the workshop.

### Goals for the after-school workshop:

At the conclusion of this workshop, the participants will be able to:

- Describe MECL's purpose for teaching economics and mathematics.
- Use the standards correlation grids in the book to select appropriate lessons for their own classroom.
- Access the NCEE Web-site support for MECL.
- Participate in one demonstration lesson from MECL and take home a sample lesson.
- Describe some of the extension activities connected with the demonstrated lesson and know where to find more lessons.
- Describe where to get more information from the local Center/Council for Economic Education.

### Materials list for demonstration of Lesson 6:

- One copy of Visuals 6.1, 6.2
- One copy of Activities 6.1, 6.5 and 6.6 for each participant
- One copy of Activity 6.2 for each group (before making the copies, be sure the bookmark resource price list includes all the materials in the resource bags and an estimated price for each resource)
- One envelope of craft materials for making bookmarks for each group
- One copy of Activity 6.3 for each group
- Enough copies of Activity 6.4 to provide three \$1.00 bills for each participant
- OPTIONAL: One copy of entire Lesson 6 if you do not plan to distribute MECL as part of the workshop
- Copy of the trade book *Chicken Sundays* by Patricia Polacco, Paperstar Book, Reprint edition, Jan. 1998 (ISBN: 0-69811-615-1) and *The Real McCoy* (a Blue Ribbon Book) by Wendy Towle, Scholastic Paperbacks, Jan. 1, 1995 (ISBN: 0-59048-102-9) to show during discussion

#### I. Welcome and Refreshments (10 minutes)

- Have nametags made ahead of time, and place them on a table for teachers to pick up as they enter the room. Introductions should not be necessary since they all teach in the same school. Provide nametags so that you are able to call on teachers by name. Code the nametags by color or math symbol so teachers are grouped by grade level and sit together.
- Have light refreshments ready as the teachers gather and a display of a variety of NCEE materials for elementary grades. If possible, have several copies of materials to use as door prizes at the end of the workshop.

## II. Overview of MECL and Its Features (10 minutes)

- Use the PowerPoint overview presentation or your own presentation.
- Explain the importance of math instruction. Point out that having students use math skills outside the math content in other subjects represents the highest levels of learning advocated by NCTM in its standards.
- Show and pass out the math and economics standards correlation grids from MECL. Ask a teacher to indicate if the grids show math skills they are currently teaching.
- Ask the teachers if they currently teach economics concepts in math or social studies. You should have obtained the school/district math curriculum and social studies standards, if possible. Refer to the economics standards grid in MECL. If teachers need further information, link them to <http://ecedweb.unomaha.edu/K-12/K-5concepts.cfm> or their own state or local Web site for information.
- Hand out the [glossary](#) from MECL.

## III. Review and Demonstration of Lesson 6, “Bookmark Profits,” and Supporting Web Site (30 minutes)

- Explain that figuring profit is something that entrepreneurs need to do to decide if the risk is worth the reward of introducing new products to the marketplace. This lesson requires students to create a new product and try to sell it to consumers. They then figure out if they made a profit or incurred a loss. Basic math operations are reviewed in this lesson as students create equations.
- Arrange the teachers by grade level into groups of 4-5. Have each group select a leader who will play the role of an entrepreneur. Distribute a large envelope of craft supplies to each group and have them read the instructions in Lesson 6. (Note: Make sure to record the prices of the supplies you have in the envelope on the price list before you make copies of Activity 6.2.) Each group should get the same supplies.
- Review the instructions for the task. Each group will create a sample bookmark, using the supplies in the envelope, and will figure how much the sample will cost to make, using Activities 6.2 and 6.3 to add the inputs. Give the groups 10 minutes to complete the task and have the entrepreneurs of each group display their bookmarks in front of the room where all can see them. All bookmarks will sell for \$3.00.
- Distribute \$3.00 to each participant (use Activity 6.4). Have each entrepreneur come to the front and offer the bookmark for \$3.00. Count the number of buyers, and take money from each buyer so that each participant can buy only one. Act as the recorder, using Visual 6.2 to figure the income each group gets from the sale of its bookmark.
- The teachers should work out the calculations on their own Activity 6.4, and you should work on the overhead. Ask each group to report if it made a profit or loss.
- Part 2 of the lesson asks the groups to write mathematical equations showing the profit or loss as mathematical equations, using Activity 6.5. Have the groups work through the worksheets together. Have a sample group report if there is time.
- Call the group to attention, and ask the groups to analyze the difficulty of the math in the lesson and describe the students or grades that might be able to use this lesson.

Point out that the lessons in MECL can be used for practice following direct instruction or review of a previous day's instructions. The lesson could also be used as a general review of math skills taught in the preceding year or as instruction for students above grade level.

- Project the MECL Web site (<http://mathandecon.ncee.net>) for Lesson 6. Draw attention to the following features: the summary of the lesson, the list of materials and the PDF downloads for Activities and Visuals, the list of Weblinks, the literature connections and *EconEdLink* lessons. Go directly to the links, and show the teachers how to use the Web site to find other activities.
- Show the trade books *Chicken Sundays* and *The Real McCoy*. *The Real McCoy* lesson is listed as an online lesson on <http://ecedweb.unomaha.edu> under entrepreneurs concept. Distribute this lesson or another sample lesson on entrepreneurs.

#### IV. Wrap-Up (10 minutes)

- Give the teachers a few minutes to review the table of contents and the grids to locate another lesson they feel would be appropriate for their students' math level. Ask a teacher from each group to share one lesson they would use with each grade level.
- Review the key features of the book and Web site. Distribute the books if you are giving them to teachers with a sticker on the front with your Center/Council information, phone number and Web site.
- Distribute the Workshop Evaluation Form and allow time for the participants to complete it.
- Give away a few small prizes or curriculum guides as door prizes.
- Discuss other programs your Council/Center is planning in the future.
- Thank the teachers for coming, and distribute your card to the teachers for future contact.

## ACTIVITY 6.1

### MONEY MATTERS REVIEW

**Directions:** Calculate the answers to these questions. Show your work.

**A.** Suppose you have been saving your money to buy a new bicycle. The price of the bicycle is \$175.50. You have saved \$75.25. How much more money must you save?

**B.** You can walk the neighbor's dog for three days. She will pay you \$3.00 a day. If you take the job, how much money will you earn? If you put all of your earnings in your savings account, how much will you still need to buy the bike?

**C.** Your sister is selling lemonade. The price is \$0.15 a cup. If she sells four cups, how much money will she have?

**D.** You bought candy at a store. You paid \$0.15 for gooey worms, \$0.20 for jelly beans and \$0.07 for sour stars. What is the total you spent? If you paid with a \$1.00 bill, how much change will you receive?

ACTIVITY 6.2

BOOKMARK RESOURCE PRICE LIST

Resource	Price
Space (rent)	\$0.25
Worker (wage)	\$0.10

**In Column 1**, list each resource you used to produce your sample bookmark.

**In Column 2**, write the price for each resource, using the Bookmark Resource Price List on Activity 6.2.

**In Column 3**, write the number of units of each resource that your company used. (For labor, write the number of students in your group, minus the entrepreneur.)

**In Column 4**, compute the cost of each resource by multiplying the number in Column 2 by the number in Column 3.

**Add the amounts** in Column 4 to find the unit costs of producing a bookmark. **Write your unit costs** (total costs of production for one bookmark) in the bottom row of Column 4.

1	2	3	4
Resource	Resource Price per Unit	Number of Units Used	Total Resource Cost (Column 2 x Column 3)
	Total Costs of Production for One Bookmark		

ACTIVITY 6.4  
DOLLARS FOR BOOKMARKS

<div>\$1<div>ONE DOLLAR</div><div>E</div><div>\$1</div><div>\$1ENTREPRENEUR\$1</div></div>	<div>\$1<div>ONE DOLLAR</div><div>E</div><div>\$1</div><div>\$1ENTREPRENEUR\$1</div></div>
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## ACTIVITY 6.5

### COMPUTING BOOKMARK PROFITS

Company Name:

Entrepreneur:

1. The selling price of your company's bookmark is

**\$3.00**

2. How many bookmarks did you sell?

3. Use this equation to determine your company's total revenue:

<b>Selling Price</b>	<b>x</b>	<b>Quantity Sold</b>	<b>=</b>	<b>Total Revenue</b>
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	<b>x</b>		<b>=</b>	
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4. Use this equation to determine your company's total cost:

<b>Unit Cost</b>	<b>x</b>	<b>Quantity Produced</b>	<b>=</b>	<b>Total Cost</b>
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	<b>x</b>		<b>=</b>	
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5. Is your company's total revenue > (greater than) its total cost  
or is your company's total revenue < (less than) its total cost?

