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## Arkansas “Diamond in the Rough” Production



### FOCUS:

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#### Overview:

Students, working in small groups, will simulate a business creating and producing a product from resources found in the state of Arkansas. Using budget constraints they must decide which resources they will purchase for production of a product prototype. They will then attempt to ‘sell’ their product to their classmates. Students will practice accounting basics as they determine **production costs, revenues, and profit or loss**. They will analyze which businesses were the most profitable. This is a fun activity that fosters both critical and creative thinking skills.\*

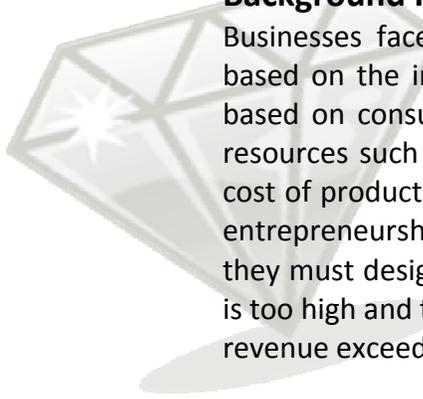
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#### Objectives:

- Simulate a business creating and producing a toy from resources found in the state of Arkansas
- Learn about **cost of production, budget constraints** and **revenue generation**
- Calculate and analyze business **profits** or **losses**

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#### Background Information:



Businesses face choices in the market system. These economic decisions are made based on the interaction of producers and consumers. They choose what to produce based on consumer wants. They decide how to produce their product by purchasing resources such as labor and capital goods. These resources cost money known as the cost of production. Businesses are attempting to make a profit, which is the reward for entrepreneurship. They make resource choices with the profit incentive in mind. But, they must design a product that consumers will want to buy. If their cost of production is too high and their revenue is low, they will suffer a loss and go out of business. If total revenue exceeds total cost of production the business will make a profit.

\*This lesson was adapted from Creative Toy Production in the Master Curriculum Guide in Economics Teaching Strategies 5-6 by Elaine Coulson and Sarapage McCorkle. It was published by the National Council on Economic Education, 1140 Avenue of the Americas, New York, NY 10036 in 1994.

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**Vocabulary:**

1. Cost of production—the amount that must be paid or spent to produce a product or service
2. Profit—the difference when total revenue exceeds total cost
3. Loss—the difference when total cost exceeds total revenue
4. Total revenue—the income from a business; calculated by multiplying the number of units sold by the price of each unit

**PREPARE:**

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**Materials:**

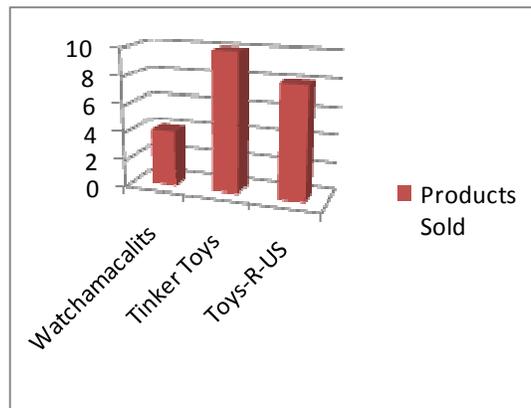
1. Handout 5.1: *Resource Price List*
2. Handout 5.2: *Diamond in the Rough—Cost of Production*
3. Handout 5.3: *Abracadabra—Profit or Loss?*
4. Handout 5.4: *Show Me “Da” Money--Calculating Profit*
5. Handout 5.5: *Diamond in the Rough Bucks*
6. Overhead Projector
7. Transparencies or handouts of Handouts 5.1- 5.4
8. **Resources:** Products found in Arkansas—Odds and ends such as cotton balls, yarn, (cotton in delta region), paper, tongue depressors/popsicle sticks, (timber products) aluminum, rocks, plastic diamonds, paper plates, feathers (chickens in Northwest Arkansas), rocks (mountains), etc.
9. A resource price list based on items in resource bags. This can be written on the board, on a transparency, or on a handout. A sample is provided for your convenience.
10. Containers for items.
11. Fun tack or something to use to stick diamond dollars to the board.
12. A prize (if desired) for members of the group earning most profit. *Economists believe that incentives work well.*

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**Construct:**

1. Duplicate a copy of Handouts 5.1 – 5.4 for each group. Prepare transparencies of each.
2. Display Arkansas resources in a way that resembles a store so that students can purchase the resources needed.
3. Copy of money so each student has \$5.

