

It All Starts with A



LEVEL: Grades 4-12

SUBJECTS: Language Arts, Mathematics, Social Studies

SKILLS: Analyzing; applying; categorizing; classifying; collaborating; collecting; communicating; comparing similarities and differences; comprehending; computing; cooperating; creating; interpreting and reading graphs; describing; developing self-understanding; discussing; evaluating; explaining; following directions; listening; organizing; planning; predicting; recognizing relationships; recording; taking responsibility

MATERIALS

Writing materials; set of colored pencils or markers for each team of students; transparency pen; transparency of attached **Tally and Frequency Chart**; photocopies of attached **Agriculture Survey, Histograms, The Importance of Agriculture** and **Agriculture Categories** copied back-to-back, **Other Group Survey**, and **Summing It Up** sheets.
Optional: dictionaries.

VOCABULARY

agriculture, fiber, frequency, harvesting, histogram, survey, tally

RELATED LESSONS

Expression Connection
From Fiber to Fashion
From Sea to Shining Sea
Step by Step
Trading Favorites
What Piece of the Pie?

SUPPORTING INFORMATION

What would it be like if each of us had to produce everything we need all by ourselves? We buy and sell among ourselves so all of us can get the food, shelter and clothing we need. And it all starts with agriculture, growing what we need, changing it to forms we can use, and getting it into our hands. Think about it: agriculture is the only industry people must have to survive. It's the largest industry in the United States and the world! If you eat food or wear clothes, you depend on agriculture. But how much do you know about agriculture and the part it plays in your life?

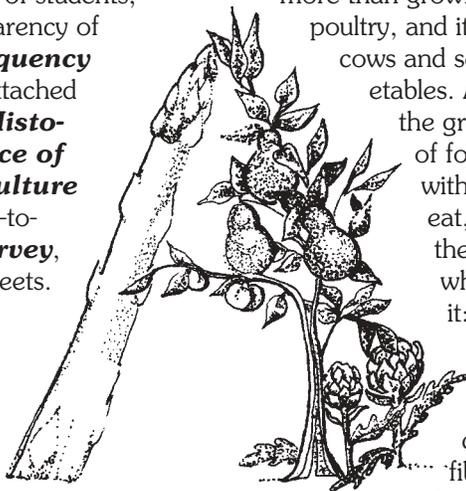
Agriculture is more than farming. It's more than planting and harvesting crops. It's more than growing livestock and poultry, and it's more than milking cows and selling fruits and vegetables. Agriculture starts with

the growing and harvesting of food and fiber. It ends with almost everything we eat, wear, and use and therefore helps make us who we are. Think about it: food comes from

plants and animals. Fiber is the raw material from which cloth is made. We get fiber from animals (wool, leather, silk) and from

plants (cotton, flax). Forests give us tree fiber or timber that becomes houses, furniture, fuel, and hundreds of other things. Sod fields, landscaped parks and lawns, flowers, Christmas-tree farms, and even golf courses count as agriculture, too.

Agriculture is everywhere. There's no way you could live a day without it. When you woke up this morning in a bed with sheets, it was an encounter with agriculture. Sheets are made of fibers from cotton plants. Did you wash or shower with soap? Oil from corn and soybeans and fat from cattle went into making that soap. Did you eat cereal, eggs, milk, bacon, pancakes, buttered toast, or juice for breakfast? Thank agriculture again! And how did you get to school? If by bicycle, bus or car, the tires were made from synthetic rubber plus products from cattle. Stearic acid, a by-product of beef, makes tires run cooler and last longer. Even your vehicle's fuel may have contained ethanol, which is 10 percent corn alcohol. At school, you probably used a wood pencil to



BRIEF DESCRIPTION

Students conduct surveys to learn what agriculture provides to people. They organize, simplify, and communicate their findings using tallies, frequency tables, and histograms.

OBJECTIVES

The student will:

- gather data from a survey he or she conducts about why agriculture is important to people and will use three different ways to communicate his or her findings;
- read, interpret and communicate information through tables and graphs;
- describe several reasons why agriculture is important to him or her and to others;
- discuss some factors that make agriculture the nation's leading industry; and
- list ways in which he or she is involved in agriculture each day.

ESTIMATED TEACHING TIME

Session One: One hour.
Session Two: 30 minutes, with additional time to survey another group.
Session Three: One hour.

write on paper, both of which come from trees - another agricultural crop. Corn and soybean by-products helped hold the ink on the paper in your books.

Take a look around you. How many things can you trace to food or fiber? That's agriculture! So are the millions of workers and billions of dollars that get those products into a form we can use and then move them to our supermarkets, lumberyards, drugstores, clothing shops, and Christmas-tree lots.