6. If your company's total revenue was greater than its total cost,  
use this equation to determine your company's profit:

<b>Profit</b>	<b>=</b>	<b>Total Revenue</b>	<b>–</b>	<b>Total Cost</b>
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	<b>=</b>		<b>–</b>	
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7. If your total cost was greater than your total revenue,  
use this equation to determine your company's loss.

<b>Loss</b>	<b>=</b>	<b>Total Revenue</b>	<b>–</b>	<b>Total Cost</b>
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	<b>=</b>		<b>–</b>	
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8. Did your company's entrepreneur earn income (profit)?

## ACTIVITY 6.6

### ASSESSMENT: LUSCIOUS LEMONADE

**Directions:** Read the paragraph below. Help Jamal and Sally use this information to figure out whether their lemonade business earned a profit or had a loss. Show your work. (Use the back if you need more room.)

Mrs. Counts talked with Jamal and Sally about their lemonade stand. She learned that they sold 60 cups of lemonade at \$0.25 each. She also learned that Jamal's mother charged them for the resources they used to make the lemonade:

- \$3.50 for lemonade mix
- \$1.00 to rent the table for the lemonade stand
- \$0.75 for cups
- \$0.75 to rent the pitcher, spoon and measuring cup

1. What were Jamal and Sally's total costs? Show your work.
2. Write the equation for Jamal and Sally's total revenue. What was their total revenue?
3. Was Jamal and Sally's total revenue  $<$  or  $>$  their total costs?
4. Who are the entrepreneurs in this activity? Why?
5. Did Jamal and Sally earn a profit or have a loss? How much was their profit or loss?
6. If Jamal and Sally's total costs were \$16.50, would they earn a profit or have a loss? How much would their profit or loss be?

Company Name: \_\_\_\_\_

**In Column 1**, list each resource you used to produce your sample bookmark.

**In Column 2**, write the price for each resource, using the Bookmark Resource Price List on Activity 6.2.

**In Column 3**, write the number of units of each resource that your company used. (For labor, write the number of students in your group, minus the entrepreneur.)


**In Column 4**, compute the cost of each resource by multiplying the number in Column 2 by the number in Column 3.


**Add the amounts** in Column 4 to find the unit costs of producing a bookmark. **Write your unit costs** (total costs of production for one bookmark) in the bottom row of Column 4.

1	2	3	4
Resource	Resource Price per Unit	Number of Units Used	Total Resource Cost (Column 2 x Column 3)
	Total Costs of Production for One Bookmark		

VISUAL 6.2  
BOOKMARKS BY THE NUMBERS

1	2	3	4	5
Bookmark Company Name	Quantity of Bookmarks Sold	Total Revenue	Total Cost	Profit / Loss

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**MATHEMATICS & ECONOMICS**  
**GRADES 3-5**

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**MATHEMATICS & ECONOMICS GRADES 3-5**  
 developed by NCEE and sponsored by 3M, helps to bring economics and personal finance into the mathematics classroom.
 

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**Why teach Econ and Math together?**

- 48 states have elementary standards in economics
- Economics is usually found in social studies
- NCTM has made math instruction a high priority
- Great opportunity for math teachers since economics uses the language of math.

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**“Recent research on mathematics education continues to confirm that teaching mathematics in the context of an application is highly effective and that significant, worthwhile and grade level appropriate content can have considerable influence on student learning”**

Weiss, Iris R. and Joan D. Pasley, “What is High-Quality Instruction”, Educational Leadership, February, 2004

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**MECL: MATHEMATICS & ECONOMICS CONNECTIONS FOR LIFE**

- Produced by the National Council on Economic Education
- Funded by the 3 M Foundation
- Completes the series of **MATHEMATICS & ECONOMICS CONNECTIONS FOR LIFE**
  - 9-12 available
  - 6-8 available
  - 3-5 available

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**MATHEMATICS & ECONOMICS**

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**About: MATHEMATICS & ECONOMICS GRADES 3-5**

- Written by teams of classroom teachers and content specialists.
- Lessons field tested in both Omaha and Little Rock in different grades.
- Revised with pilot teacher suggestions.
- Edited by mathematics educator and economist.

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**MATHEMATICS & ECONOMICS**


  
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## About: MATHEMATICS & ECONOMICS GRADES 3-5

- 12 lessons teaching economics by using mathematical skills
- Each lesson has teacher's instruction, hands-on activities, closing review and assessment
- Economics instruction is included in each lesson.
- Math instruction is not included and needs to be taught first.

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## Web site: [mathandecon.ncee.net/35/](http://mathandecon.ncee.net/35/)

- Designed to help teachers prepare to teach lesson
- Downloadable PDF of Visuals and Activities
- Manipulative for student practice in 5 of the lessons
- Literature and language arts connections
- Links to other lessons and resources



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# Glossary of Terms

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**Alternatives:** options among which people can make a choice

**Barter:** direct exchange of goods or services among people without the use of money

**Benefits of trade:** increase in well-being after the voluntary exchange of goods and services

**Budgeting:** making a plan for managing income, spending and saving

**Capital goods (resources):** goods people produce and use to make other goods and services

**Choice:** a decision made among alternatives

**Complementary goods and services:** goods or services people typically consume together

**Consumers:** people whose wants are satisfied by using goods and services

**Costs of production:** the costs of all the resources a business uses in producing goods or services

**Criteria:** standards or measures of value that people use to evaluate something

**Decision making:** a process of choosing among alternatives

**Demand:** the schedule of the quantity of a good or service that people are willing and able to buy at different prices during a given time period, when income and prices of other items remain the same

**Division of labor:** jobs are divided among the workers so that each worker specializes in one part of the production process

**Economic benefits:** improvements in well-being associated with any economic action, good or service; for example, the increase in

satisfaction from consuming something

**Economic wants:** desires that people can satisfy by consuming a good or service

**Entrepreneurs:** people who take risks to develop new products and services and start new businesses. Profit is income for entrepreneurs and is an incentive that encourages them to risk their money and resources.

**Exchange rate:** the price of one country's currency in terms of another country's currency

**Goods:** objects that can satisfy people's economic wants

**Human capital:** the skills, education and talent a person possesses

**Human resources:** the quantity and quality of human effort directed toward producing goods or services

**Interest:** the amount that a borrower of money must pay to the lender for the use of the lender's money

**Interest rate:** the percentage that a borrower must pay of the money loaned in return for the use of the money, usually expressed over a period of one year

**Intermediate goods:** materials that are used up in production and become part of the final good

**Investment in capital:** purchasing capital goods (equipment and buildings) that can assist people in producing goods and services

**Law of demand:** people are willing and able to buy a lower quantity of a good or service at a higher price and a higher quantity of a good or service at a lower price, when income and prices of other items remain the same.



## GLOSSARY OF TERMS

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**Medium of exchange:** a good that people generally accept in exchange for other goods or services

**Money:** anything widely accepted as final payment for goods and services (a medium of exchange)

**Natural resources:** “gifts of nature” that are present without human intervention

**Opportunity cost:** the next best alternative people give up when they make a decision

**Productive resources:** natural resources, human resources and capital goods available to make goods and services

**Productivity:** a measure of output compared to inputs during some time period

**Profit and loss:** difference between the total revenue a business receives and the total costs it pays for resources. If this number is positive, it is called profit; and if it is negative, it is called loss.

**Revenue:** total amount a business receives for selling a product or service

**Savings:** income people have not spent on consumption or taxes

**Services:** actions that can satisfy people’s economic wants

**Specialization:** each worker focuses on one part of the production process

**Trade/Exchange:** voluntarily trading goods and services with people for other goods and services or for money

## Mathematics and Economics: Connections for Life, Grades 3-5 Workshop Evaluation Form

<Insert Center/Council Name>

In our effort to continuously improve our programming, we would appreciate your comments on our workshop. Looking back over your experience, please comment on the following questions.

Date \_\_\_\_\_ Location \_\_\_\_\_

1. Did this MECL workshop meet your expectations? \_\_\_\_yes \_\_\_\_no
2. Did you feel that you were presented with enough information about MECL to be able to go back into your classroom and use the curriculum? \_\_\_\_yes \_\_\_\_no
3. Were the materials and teaching strategies presented appropriate for your students?  
\_\_\_\_yes \_\_\_\_no
4. Did you have ample opportunity to ask questions and express your opinions?  
\_\_\_\_yes \_\_\_\_no
5. Please write your suggestions for improving future MECL workshops.
  
6. Please write any additional comments or recommendations.

## Sample Agenda for a Half-Day Workshop

This format is designed for workshops for teachers from several grades and/or schools.