4. As teams name their companies, write the company name and CEO on the board. Line them up along the bottom of the board so that the \$5 can be placed above them forming a bar graph. Example shown.



## TEACH:

### Introduction:

- ❖ **Discuss** what “Diamond in the Rough” means. *(The phrase is a metaphor for the original unpolished state of diamond gemstones, especially those that have the potential to become high quality jewels. You could relate this to an entrepreneur starting a business.)*
- ❖ **Ask** if the students have had entrepreneurial experiences such as selling lemonade at mom’s garage sale, mowing lawns, shoveling snow, weeding flower gardens, or babysitting.
- ❖ **Talk** about the materials or supplies they needed to operate their business ventures and how much these materials cost.
- ❖ **Make** a list of materials and costs on the board or overhead.
- ❖ **Explain** that these costs are known as the costs of production for a business.
- ❖ **Discuss** how they determined what prices to charge in their business.
- ❖ **Ask** if they earned a profit.
- ❖ **Tell** the students that in today’s activity each group will simulate an actual business. They will invent a product that they believe other members of their class would want to purchase. Everyone in the class will have an opportunity to decide which invention they would like to buy. The groups’ goal is to earn a profit in this activity. *(You may want to offer a prize for the group that earns the most profit.)*

### Activities:

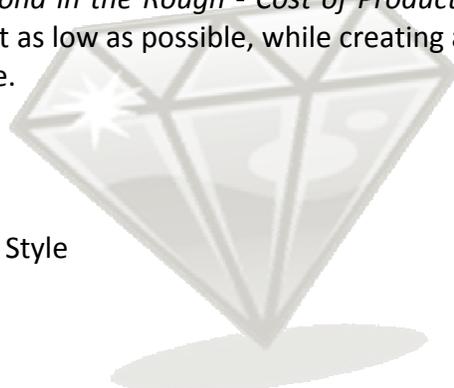
- 1) **Arrange** students in small groups of three or four. Give them two minutes to determine a name for their company and to select a student to serve as CEO (Chief Executive Officer).

- 2) **Distribute** the resource bags to each group and a copy of Handout 5.1: *Resource Price List* and Handout 5.2: *Diamond in the Rough - Cost of Production* worksheet. (You may want to discuss the fact that Arkansas is the only diamond producing state in the U.S. Locate Murfreesboro, AR on a map. Ask if students have been to the diamond mines. Etc...)
- 3) **Explain** that the resource bag contains items the group may use to assemble a prototype of its product. These resources are found in the state of Arkansas. Discuss the representation of Arkansas resources. (*You might want to give rewards for correct answers.*)
- Where is cotton grown in Arkansas? (*Delta region*)
  - What are some products made from cotton? (*clothing, cotton balls, etc.*)
  - Where is timber harvested? (*South and North Arkansas*)
  - What are some products made from timber? (*furniture, lumber for building, etc.*)
  - What mineral is mined in Arkansas that is used to make aluminum? (*The principal ore of aluminum is bauxite.*)
  - Where are chickens produced in Arkansas? (*mountainous regions of North Arkansas*)
- 4) **Discuss** resource price list.

**Example:** Modify given the resources you have available.

<b>Sample Resource Price List</b>	
Labor (per worker)	.25
Rent for work space	.50
Capital tools (glue, pens, scissors)	.50 per company
Paper Plate	.25 each
Aluminum Foil	.25 per foot
String	.25 per foot
Cotton ball	5 for .25
Paper	.25
Tongue depressors/popsicle sticks	.25
Rocks	5 for .25
Gems	.25
Feathers	5 for .25

- 5) **Explain** that each group will have 15 minutes to produce a prototype of its product. While constructing their prototype students should complete the worksheet *Diamond in the Rough - Cost of Production*. Remind students they want to keep their cost as low as possible, while creating a product their classmates would want to purchase.



