

LESSON 4: DISCOVER DAIRY . . . *In the Community*: LAB COMPONENT

Name: _____

Part I — Milk By The Gallon

The price you pay for milk at the store reflects many costs associated with producing, transporting, processing, packaging and storing the milk, from cow on the farm to the grocery store shelf. In this lab, students will be looking at how changes in these costs reflect the final price paid for the milk while creating a visual of how costs are reflected in a gallon of milk.

Needed Materials: 1 empty milk quart jug
 Four (4) 16-ounce portions of colored sand (at least two different colors)
 Funnel for jug
 1/2 and 1/4 cup measuring cups

Students should divide into groups of 4, and each group should be assigned to follow the directions for either Example 1 or Example 2. Find out which example you are to follow before beginning the experiment. The steps for Example 1 are below, and the steps for Example 2 are on page 2.

Example 1

Step 1: In this exercise, sand will represent the costs associated with the price of milk. Each 1/4 cup of sand represents 12.5-cents. Translate the dollar values below to determine the measurement of sand that should represent each of the following costs associated with producing a gallon of milk.

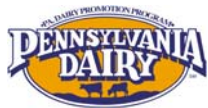
Cost	Dollar Value	Corresponding Measurement	Percentage of Total Costs
Farm Costs	\$0.375	3/4 cup	18.75%
Transportation Costs	\$0.250	1/2 cup	12.50%
Processing Costs	\$0.500	1 cup	25.00%
Packaging Costs	\$0.125	1/4 cup	6.25%
Storage Costs	\$0.125	1/4 cup	6.25%
Retail Costs	\$0.625	1 1/4 cup	31.25%
Total Cost	\$2.00	4 cups	100%

Step 2: Now add the costs together and the measurements together to get the totals for each. Determine the percentage for each category.

Step 3: Now take the corresponding measurements to “create” the price of milk. Alternate the colors of the sand to represent each cost, and fill the milk jug up with the representative amount of sand for each cost, starting with farm costs and building up to retail costs.

Step 3: Use the graphic on the back of this page to draw a chart reflecting the different costs that go into the price of milk. Label the graph appropriately with the percentage listed for each cost.

Step 4: Compare your jug to one from Example 2 and write down reasons why your milk jug may appear differently than the other. What could have happened to create the difference?



LESSON 4: DISCOVER DAIRY . . . *In the Community*: LAB COMPONENT**Example 2**

Step 1: In this exercise, sand will represent the costs associated with the price of milk. Each 1/4 cup of sand represents 12.5 cents. Translate the dollar values below to determine the measurement of sand that should represent each of the following costs associated with producing a gallon of milk.

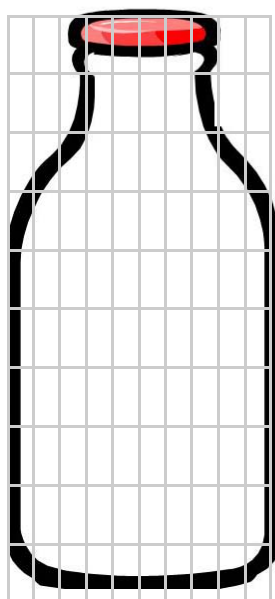
Cost	Dollar Value	Corresponding Measurement	Percentage of Total Costs
Farm Costs	\$0.375 cents	3/4 cup	15.79%
Transportation Costs	\$0.500 cents	1 cup	21.05%
Processing Costs	\$0.500 cents	1 cup	21.05%
Packaging Costs	\$0.125 cents	1/4 cup	5.26%
Storage Costs	\$0.250 cents	1/2 cup	10.53%
Retail Costs	\$0.625 cents	1 1/4 cup	26.32%
Total Cost	\$2.375	4 3/4 cup	100.00%

Step 2: Now add the costs together and the measurements together to get the totals for each. Determine the percentage for each category.

Step 3: Now take the corresponding measurements to “create” the price of milk. Alternate the colors of the sand to represent each cost, and fill the milk jug up with the representative amount of sand for each cost, starting with farm costs and building up to retail costs.

Step 3: Use the graphic below to draw a chart reflecting the different costs that go into the price of milk. Label the graph appropriately with the percentage listed for each cost.

Step 4: Compare your jug to one from Example 1 and write down reasons why your milk jug may appear differently than the other. What could have happened to create the difference?

**The Cost of A Gallon of Milk**

Use the milk bottle to chart what percent of the total cost is represented in each category (farm, transportation, etc.) and label each category. HINT: there are 100 blocks in the grid. Compare your bottle to the other example. What could have caused them to be different?