### Goals for the half-day workshop:

At the conclusion of this workshop, the participants will be able to:

- Describe MECL's purpose for teaching economics and mathematics.
- Use the standards correlation grids in the book to select appropriate lessons for their own classroom.
- Access the NCEE Web-site support for MECL.
- Participate in at least two demonstration lessons from MECL and take home sample lessons.
- Describe some of the extension activities connected with the demonstrated lesson and know where to find more lessons.
- Describe how MECL lessons can help engage students above and below grade level in mathematics.
- Describe where to get more information from the local Center/Council for Economic Education.

### Materials list for demonstration of Lessons 6 and 3:

- One copy of Visuals 6.1, 6.2
- One copy of Activities 6.1, 6.5 and 6.6 for each participant
- One copy of Activity 6.2 for each group (before making the copies, be sure the bookmark resource price list includes all the materials in the resource bags and an estimated price for each resource)
- One envelope of craft materials for making bookmarks for each group
- One copy of Activity 6.3 for each group
- Enough copies of Activity 6.4 to provide three \$1.00 bills for each participant
- OPTIONAL: One copy of entire Lesson 6 if you do not plan to distribute MECL as part of the workshop
- Copy of the trade book *Chicken Sundays* by Patricia Polacco, Paperstar Book, Reprint edition, Jan. 1998 (ISBN: 0-69811-615-1) and *The Real McCoy* (a Blue Ribbon Book) by Wendy Towle, Scholastic Paperbacks, Jan. 1, 1995 (ISBN: 0-59048-102-9) to show during discussion
- One copy of Visuals 3.1, 3.2 and 3.3
- Two copies of Activity 3.1. Make one copy of the activity cards on red paper and one copy of the activity cards on blue paper. Cut the cards apart. Make sure you have enough to distribute one card, red or blue (not both), to all participants.
- One copy of Activity 3.2 for each participant
- OPTIONAL: Thermometers if you plan to do the estimation activity

#### I. Welcome and Ice-Breaker (20 minutes)

- Have nametags made ahead of time, and place them on a table for teachers to pick up as they enter the room.

- As teachers check in, have them select an index card from a basket. On one side of the card, have these instructions: Find four people who can help you make a correct number sentence and form a group; find a table together and put your correct sentence in the middle of the table. On the other side of the card, have one number or math symbol. In order to form groups, five teachers must make a number sentence and put the cards in the correct order in the center of their table. An example would be five cards containing  $(2 + 3 = 5)$ . Make enough cards to make the math work but only enough  $=$  signs for the number of groups you plan to have. Thirty teachers will require six  $=$  signs. You can select easy or more difficult numbers. You may want to give candy or small prizes to the groups after they are organized.
- Give the teachers time to introduce themselves, and ask them to make stand-up cards with first names for each group member with larger folded index cards and markers you have placed on each table. This will help you with names and give teachers time to interact. Give a prize for the name card with the best math symbols.

## II. Overview of MECL and Its Features (10 minutes)

- Use the PowerPoint overview presentation or your own presentation.
- Explain the importance of math instruction. Point out that having students use math skills outside the math content in other subjects represents the highest levels of learning advocated by NCTM in its standards.
- Show and pass out the math and economics standards correlation grids from MECL. Ask a teacher to indicate if the grids show math skills they are currently teaching.
- Ask the teachers if they currently teach economics concepts in math or social studies. You should have obtained the school/district math curriculum and social studies standards, if possible. Refer to the economics standards grid in MECL. If teachers need further information, link them to <http://ecedweb.unomaha.edu/K-12/K-5concepts.cfm> or their own state or local Web site for information.
- Hand out the glossary from MECL.

## III. Review and Demonstration of Lesson 6, “Bookmark Profits,” and Supporting Web Site (30 minutes)

- Explain that figuring profit is something that entrepreneurs need to do to decide if the risk is worth the reward of introducing new products to the marketplace. This lesson requires students to create a new product and try to sell it to consumers. They then figure out if they made a profit or incurred a loss. Basic math operations are reviewed in this lesson as students create equations.
- Arrange the teachers by grade level into groups of 4-5. Have each group select a leader who will play the role of an entrepreneur. Distribute a large envelope of craft supplies to each group and have them read the instructions in Lesson 6. (Note: Make sure to record the prices of the supplies you have in the envelope on the price list before you make copies of Activity 6.2.) Each group should get the same supplies.
- Review the instructions for the task. Each group will create a sample bookmark, using the supplies in the envelope, and will figure how much the sample will cost

- to make, using Activities 6.2 and 6.3 to add the inputs. Give the groups 10 minutes to complete the task and have the entrepreneurs of each group display their bookmarks in front of the room where all can see them. All bookmarks will sell for \$3.00.
- Distribute \$3.00 to each participant (use Activity 6.4). Have each entrepreneur come to the front and offer the bookmark for \$3.00. Count the number of buyers, and take money from each buyer so that each participant can buy only one. Act as the recorder, using Visual 6.2 to figure the income each group gets from the sale of its bookmark.
  - The teachers should work out the calculations on their own Activity 6.4, and you should work on the overhead. Ask each group to report if it made a profit or loss.
  - Part 2 of the lesson asks the groups to write mathematical equations showing the profit or loss as mathematical equations, using Activity 6.5. Have the groups work through the worksheets together. Have a sample group report if there is time.
  - Call the group to attention, and ask the groups to analyze the difficulty of the math in the lesson and describe the students or grades that might be able to use this lesson. Point out that the lessons in MECL can be used for practice following direct instruction or review of a previous day's instructions. The lesson could also be used as a general review of math skills taught in the preceding year or as instruction for students above grade level.
  - Project the MECL Web site (<http://mathandecon.ncee.net>) from the Internet for Lesson 6. Draw attention to the following features: the summary of the lesson, the list of materials and the PDF downloads for Activities and Visuals, the list of Weblinks, the literature connections and *EconEdLink* lessons. Go directly to the links, and show the teachers how to use the Web site to find other activities.
  - Show the trade books *Chicken Sundays* and *The Real McCoy*. The *Real McCoy* lesson is listed as an online lesson on <http://ecedweb.unomaha.edu> under entrepreneurs concept. Distribute this lesson or another sample lesson on entrepreneurs.

#### IV. Break (20 minutes)

- Have a refreshments table or buffet for teachers. As they take the break, have a display of a variety of NCEE materials for elementary grades. If possible, have several copies of materials to be given away as door prizes at the end of the workshop. If you have local district math textbooks that you have marked to correlate with the lessons in MECL, display them also.

#### V. Review and Demonstration of Lesson 3, "What's Hot and What's Not," and Supporting Web Site (45 minutes)

- Go to the MECL Web site (<http://mathandecon.ncee.net>) to review the lesson summary.
- After reviewing the summary with the participants, draw attention to the Notes to Teachers about satisfaction comparison. Point out that information about preparing to teach lessons is one of the features of the MECL Web support.
- If time permits, do the opening of Lesson 3, reviewing the steps in Procedures 1-12 and ending with the estimation of the temperature in the room and outside. If you do not have the time, go directly to step 19.

- Divide the class into two groups. Distribute the red and blue cards, and describe the red and blue zones of the room. Remember to mix up the colors as you distribute one card to each participant. After the two groups have rated their satisfaction with their goods, give them time to trade.
- Allow the groups to trade and record the satisfaction rating on the overhead. Go back to the teacher note on the Web site, and make sure that the teachers understand that the satisfaction rates are ordinal and cannot be compared from one student to another. Emphasize the voluntary nature of trading, and make sure they understand the economic benefits of trade.
- Go to the [interactive Web activity for Lesson 3](#), and demonstrate the estimation activity a few times so that the teachers are familiar with it. Tell them that Lessons 1, 2, 3, 7 and 12 have this interactive feature for student practice.
- Scroll down to the section with the links to other Related Online Lessons. Go to the fourth link, "[A Rooster and a Bean Seed](#)," and show the teachers how to download this lesson. Also show them the fifth link, "[Economic Spotter: Trade in Colonial Days](#)," to emphasize the connection to the elementary social studies curriculum.
- Pass out copies of Activity 3.2, and explain to the teachers that each MECL lesson has an assessment that checks for understanding of both the mathematics and economics concepts in the lesson.

#### IV. Wrap-Up (10 minutes)

- Give the teachers a few minutes to review the table of contents and the grids to locate another lesson they feel would be appropriate for their students' math level. Ask a teacher from each group to share one lesson they would use with each grade level.
- Review the key features of the book and Web site. Distribute the books if you are giving them to teachers with a sticker on the front with your Center/Council information, phone number and Web site.
- Distribute the Workshop Evaluation Form and allow time for the participants to complete it.
- Give away a few small prizes or curriculum guides as door prizes.
- Discuss other programs your Council/Center is planning in the future.
- Thank the teachers for coming, and distribute your card to the teachers for future contact.