- 6) **Demonstrate** how to fill out the *Diamond in the Rough- Cost of Production* sheet.
- A) Explain each business will pay \$0.50 rent.
  - B) Each business will pay for labor depending upon the number in the group.  
Example:  $(4 \times \$0.25) = \$1.00$
  - C) All other costs depend on resources the group chooses to use.
  - D) After business has finished their prototype, they will total the cost of all the resources. Explain that this total is the cost of production for one unit or prototype.
- 7) When the prototype is finished a company representative will give a one minute sales pitch promoting and demonstrating its invention to the rest of the class. Place all products so that they are visible to the class. Across the bottom of the board write each company name, product name and name of the CEO. Leave space to place the \$5 above the names.
- 8) Explain to students that they will role play consumers. They may each choose one product and they cannot choose their own. Have each student tape their \$5 above the product he/she would purchase. Stack the \$5 to form a bar graph.
- 9) Use the *Abracadabra - Profit or Loss?* Transparency to demonstrate how to compare each business. Have each group complete this sheet along with you. Fill in each group's company name, CEO name, product name and quantity demanded. The quantity demanded is the number of products sold by that group – refer to the bar graph of \$5.
- 10) Discuss the definitions of total revenue, total cost, profit and loss at this time. Again, use one company as an example and then roam the room helping each group to complete the *Calculating Profit: Show Me 'Da' Money* sheet.
- Product cost**—the amount that must be paid or spent to produce a product or service – this is the cost of production
  - Profit**—when total revenue exceeds total cost
  - Loss**—when total cost exceeds total revenue
  - Total revenue**—the income from a business
- 11) Ask each business to report its total revenue, total cost and profit or loss to complete column 3 to 6 of *Abracadabra Profit or Loss?* worksheet. Determine together which business had the highest profit.
- 12) Have the class discuss possible reasons for this group's success. This will probably include the demand for the product based on appeal or uses. Discuss with the class that often the business with the most sales (column 3) isn't the business with the highest profit due to higher production costs. Discuss ways to increase profits. If any businesses had a loss, discuss why this happened.

13) *If you want you can give the team with the most profit a small prize/reward.*

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### **Closure:**

Discuss the following with the class:

1. **Ask** the students to explain the meaning of cost of production, profit, loss, total revenue. *(see vocabulary)*
2. What resources were used to produce their prototype? *(natural, human, and capital)*
3. Why do producers need to carefully choose the resources they use in production? *(the higher the cost of production the lower the company profit)*
4. Why is profit important to entrepreneurs? *(provides a monetary reward and an incentive to accept the risks of business to provide consumers with new products and services)*
5. What will eventually happen to a business that continues to incur losses? *(consumer preferences and high cost of production will cause loss of revenue and the business will eventually close)*

## **Evaluation:**

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### **Performance Tasks:**

- ❖ Students will complete the worksheets for finding cost of production, and calculating profit and loss.
- ❖ Oral assessment of questions in closure.

## **Connect:**

For further Arkansas Social Studies benchmark standards please refer to:

<http://arkansased.org/teachers/frameworks2.html#Social>

Economic Standards website:

<http://www.ncee.net/ea/standards/>

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### **Graphing:**

Internet website for creating graphs:

<http://nces.ed.gov/nceskids/createagraph/>

- **Content Standard Data Analysis Probability 14.6.3**
- **Content Standard Data Analysis Probability 15.6.1**
- **Content Standard Data Analysis Probability 15.6.2**
- **Content Standard Data Analysis Probability 15.7.2**
- **Content Standard Data Analysis Probability 16.6.1**



**6. Mike Mulligan and His Steam Shovel**

Author/Illustrator: Burton, Virginia Lee      Publisher: Houghton Mifflin  
ISBN: 0-395-25939-8      Year: 1939  
*Economic concepts: capital resources*

**7. Curious George Goes to a Chocolate Factory**

Author: Rey, Margret & H.A.      Internet video about making chocolate:  
[http://www.hersheys.com/discover/tour\\_video.asp](http://www.hersheys.com/discover/tour_video.asp)  
*Economic concepts: natural, human, and capital resources*

Use the website to check out children's books on economic concepts:

<http://www.fas.rutgers.edu/cms/econkids/images/pdf/econbibliography.pdf>

**Math:**

**Using the Revenue-Profit/Loss worksheet information students can:**

1. Order from least to greatest (etc.) the information in column 6.
2. Find the percent of growth and decline of total revenue.