Agriculture can contribute to the health and beauty of Earth. Thanks to growing plants and trees that remove carbon dioxide from the air, we have cleaner air to breathe. They also hold soil in place, allowing soil to filter water as it soaks it up and stores it. The nutrients and water in the soil are important to flowers, grasses, trees, and various agricultural crops. And who doesn't enjoy the beauty of crop-filled fields and forests, not to mention landscaping and parks?

People in the past were very aware of the role that agriculture played in their lives. Most men, women and children worked on the land. It meant survival. Agriculture still means survival. That will never change. But as time goes on, fewer and fewer people have close contact with farming or the land. They seldom think about their own - and the world's - total dependence on agriculture.

Today, only about one out of 50 Americans works in production agriculture, or what we call "farming." Yet each of those American farmers produces food and fiber for 129 people (101 in the United States and 28 abroad), making the United States the largest food exporter in the world. Agriculture has a massive impact on the American economy. Along with its related occupations, agriculture is the nation's largest industry. It generates billions of dollars each year; one out of every five jobs depends on it in some way. (See the FLP lessons "Step by Step," "Cleared for Takeoff" and "From Fiber to Fashion" to learn more about the variety of careers in agriculture.) It greatly influences the United States' international balance of trade in a positive way, as we export to and import from other countries to meet everyone's needs for daily living and the comforts of life. Our citizens must be agriculturally literate to make responsible decisions affecting this giant lifeline. Building that literacy begins when they realize that it all starts with A!

GETTING STARTED

Gather writing materials, a set of colored pens or markers for each team of four students; make a transparency of **Tally and Frequency Chart**; photocopy

the **Agriculture Survey** and the **Histogram** sheets, one per student, **The Importance of Agriculture** and **Agriculture Categories** copied back-to-back, and **Summing It Up** sheets, one per team, (the **Summing It Up** sheet can be a transparency) and the **Other Group Survey** sheet, one per pair of students. **Optional:** dictionaries. See Extensions and Variations 8 for references to FLP lessons that complement this lesson.

PROCEDURE

SESSION ONE

1. Share the Supporting Information with students. Tell them they are going to conduct some surveys about agriculture. Introduce the concept of a survey by asking:
 - What are some of the ways by which we can get information from people about a specific subject? (*Telephone or conduct in-person interviews, send out questionnaires, conduct a survey, search the Internet, and more.*)
 - What is a survey? (*A method of gathering information about a specific topic.*)
 - What are some of the kinds of surveys that are conducted? (*Possible answers include food, sports, health, education, political, dating, vacation places, and more.*)
 - What are some of the reasons for conducting a survey? (*Answers will vary. Accept any answer that includes learning more about what people like to do, places they like to visit, number of family members, and so on.*)
2. Introduce the topic of the survey by telling students that agriculture is important to people for many reasons. (Let them discover the reasons for themselves.) Explain that during this activity students will conduct a survey to learn what people think are the most important things that agriculture provides for them. (Note: Include yourself as a surveyor in the survey and share your results with students.)
3. Explain that students will use all of the following ways to organize the data they gather.
 - A. Tally - a mark made for each observation that falls within a category.
 - B. Frequency chart - made when tally marks are counted; data are represented as whole numbers instead of lines that must be counted.

C. Histogram - a bar graph in which the length of the bar illustrates the number of observations or the frequency of each item.

- Distribute the **Agriculture Survey** sheet to individual students. Ask them to complete the second column of the sheet. They are to check off the things they personally think are the most important contributions of agriculture. Tell students this is only a partial list of the things people get from agriculture and that the blanks at the bottom of the survey can be used to add choices that are not on the list.
- Divide the class into teams of four students. Each team will tally its data by making a single line tally in column 3 (Team tally) for each check made by individual team members. Each team selects one student to transfer their team data (the totals) to the Our Class Tally column on the **Tally and Frequency Chart** transparency displayed on the overhead projector. (Note: You can distribute the **The Importance of Agriculture/Agriculture Categories** sheet for Step 11 to teams to read and discuss while all the teams are transferring their data to the transparency.)
- When all the team data for the class have been recorded in the Tally column, lead students in counting the tally marks for a few items and in writing the number of marks in the Frequency column (column 3) on the **Tally and Frequency Chart** transparency. See the following example.

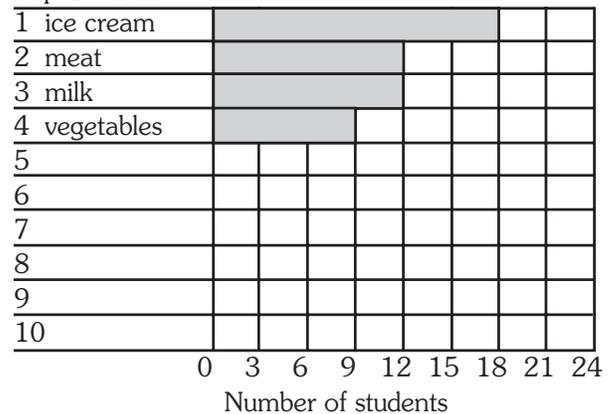
Provided by agriculture	Our Class		Other Group	
	Tally	Frequency	Tally	Frequency
air quality		2		
beautiful scenery		5		

- Let each team determine the frequencies for the rest of the survey items. They record those data in the Our Class Frequency column (column 4) of their **Agriculture Survey** sheet.
- Tell students to use the class-frequencies data to identify the 10 most popular choices for their class. Students can number these 1 through 10, using the Top 10 choices column (column 5) of the **Agriculture Survey** sheet.
- Distribute the **Histograms** sheet to individual students. Students write the top 10 choices in the blank spaces of the Class Histogram and shade in the bars with different-colored pencils to show the number of observations or frequency of each of the choices. See the following example.