## ACTIVITY 6.1

### MONEY MATTERS REVIEW

**Directions:** Calculate the answers to these questions. Show your work.

**A.** Suppose you have been saving your money to buy a new bicycle. The price of the bicycle is \$175.50. You have saved \$75.25. How much more money must you save?

**B.** You can walk the neighbor's dog for three days. She will pay you \$3.00 a day. If you take the job, how much money will you earn? If you put all of your earnings in your savings account, how much will you still need to buy the bike?

**C.** Your sister is selling lemonade. The price is \$0.15 a cup. If she sells four cups, how much money will she have?

**D.** You bought candy at a store. You paid \$0.15 for gooey worms, \$0.20 for jelly beans and \$0.07 for sour stars. What is the total you spent? If you paid with a \$1.00 bill, how much change will you receive?

ACTIVITY 6.2  
BOOKMARK RESOURCE PRICE LIST

Resource	Price
Space (rent)	\$0.25
Worker (wage)	\$0.10



Company Name: \_\_\_\_\_

**In Column 1**, list each resource you used to produce your sample bookmark.

**In Column 2**, write the price for each resource, using the Bookmark Resource Price List on Activity 6.2.

**In Column 3**, write the number of units of each resource that your company used. (For labor, write the number of students in your group, minus the entrepreneur.)

**In Column 4**, compute the cost of each resource by multiplying the number in Column 2 by the number in Column 3.

**Add the amounts** in Column 4 to find the unit costs of producing a bookmark. **Write your unit costs** (total costs of production for one bookmark) in the bottom row of Column 4.

1	2	3	4
Resource	Resource Price per Unit	Number of Units Used	Total Resource Cost (Column 2 x Column 3)
	Total Costs of Production for One Bookmark		

ACTIVITY 6.4  
DOLLARS FOR BOOKMARKS

<div>\$1<div>ONE DOLLAR</div><div>E</div><div>\$1</div><div>\$1ENTREPRENEUR\$1</div></div>	<div>\$1<div>ONE DOLLAR</div><div>E</div><div>\$1</div><div>\$1ENTREPRENEUR\$1</div></div>
<div>\$1<div>ONE DOLLAR</div><div>E</div><div>\$1</div><div>\$1ENTREPRENEUR\$1</div></div>	<div>\$1<div>ONE DOLLAR</div><div>E</div><div>\$1</div><div>\$1ENTREPRENEUR\$1</div></div>
<div>\$1<div>ONE DOLLAR</div><div>E</div><div>\$1</div><div>\$1ENTREPRENEUR\$1</div></div>	<div>\$1<div>ONE DOLLAR</div><div>E</div><div>\$1</div><div>\$1ENTREPRENEUR\$1</div></div>
<div>\$1<div>ONE DOLLAR</div><div>E</div><div>\$1</div><div>\$1ENTREPRENEUR\$1</div></div>	<div>\$1<div>ONE DOLLAR</div><div>E</div><div>\$1</div><div>\$1ENTREPRENEUR\$1</div></div>

## ACTIVITY 6.5

### COMPUTING BOOKMARK PROFITS

Company Name:

Entrepreneur:

1. The selling price of your company's bookmark is

**\$3.00**

2. How many bookmarks did you sell?

3. Use this equation to determine your company's total revenue:

<b>Selling Price</b>	<b>x</b>	<b>Quantity Sold</b>	<b>=</b>	<b>Total Revenue</b>
----------------------	----------	----------------------	----------	----------------------

	<b>x</b>		<b>=</b>	
--	----------	--	----------	--

4. Use this equation to determine your company's total cost:

<b>Unit Cost</b>	<b>x</b>	<b>Quantity Produced</b>	<b>=</b>	<b>Total Cost</b>
------------------	----------	--------------------------	----------	-------------------

	<b>x</b>		<b>=</b>	
--	----------	--	----------	--

5. Is your company's total revenue > (greater than) its total cost  
or is your company's total revenue < (less than) its total cost?

6. If your company's total revenue was greater than its total cost,  
use this equation to determine your company's profit:

<b>Profit</b>	<b>=</b>	<b>Total Revenue</b>	<b>–</b>	<b>Total Cost</b>
---------------	----------	----------------------	----------	-------------------

	<b>=</b>		<b>–</b>	
--	----------	--	----------	--

7. If your total cost was greater than your total revenue,  
use this equation to determine your company's loss.

<b>Loss</b>	<b>=</b>	<b>Total Revenue</b>	<b>–</b>	<b>Total Cost</b>
-------------	----------	----------------------	----------	-------------------

	<b>=</b>		<b>–</b>	
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8. Did your company's entrepreneur earn income (profit)?

## ACTIVITY 6.6

### ASSESSMENT: LUSCIOUS LEMONADE

**Directions:** Read the paragraph below. Help Jamal and Sally use this information to figure out whether their lemonade business earned a profit or had a loss. Show your work. (Use the back if you need more room.)

Mrs. Counts talked with Jamal and Sally about their lemonade stand. She learned that they sold 60 cups of lemonade at \$0.25 each. She also learned that Jamal's mother charged them for the resources they used to make the lemonade:

- \$3.50 for lemonade mix
- \$1.00 to rent the table for the lemonade stand
- \$0.75 for cups
- \$0.75 to rent the pitcher, spoon and measuring cup

1. What were Jamal and Sally's total costs? Show your work.
2. Write the equation for Jamal and Sally's total revenue. What was their total revenue?
3. Was Jamal and Sally's total revenue  $<$  or  $>$  their total costs?
4. Who are the entrepreneurs in this activity? Why?
5. Did Jamal and Sally earn a profit or have a loss? How much was their profit or loss?
6. If Jamal and Sally's total costs were \$16.50, would they earn a profit or have a loss? How much would their profit or loss be?

Company Name: \_\_\_\_\_

**In Column 1**, list each resource you used to produce your sample bookmark.

**In Column 2**, write the price for each resource, using the Bookmark Resource Price List on Activity 6.2.

**In Column 3**, write the number of units of each resource that your company used. (For labor, write the number of students in your group, minus the entrepreneur.)

**In Column 4**, compute the cost of each resource by multiplying the number in Column 2 by the number in Column 3.

**Add the amounts** in Column 4 to find the unit costs of producing a bookmark. **Write your unit costs** (total costs of production for one bookmark) in the bottom row of Column 4.

1	2	3	4
Resource	Resource Price per Unit	Number of Units Used	Total Resource Cost (Column 2 x Column 3)
	Total Costs of Production for One Bookmark		

VISUAL 6.2  
BOOKMARKS BY THE NUMBERS

1	2	3	4	5
Bookmark Company Name	Quantity of Bookmarks Sold	Total Revenue	Total Cost	Profit / Loss