**Art:**

- **Content Standard A.2.6.** Students will create artwork based on personal observations and reactions to life experiences.
  - **Content Standard A.2.8.** Students will use information and ideas generated in group discussion as a basis for art production.
1. Students can draw and label their prototype product
  2. Illustrate economic vocabulary definitions

**Standards:**

***Voluntary National Content Standards in Economics:***

- **Content Strand 1:** Students will understand that productive resources are limited. Therefore, people cannot have all the goods and services they want; as a result, they must choose some things and give up others.
- **Content Strand 14:** Students will understand that entrepreneurs are people who take the risks of organizing productive resources to make goods and services. Profit is an important incentive that leads entrepreneurs to accept the risks of business failure.

**Handout 5.1: Resource Price List**

<b>Resource Price List</b>	
Labor (per worker)	.25
Rent for work space	.50
Capital tools (glue, pens, scissors)	.50 per company
Paper Plate	.25 each
Aluminum Foil	.25 per foot
String	.25 per foot
Cotton ball	5 for .25
Paper	.25
Tongue depressors/popsicle sticks	.25
Rocks	5 for .25
Gems	.25
Feathers	5 for .25

## Handout 5.2: Cost of Production



# COST of PRODUCTION

## DIAMOND IN THE ROUGH



**Company Name:** \_\_\_\_\_ **Product Name:** \_\_\_\_\_

### Directions:

**In column 1:** List each resource your group used to produce your product.

**In column 2:** List number of units used.

**In column 3:** Using the Resource Price List, write the price of each resource.

**In column 4:** Multiply column 3 by column 2.

1	2	3	4
Resource Used	Number of Units Used	Resource Price	Resource Cost
Rent			
Labor			
<b>Product Cost</b> <b>(Add figures in last column)</b>			

## Handout 5.3: Revenue – Profit or Loss



### ABRACADABRA—Profit or Loss?



**In column 1:** Write the name of each company and the CEO.

**In column 2:** Write product produced by each business.

**In column 3:** Write in number of the quantity demanded. This is determined by the number of people who bought your product.

**In columns 4, 5 and 6:** Fill in after completing “Show Me “Da” Money”.

1	2	3	4	5	6
Company Name & CEO	Product Name	Quantity Demanded	Total Revenue	Total Cost	Profit/ Loss

## Handout 5.4: Calculating Profit



**SHOW ME 'DA' MONEY!**



1. The selling price of your company product is \$\_\_\_\_\_.
2. How many products were ordered (quantity demanded)? \_\_\_\_\_.
3. To determine total revenue (sales), use this equation:

$$\text{Selling Price} \times \text{Quantity Demanded} = \text{Total Revenue}$$

$$P \times Q_D = R$$

Selling Price	X	Quantity Demanded	=	Total Revenue
				\$

4. To determine total cost, use this equation:

$$\text{Product Cost} \times \text{Quantity Produced} = \text{Total Cost}$$

$$C \times P = TC$$

Product Cost	X	Quantity Produced	=	Total Cost
				\$

## Handout 5.4: Calculating Profit – page 2



**SHOW ME 'DA' MONEY!**



5. If your total revenue (sales) was greater than total cost, use this equation to determine your profit:

$$\text{Total Revenue} - \text{Total Cost} = \text{Profit}$$

$$\mathbf{R - C = P}$$

<b>Total Revenue</b>	<b>-</b>	<b>Total Cost</b>	<b>=</b>	<b>Profit</b>
				\$

6. If your total cost was greater than your total revenue (sales), use this equation to determine your loss:

$$\text{Total Cost} - \text{Total Revenue} = \text{Loss}$$

$$\mathbf{C - R = L}$$

<b>Total Cost</b>	<b>-</b>	<b>Total Revenue</b>	<b>=</b>	<b>Loss</b>
				\$

Did your company make a profit or suffer a loss? Most companies can expect to have a loss for the first **three** years.

<b>Total Profit</b>	\$
<b>Total Loss</b>	\$

Handout 5.5 - Diamond in the Rough Bucks

<p><b>FUTURE</b>  <b>ARKANSAS</b>  <b>ENTREPRENEUR</b></p> <p>  </p> <p><b>FUTURE</b>  <b>LAND OF OPPORTUNITY</b>  <b>ENTREPRENEUR</b></p>	<p><b>FUTURE</b>  <b>ARKANSAS</b>  <b>ENTREPRENEUR</b></p> <p>  </p> <p><b>FUTURE</b>  <b>LAND OF OPPORTUNITY</b>  <b>ENTREPRENEUR</b></p>
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