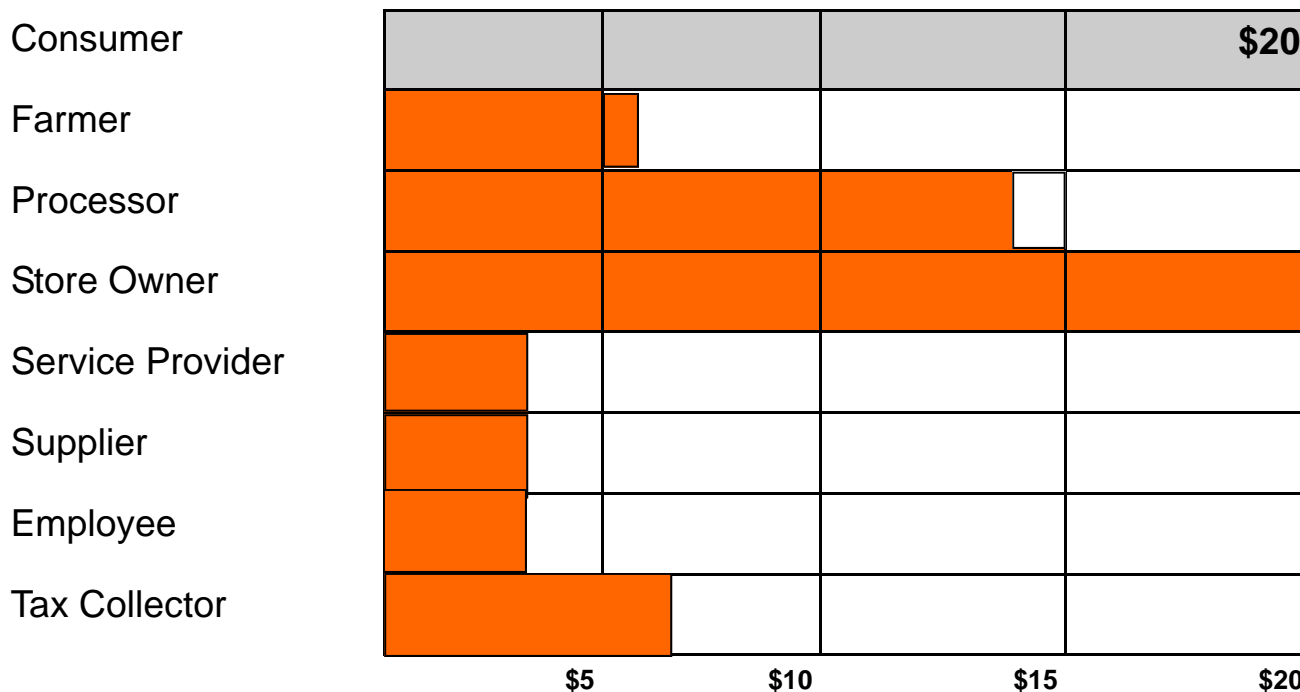
Difference: Transportation and Storage Costs

What could have caused the difference: Higher energy costs, higher fuel costs, and higher electricity could have caused the increase.

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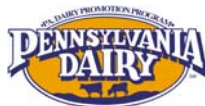
Money Exchanged Throughout a Community

Color in the bar chart below to indicate how much money each person receives in the process.



Summary Questions:

- How many different people received a share of the original \$20? 7 people
 - How much total money moved through the community if you add up all of the dollars? \$56
 - How much money does the farmer have left after he pays everyone? \$2
 - How much does the processor have left? \$3
 - Who ends up with the most money? Tax Collector
 - Who ends up with the least amount of money? Farmer
 - How do you think this situation compares to real world scenarios? Open to Interpretation
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Role Playing Cards:

Copy and cut out the role-playing cards below and distribute to students for Lab II.

<p style="text-align: center;">FARMER</p> <p>The farmer produces the milk to start the cycle and bring money back into the community.</p> <p style="text-align: center;">Amount of money received:</p> <p>_____</p>	<p style="text-align: center;">PROCESSOR</p> <p>The processor takes the milk and makes a product out of it that people want to buy, increasing the dollar value of the milk.</p> <p style="text-align: center;">Amount of money received:</p> <p>_____</p>
<p style="text-align: center;">GROCERY STORE OWNER</p> <p>The grocery store owner markets the product where people want to buy it, increasing the value of the product.</p> <p style="text-align: center;">Amount of money received:</p> <p>_____</p>	<p style="text-align: center;">CONSUMER</p> <p>The consumer puts the money into the cycle by paying for the product made from the milk.</p> <p style="text-align: center;">Amount of money received:</p> <p>_____</p>
<p style="text-align: center;">SERVICE PROVIDER</p> <p>The service provider provides a service for those making the product. An example could be a veterinarian on the farm or the engineer at the processing plant.</p> <p style="text-align: center;">Amount of money received:</p> <p>_____</p>	<p style="text-align: center;">SUPPLIER</p> <p>The supplier provides goods to help make the product. On the farm, this could be the feed. At the plant, it could be product-wrapping materials.</p> <p style="text-align: center;">Amount of money received:</p> <p>_____</p>
<p style="text-align: center;">EMPLOYEE</p> <p>The employee helps the work get done and is vital to keeping the process moving.</p> <p style="text-align: center;">Amount of money received:</p> <p>_____</p>	<p style="text-align: center;">TAX COLLECTOR</p> <p>The tax collector uses tax dollars to help the community do things like build new roads and make other improvements.</p> <p style="text-align: center;">Amount of money received:</p> <p>_____</p>