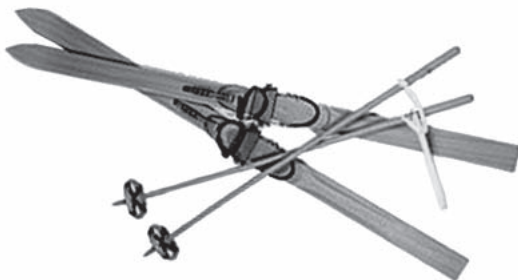
## ACTIVITY 3.1

### WEATHER-TIME GOODS



## ACTIVITY 3.1 (continued)

### WEATHER-TIME GOODS





## ACTIVITY 3.2

### ASSESSMENT: DO I WANT TO TRADE?

1. Write the temperature shown on each thermometer.

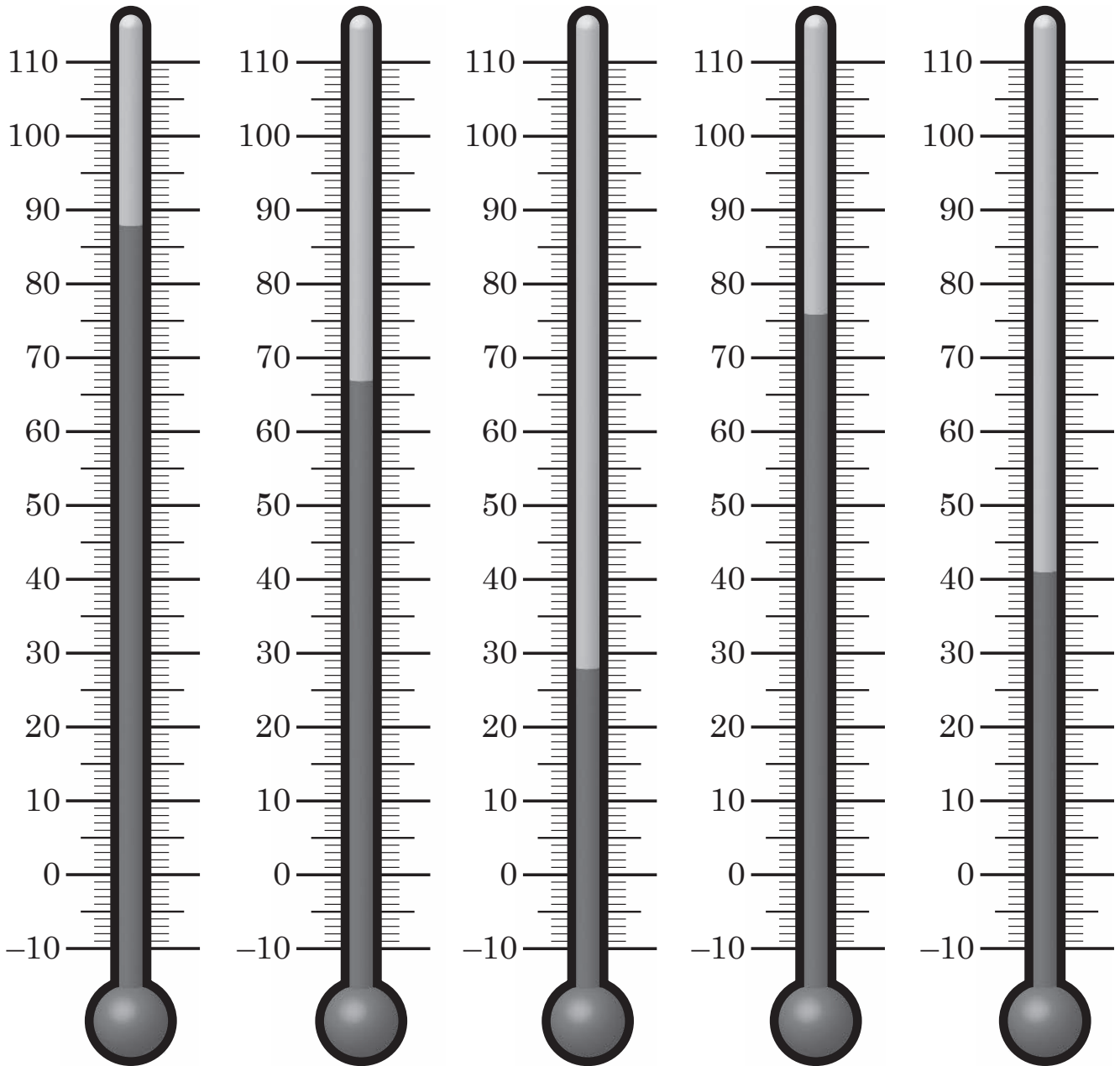
A. \_\_\_\_\_°F

B. \_\_\_\_\_°F

C. \_\_\_\_\_°F

D. \_\_\_\_\_°F

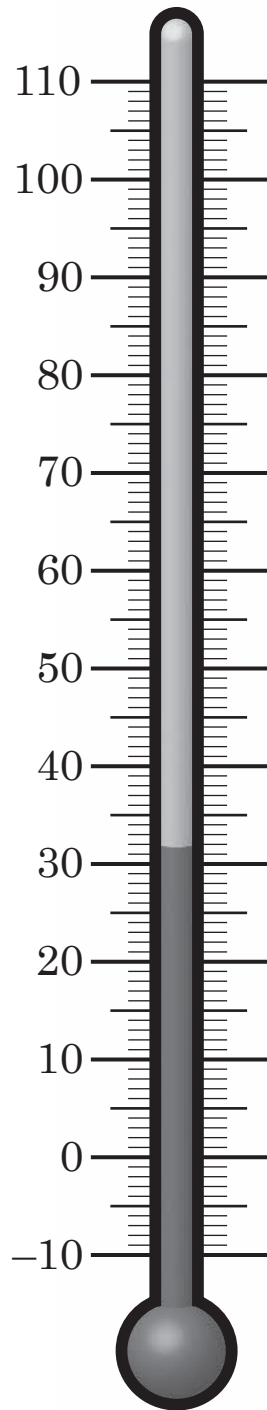
E. \_\_\_\_\_°F



**ACTIVITY 3.2 (continued)****ASSESSMENT: DO I WANT TO TRADE?**

2. List the temperatures on the thermometers in Question 1 from coolest to warmest.
  
3. What is the median of these temperatures?
  
4. Pretend that these five temperatures are from different times of the year in the region where you live. What is the mean temperature for your region?
  
5. Which one of the following goods would you choose to use when the temperature is  $70^{\circ}$ ? Circle this good.  
A. Swing Set      B. Roller Blades      C. Snow Skis      D. Bicycle
  
6. Why did you make this choice?
  
7. How would you rate your satisfaction with the good you chose using a scale of 1 to 10, with 1 meaning not very happy and 10 meaning very happy?

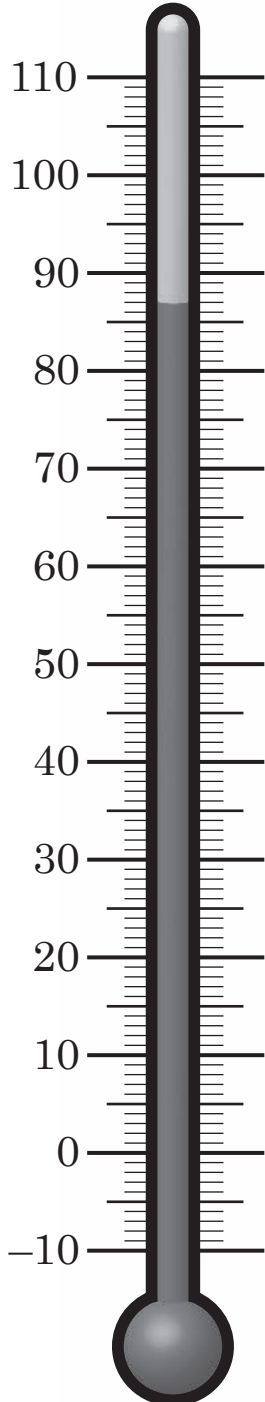
## VISUAL 3.1 READING A THERMOMETER



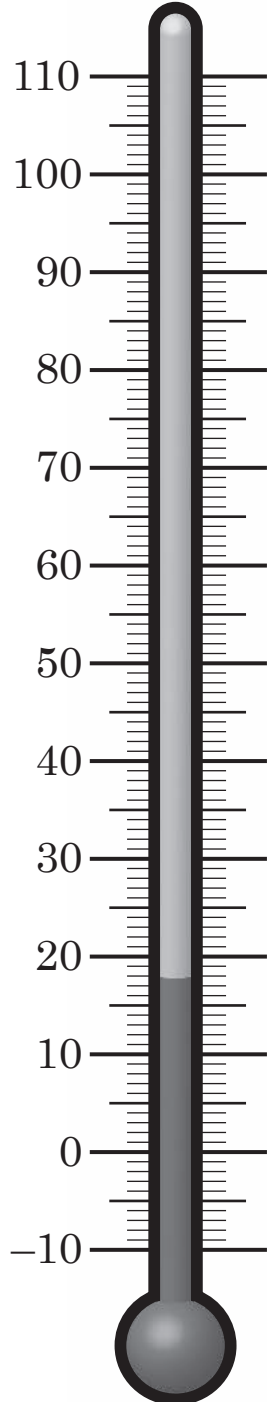
## VISUAL 3.2

### THREE TEMPERATURE READINGS

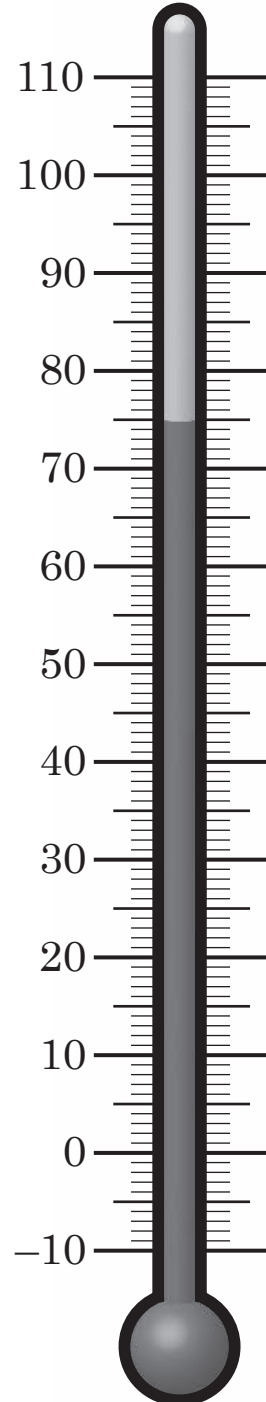
A. \_\_\_\_\_°F



B. \_\_\_\_\_°F



C. \_\_\_\_\_°F





## VISUAL 3.3

### SATISFACTION TABLE

Blue Zone		
Student Name	Rating	
	Round 1	Round 2
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		

Red Zone		
Student Name	Rating	
	Round 1	Round 2
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		

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**MATHEMATICS & ECONOMICS**  
**GRADES 3-5**

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**MATHEMATICS & ECONOMICS GRADES 3-5**  
 developed by NCEE and sponsored by 3M, helps to bring economics and personal finance into the mathematics classroom.

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**MATHEMATICS & ECONOMICS**

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**Why teach Econ and Math together?**

- 48 states have elementary standards in economics
- Economics is usually found in social studies
- NCTM has made math instruction a high priority
- Great opportunity for math teachers since economics uses the language of math.

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**"Recent research on mathematics education continues to confirm that teaching mathematics in the context of an application is highly effective and that significant, worthwhile and grade level appropriate content can have considerable influence on student learning"**

Weiss, Iris R. and Joan D. Pasley  
"What is High-Quality Instruction", Educational Leadership, February, 2004

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**MATHEMATICS & ECONOMICS**

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**MECL: MATHEMATICS & ECONOMICS**  
**CONNECTIONS FOR LIFE**

- Produced by the National Council on Economic Education
- Funded by the 3 M Foundation
- Completes the series of **MATHEMATICS & ECONOMICS CONNECTIONS FOR LIFE**
  - 9-12 available
  - 6-8 available
  - 3-5 available

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**MATHEMATICS & ECONOMICS**

National Council on Economic Education

**About: MATHEMATICS & ECONOMICS**  
**GRADES 3-5**

- Written by teams of classroom teachers and content specialists.
- Lessons field tested in both Omaha and Little Rock in different grades.
- Revised with pilot teacher suggestions.
- Edited by mathematics educator and economist.

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**MATHEMATICS & ECONOMICS**


  
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## About: MATHEMATICS & ECONOMICS GRADES 3-5

- 12 lessons teaching economics by using mathematical skills
- Each lesson has teacher's instruction, hands-on activities, closing review and assessment
- Economics instruction is included in each lesson.
- Math instruction is not included and needs to be taught first.

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## Web site: [mathandecon.ncee.net/35/](http://mathandecon.ncee.net/35/)

- Designed to help teachers prepare to teach lesson
- Downloadable PDF of Visuals and Activities
- Manipulative for student practice in 5 of the lessons
- Literature and language arts connections
- Links to other lessons and resources



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# Glossary of Terms

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**Alternatives:** options among which people can make a choice

**Barter:** direct exchange of goods or services among people without the use of money

**Benefits of trade:** increase in well-being after the voluntary exchange of goods and services

**Budgeting:** making a plan for managing income, spending and saving

**Capital goods (resources):** goods people produce and use to make other goods and services

**Choice:** a decision made among alternatives

**Complementary goods and services:** goods or services people typically consume together

**Consumers:** people whose wants are satisfied by using goods and services

**Costs of production:** the costs of all the resources a business uses in producing goods or services

**Criteria:** standards or measures of value that people use to evaluate something

**Decision making:** a process of choosing among alternatives

**Demand:** the schedule of the quantity of a good or service that people are willing and able to buy at different prices during a given time period, when income and prices of other items remain the same

**Division of labor:** jobs are divided among the workers so that each worker specializes in one part of the production process

**Economic benefits:** improvements in well-being associated with any economic action, good or service; for example, the increase in

satisfaction from consuming something

**Economic wants:** desires that people can satisfy by consuming a good or service

**Entrepreneurs:** people who take risks to develop new products and services and start new businesses. Profit is income for entrepreneurs and is an incentive that encourages them to risk their money and resources.

**Exchange rate:** the price of one country's currency in terms of another country's currency

**Goods:** objects that can satisfy people's economic wants

**Human capital:** the skills, education and talent a person possesses

**Human resources:** the quantity and quality of human effort directed toward producing goods or services

**Interest:** the amount that a borrower of money must pay to the lender for the use of the lender's money

**Interest rate:** the percentage that a borrower must pay of the money loaned in return for the use of the money, usually expressed over a period of one year

**Intermediate goods:** materials that are used up in production and become part of the final good

**Investment in capital:** purchasing capital goods (equipment and buildings) that can assist people in producing goods and services

**Law of demand:** people are willing and able to buy a lower quantity of a good or service at a higher price and a higher quantity of a good or service at a lower price, when income and prices of other items remain the same.

## GLOSSARY OF TERMS

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**Medium of exchange:** a good that people generally accept in exchange for other goods or services

**Money:** anything widely accepted as final payment for goods and services (a medium of exchange)

**Natural resources:** “gifts of nature” that are present without human intervention

**Opportunity cost:** the next best alternative people give up when they make a decision

**Productive resources:** natural resources, human resources and capital goods available to make goods and services

**Productivity:** a measure of output compared to inputs during some time period

**Profit and loss:** difference between the total revenue a business receives and the total costs it pays for resources. If this number is positive, it is called profit; and if it is negative, it is called loss.

**Revenue:** total amount a business receives for selling a product or service

**Savings:** income people have not spent on consumption or taxes

**Services:** actions that can satisfy people’s economic wants

**Specialization:** each worker focuses on one part of the production process

**Trade/Exchange:** voluntarily trading goods and services with people for other goods and services or for money

## Mathematics and Economics: Connections for Life, Grades 3-5 Workshop Evaluation Form

<Insert Center/Council Name>

In our effort to continuously improve our programming, we would appreciate your comments on our workshop. Looking back over your experience, please comment on the following questions.

Date \_\_\_\_\_ Location \_\_\_\_\_

1. Did this MECL workshop meet your expectations? \_\_\_\_yes \_\_\_\_no
2. Did you feel that you were presented with enough information about MECL to be able to go back into your classroom and use the curriculum? \_\_\_\_yes \_\_\_\_no
3. Were the materials and teaching strategies presented appropriate for your students?  
\_\_\_\_yes \_\_\_\_no
4. Did you have ample opportunity to ask questions and express your opinions?  
\_\_\_\_yes \_\_\_\_no
5. Please write your suggestions for improving future MECL workshops.
  
6. Please write any additional comments or recommendations.

## **Sample Agenda for Introducing MECL to Math Supervisors and Curriculum Specialists in a District or State Department of Education (30 minutes)**

In large school districts, math supervisors may be the best “gatekeepers” to reaching the teachers and getting them interested in MECL. You may want to set up a meeting to demonstrate some of the features of MECL to a group of math supervisors and/or curriculum specialists.

Folders for the participants of the meeting should contain these items:

- ✓ Information about you and your Center/Council
- ✓ NCEE catalogs
- ✓ Copy of MECL or sample copy of one lesson
- ✓ Essay from MECL about teaching math and economics together
- ✓ Grids showing correlation of the curriculum to NCTM and NCEE standards
- ✓ Workshop evaluation forms from past MECL workshop your Center/Council has hosted
- ✓ Copy of the local district math and social studies outcomes for grades 3-5 that you have referenced to the MECL lessons

Points to make during this meeting:

- Describe MECL’s purpose in teaching economics and mathematics by highlighting the grids correlating the NCTM standards and the NCEE standards to lessons. Make reference to the handouts in the folders.
- Direct the participants to the grids in the book to select appropriate lessons matching district outcomes and standards. If you have not been able to do this in advance of the meeting, ask the participants to see if they find any of their district’s standards in the NCTM grid.
- Describe how the lessons in MECL can engage students above and below grade level in mathematics.
- If computers and the Internet are available, demonstrate the features of the MECL Web site (<http://mathandecon.ncee.net>), using Lesson 3. This lesson has one of the interactives for students. Make sure to show the downloadable Visuals and Activities. Show the assessment, Activity 3.2, to highlight the fact that each lesson has an assessment component. Show the link to the NCEE lessons on *EconEdLink* (<http://www.econedlink.org>) to show the additional support for teachers.

End the meeting by asking how you can arrange to host a workshop for teachers during the next district curriculum day. Offer to train lead teachers who can take the information back to their colleagues.

## **Listing of lessons with a brief description.**

- **Lesson 1: A Season of Goods**

This lesson focuses on goods and services (economics) and basic operations (mathematics). The students review the four seasons of the year and brainstorm goods and services that people often purchase during each season. The students then participate in a matching game, pairing goods and services according to the seasons. Finally, the students work on an activity that requires them to act as consumers on a budget and make decisions to purchase goods and services.

- **Lesson 2: Choices, Choices**

This lesson focuses on decision making (economics) and introduces surveying as a method of data collection (mathematics). After analyzing data on a sample topic, the students use a decision-making grid to help them rank career choices and create fractions using the survey data. You can use this lesson as part of a career unit. It focuses on math-related careers, but you can modify it to cover all types of careers if this fits better into the grade-level curriculum.

- **Lesson 3: What's Hot! What's Not!**

This lesson focuses on exchange and trade (economics) and mean, median and temperatures (mathematics). The students review how to read temperatures on a thermometer and discuss activities associated with various temperatures. They estimate temperatures and find the median and mean of a group of temperatures. They participate in a trading simulation and experience the economic principle that voluntary exchange increases satisfaction.

- **Lesson 4: Pizza on a Budget**

This lesson focuses on budgeting (economics) and basic operations (mathematics). The students participate in a mouth-watering budget activity while they use estimating skills and practice identifying costs and benefits. Using a budget work sheet, they work in small groups to plan a class pizza party. They review basic operations skills using money as they make decisions about refreshments for the party.

- **Lesson 5: The Math Factory**

This lesson focuses on productivity (economics) and multiplication (mathematics). The students learn about physical capital and human capital as they create multiplication-fact review cards. In the first production round, groups of students produce as craftspeople and as specialists. In the second round, they continue to produce as craftspeople and specialists, but they also receive information that helps them to increase their human capital - their skills and knowledge - and their productivity. In the third round, the students get scissors; and this tool, along with their prior experience, once again increases their human capital and productivity.

- **Lesson 6: Bookmark Profit**

This lesson focuses on profit (economics) and basic operations (mathematics). Working in small groups, the students act as companies and produce bookmarks. They decide which resources to purchase to produce their bookmarks. They calculate their costs of production and display their bookmarks for the class. The students then act as consumers and "buy" bookmarks. Based on their "sales," the student companies compute their profit or loss.

- **Lesson 7: Go Fly a Kite**

This lesson focuses on resources and barter (economics) and geometry (mathematics). After reviewing the concept of bartering, the students roll a four-sided dice to gather some of the resources they will need to build a tetrahedron kite, which is based on the shape of a platonic solid. Then they barter to get the rest of the materials they will need. During this process, the students identify the characteristics of intermediate goods and use these goods to build their kite.

- **Lesson 8: Doughnut Dreaming**

This lesson focuses on demand (economics) and line graphs (mathematics). The students use a class survey to collect data about the quantity demanded of doughnuts at different prices. They use this data to construct a line graph. They discuss the law of demand and apply it to the graph to understand that at lower prices, the students will purchase more doughnuts.

- **Lesson 9: How Much Time?**

This lesson focuses on opportunity cost (economics) and graphs (mathematics). The students review terms related to measuring time and convert a time schedule into a pie chart, or circle graph. The students use the circle graph to assist them in making decisions about using time wisely to satisfy the requirements of a school-day schedule, and they consider the opportunity cost of their decisions.

- **Lesson 10: Bunches of Brownies**

This lesson focuses on resources (economics) and fractions (mathematics). The students use measuring cups to determine equivalent fractions for a recipe. Thinking economically, the students identify the productive resources they would use to make brownies and categorize them as natural resources, human resources or capital goods (resources). The students work in groups to decide how they would divide a pan of brownies equally. Finally, the students determine how much of each ingredient they would need if they wanted to produce additional batches of brownies.

- **Lesson 11: Plenty of Pennies**

This lesson focuses on interest (economics) and percents (mathematics). The students use pennies to help them compute percents. They convert percent to decimals and figure interest amounts on savings or borrowed money. They role-play to understand that interest is payment for the use of money, and they discover that all financial choices have a cost.

- **Lesson 12: Birdly Exchange**

This lesson focuses on barter, money and characteristics of money (economics) and fractions and ratios (mathematics). The students will role-play a bartering activity and participate in trading simulations using feathers and birdles (a form of paper money) as mediums of exchange. They will compare their trading experiences to decide why medium of exchange is an important function of money. The students should have some grasp of fractions and ratios, because the lesson introduces exchange rate as a ratio and includes an activity in which the students calculate the exchange rate between U.S. dollars and birdles.

## Why Teach Mathematics and Economics Together?

Teaching mathematics in today's elementary classroom can be both exciting and challenging for an elementary teacher. It can be exciting because we are experiencing a wonderful evolution in mathematics education that recognizes the importance of teaching mathematics in a hands-on, dynamic and applied way. This approach makes learning mathematics fun for teacher and student alike.

Teaching mathematics for an elementary teacher can also be a challenge because the mathematics that should be taught today includes much more than the simple arithmetic that we adults may have experienced in our elementary classrooms.

In the elementary classroom of today, mathematics is a dynamic discipline basic to our information society and includes essential processes such as problem solving, reasoning, communication, connections and representation. (*Principles and Standards for School Mathematics*, Reston, Va.: National Council of Teachers of Mathematics, 2000). *Mathematics and Economics: Connections for Life Grades 3- 5* book helps an elementary teacher strive for thoughtful and creative mathematics instruction by providing 12 model lessons for grades 3 through 5 that give students a great context — economics — for learning mathematics.

Recent research on mathematics education continues to confirm that teaching mathematics in the context of an application is highly effective and that significant, worthwhile and grade-level appropriate content can have considerable influence on student learning. (Iris R. Weiss and Joan D. Pasley, "What is High- Quality Instruction?" *Educational Leadership*, February 2004, pp. 24-28). Primary factors associated with effective lessons were student engagement and interaction with the content.

As it does in many sciences, the discipline of mathematics quite naturally represents a "language" for economics. Economics depends on mathematics to represent relationships, solve problems, and communicate ideas effectively. This real-world context provides a great opportunity for elementary teachers to teach their students current mathematics, while simultaneously offering their students a chance to learn some of the fundamental concepts of economics. Thus, the lessons in this book will help teachers illustrate to their students the real power of mathematics in our world.

Economics teaches students how to be wise producers and consumers, lessons they will use throughout their lives. Although the focus of these lessons is teaching mathematics within the context of economics, the teaching of economics is itself essential. Forty-eight states now have curriculum standards at the elementary level requiring that students be taught economics. Teachers often weave economics concepts into the material of other subjects as they seek to fulfill the responsibility to address their district's elementary curriculum. Not only do the lessons in this book teach mathematics in a compelling way, they are also exciting and relevant approaches to teaching economics concepts that students will use for a lifetime.

The lessons have been designed by master teachers, reviewed by content experts, piloted in elementary classrooms and published with a careful attention to the potential excitement and utility of blending instruction for these two disciplines. All lessons include hands-on activities, encourage class discussions and provide many effective questions teachers can use to review and deepen student understanding. All lessons, even the fanciful, are grounded in familiar activities relevant to the everyday lives of students.

Each lesson includes a Web address for all of the activities and visuals ready to print, further connections to other disciplines, additional suggestions for mathematics and economics activities for students, and links to interesting information and resources. Most of all, students will be excited by these creative activities and that will excite teachers as well.

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**This document contains pages from the publication *Mathematics & Economics: Connections for Life, Grades 3-5* from the National Council on Economic Education (NCEE).**

**If you are interested in purchasing *Mathematics & Economics, Grades 3-5*, visit: <http://store.ncee.net>**

**If you are interested in learning more about NCEE, visit: <http://www.ncee.net>**



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# Content Standards: **Mathematics**

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## **Number and Operations**

- Understand numbers, ways of representing numbers, relationships among numbers and number systems.
- Develop understanding of fractions as parts of unit wholes, as parts of a collection, as locations on number lines and as divisions of whole numbers.
- Recognize and generate equivalent forms of commonly used fractions, decimals and percents.
- Develop fluency in adding, subtracting, multiplying and dividing whole numbers.
- Develop and use strategies to estimate computations involving fractions and decimals in situations relevant to students' experience.
- Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results.

## **Algebra**

- Use mathematical models to represent and understand quantitative relationships.

## **Geometry**

- Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.
- Use visualization, spatial reasoning and geometric modeling to solve problems.

## **Measurement**

- Understand measurable attributes of objects and the units, systems and processes of measurement.

## **Data Analysis and Probability**

- Formulate questions that can be addressed with data and collect, organize and display relevant data to answer them.
- Collect data using observations, surveys and experiments.
- Represent data using tables and graphs such as line plots, bar graphs and line graphs.
- Select and use appropriate statistical methods to analyze data.
- Propose and justify conclusions and predictions that are based on data, and design studies to further investigate the conclusions or predictions.

## **Problem Solving**

- Build new mathematical knowledge through problem solving.
- Solve problems that arise in mathematics and in other contexts.
- Apply and adapt a variety of appropriate strategies to solve problems.

## **Connections**

- Recognize and apply mathematics in contexts outside of mathematics.

## **Representation**

- Create and use representations to organize, record and communicate mathematical ideas.

## A Correlation of the Lessons with the Mathematics Standards

Standards	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7	Lesson 8	Lesson 9	Lesson 10	Lesson 11	Lesson 12
<b>Number and Operations</b>												
• Understand numbers, ways of representing numbers, relationships ...	●											
• Develop understanding of fractions as parts of unit wholes, as parts ...		●								●		
• Recognize and generate equivalent forms of commonly used fractions, ...											●	●
• Compute fluently and make reasonable estimates.	●		●		●							
• Develop fluency in adding, subtracting, multiplying and dividing ...				●								
• Develop and use strategies to estimate computations involving fractions ...				●		●				●		
• Develop and use strategies to estimate the results of whole-number ...				●								
<b>Algebra</b>												
• Use mathematical models to represent and understand quantitative ...		●										
<b>Geometry</b>												
• Analyze characteristics and properties of two- and three-dimensional ...							●					
• Use visualization, spatial reasoning and geometric modeling to solve ...							●					
<b>Measurement</b>												
• Understand measurable attributes of objects and the units, systems ...			●						●			
<b>Data Analysis and Probability</b>												
• Formulate questions that can be addressed with data and collect, ...		●										
• Collect data using observations, surveys and experiments.								●				
• Represent data using tables and graphs such as line plots, bar graphs ...								●				
• Select and use appropriate statistical methods to analyze data.		●	●									
• Propose and justify conclusions and predictions that are based on data, ...								●				
<b>Problem Solving</b>												
• Build new mathematical knowledge through problem solving.											●	
• Solve problems that arise in mathematics and in other contexts.	●				●	●				●	●	●
• Apply and adapt a variety of appropriate strategies to solve problems.	●	●			●	●				●		
<b>Connections</b>												
• Recognize and apply mathematics in contexts outside of mathematics.	●	●	●	●	●	●	●	●	●	●	●	●
<b>Representation</b>												
• Create and use representations to organize, record and communicate ...									●			

Selected standards from *Principals & Standards for School Mathematics*

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# Content Standards: Economics

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In the Voluntary National Content Standards in Economics, benchmarks for demand, entrepreneurs, profit and losses are at the eighth grade level. Many district elementary economics curricula introduce these concepts in lower grades, so we included them in these lessons.

## Standard 1

- **Benchmark 1 for 4th grade:**

People make choices because they cannot have everything they want.

- **Benchmark 3 for 4th grade:**

Goods are objects that can satisfy people's wants.

- **Benchmark 4 for 4th grade:**

Services are actions that can satisfy people's wants.

- **Benchmark 5 for 4th grade:**

People's choices about what goods and services to buy and consume determine how resources will be used.

- **Benchmark 6 for 4th grade:**

Whenever a choice is made, something is given up.

- **Benchmark 7 for 4th grade:**

The opportunity cost of a choice is the value of the best alternative given up.

- **Benchmark 8 for 4th grade:**

People whose wants are satisfied by using goods and services are called consumers.

- **Benchmark 9 for 4th grade:**

Productive resources are the natural resources, human resources and capital goods available to make goods and services.

- **Benchmark 10 for 4th grade:**

Natural resources, such as land, are "gifts of nature"; they are present without human intervention.

- **Benchmark 11 for 4th grade:**

Human resources are the quantity and quality of human effort directed toward producing goods and services.

- **Benchmark 12 for 4th grade:**

Capital goods are goods produced and used to make other goods and services.

## Standard 2

- **Benchmark 1 for 4th grade:**

Few choices are all-or-nothing decisions; they usually involve getting a little more of one thing by giving up a little of something else.

- **Benchmark 2 for 4th grade:**

A cost is what you give up when you decide to do something.

- **Benchmark 3 for 4th grade:**

A benefit is something that satisfies your wants.

## Standard 5

- **Benchmark 1 for 4th grade:**

Exchange is trading goods and services with people for other goods and services or for money.

- **Benchmark 2 for 4th grade:**

The oldest form of exchange is barter — the direct trading of goods and services between people.

- **Benchmark 3 for 4th grade:**

People voluntarily exchange goods and services because they expect to be better off after the exchange.

## Standard 6

- **Benchmark 3 for 4th grade:**

Specialization and division of labor usually increase the productivity of workers.

## Standard 8

- **Benchmark 1 for 4th grade:**

Higher prices for a good or service provide incentives for buyers to purchase less of that good or service and for producers to make or sell more of it. Lower prices for a good or service provide incentives for buyers to purchase more of that good or service and for producers to make or sell less of it.

- **Benchmark 1 for 8th grade:**

An increase in the price of a good or service encourages people to look for substitutes, causing the quantity demanded to

decrease and vice versa. This relationship between price and quantity demanded, known as the law of demand, exists as long as other factors influencing demand do not change.

#### Standard 10

- **Benchmark 1 for 4th grade:**

Banks are institutions where people save money and earn interest, and where other people borrow money and pay interest.

- **Benchmark 2 for 4th grade:**

Saving is the part of income not spent on taxes or consumption.

#### Standard 11

- **Benchmark 1 for 4th grade:**

Money is anything widely accepted as final payment for goods and services.

- **Benchmark 2 for 4th grade:**

Money makes trading easier by replacing barter with transactions involving currency, coins or checks.

- **Benchmark 5 for 4th grade:**

Most countries create their own currency for use as money.

#### Standard 15

- **Benchmark 1 for 4th grade:**

When workers learn and practice new skills they are improving their human capital.

- **Benchmark 2 for 4th grade:**

Workers can improve their productivity by improving their human capital.

- **Benchmark 3 for 4th grade:**

Workers can improve their productivity by using physical capital such as tools and machinery.

#### Standard 14

- **Benchmark 3 for 8th grade:**

Entrepreneurs and other sellers earn profits when buyers purchase the products they sell at prices high enough to cover the costs of production.

- **Benchmark 4 for 8th grade:**

Entrepreneurs and other sellers incur losses when buyers do not purchase products they sell at prices high enough to cover the costs of production.

# A Correlation of the Lessons with the Voluntary National Content Standards in Economics

Standards	Benchmarks	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7	Lesson 8	Lesson 9	Lesson 10	Lesson 11	Lesson 12
<b>Standard 1</b>	1 for 4th grade Choices	●	●							●			
	3 for 4th grade Goods	●											
	4 for 4th grade Services	●											
	5 for 4th grade Choices determine resource use									●			
	6 for 4th grade Choices require giving up something		●							●			
	7 for 4th grade Opportunity cost		●							●			
	8 for 4th grade Consumers	●											
	9 for 4th grade Productive resources							●			●		
	10 for 4th grade Natural resources							●			●		
	11 for 4th grade Human resources							●			●		
	12 for 4th grade Capital goods (resources)							●			●		
<b>Standard 2</b>	1 for 4th grade Few choices are all-or-nothing decisions		●		●								
	2 for 4th grade Costs				●								
	3 for 4th grade Benefits				●								
<b>Standard 5</b>	1 for 4th grade Exchange			●									●
	2 for 4th grade Barter							●					
	3 for 4th grade Why people trade			●				●					
<b>Standard 6</b>	3 for 4th grade Specialization and division of labor					●							
<b>Standard 8</b>	1 for 4th grade Prices provide incentives to buyers								●				
	1 for 8th grade Law of demand								●				
<b>Standard 10</b>	1 for 4th grade Banks											●	
	2 for 4th grade Saving											●	
<b>Standard 11</b>	1 for 4th grade What is money												●
	2 for 4th grade Money makes trading easier												●
	5 for 4th grade Most countries create currency												●
<b>Standard 14</b>	3 for 8th grade Entrepreneurs, profits						●						
	4 for 8th grade Entrepreneurs, losses						●						
<b>Standard 15</b>	1 for 4th grade New skills increase human capital					●							
	2 for 4th grade Human capital and productivity					●							
	3 for 4th grade Physical capital and productivity					●							

Selected standards from *Voluntary National Content Standards in Economics*  
National Council on Economic Education, 1997