CLASS HISTOGRAM

Most important things we get from agriculture

Top 10 choices

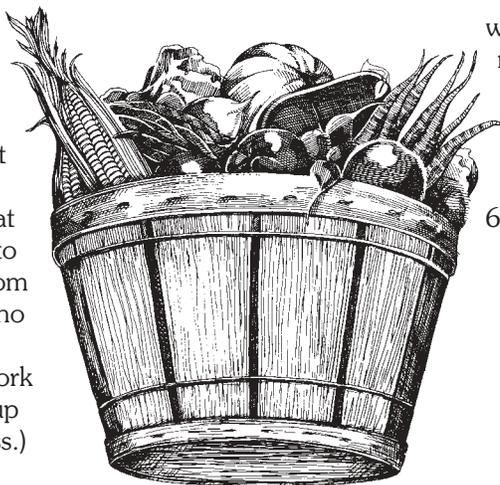


- Encourage students to examine and discuss the types of items their class chose as the most important.
- Distribute the **Agriculture Categories** sheet to teams and have them read the categories from the **Importance of Agriculture** sheet. (For younger students, you may want to read the categories together.) Discuss the categories, if students have questions or want clarification. Teams use the portion of the table titled Our Class to classify the top 10 choices into one of these three categories: 1) food, fiber and other agricultural products; 2) economics, jobs and trade; or 3) quality of life. (Note: This is only one of several ways in which the items could be categorized. What is important is the discussion that occurs as the students are attempting to categorize the items.) Have students save their sheets for Sessions Two and Three.

SESSION TWO

- Before continuing the survey process, ask:
 - In what ways are you involved in agriculture every day?
 - Why is agriculture important to you?
 - How did you like doing a survey?
 - Do you think a survey is a good way to gather information?
 - How could you use surveys in the future?
 - We could use this same survey with what other groups?

2. Work with the class to select another group to survey. Encourage students to select a group they feel might be very different from them. (If they select other students, be sure they are from another grade level. Adults at the school and parents are likely to have much different responses from the students, as might students who are much older or younger. If students complete this as homework they may be able to survey a group that is very different from the class.)



written responses. If so, decide how many questions they will answer and in what detail. Make students aware that some of the questions have four or more parts.

3. Once the selection is made, distribute **Other Group Survey** sheets to pairs of students. Have pairs of students write a prediction on the back of the sheet about what will be the top 10 choices of the most important things the other group gets from agriculture. Have the pairs survey at least two members of the other group and record their responses on the **Other Group Survey** sheet, writing the last name of one person surveyed in the space next to #1 and of the other person in the space next to #2.

SESSION THREE

1. Have students work in teams of four to tally other group data in the third column of the **Other Group Survey** sheet. When finished, they should place these team data in the Other Group tally column on the **Tally and Frequency Chart** transparency.
2. When all the team data have been recorded in the Other Group tally column, allow the students to determine the frequencies for each category and identify the top 10 choices of this other group. Ask teams to compare their predictions of the top 10 choices (from Session Two, Step 3) to the actual results for the other group. What surprised them?
3. Have students display the findings on the Other Group Histogram on their **Histogram** Sheet.
4. Students then classify the top 10 choices in the Other Group category of the **Agriculture Categories** sheet as: 1) food, fiber and other agricultural products; 2) economics, jobs and trade; or 3) quality of life.
5. Distribute the **Summing It Up** sheet (or display the transparency) to the teams of students for a discussion. Allow time for teams to discuss the questions. Have the teams share their findings with the class. You may decide to have students prepare

6. Summarize the lesson by asking:

- Why is it important for people of all ages to be aware of the contributions of agriculture in our lives?
- What is one thing you've learned about the contributions of agriculture that you will share with others?

- How will what you've learned in this process help you in the future?

EVALUATION OPTIONS

1. Evaluate students' ability to use frequency data to identify the top 10 choices and accurately create the histograms.
2. Assess students' ability to survey other people and accurately record responses.
3. Have students complete one or more phrases.
 - Agriculture is important to me because...
 - Agriculture is the nation's leading industry because...
 - Agriculture is important to others because...
4. Assess students' attitudes and opinions by having them write a paragraph about their top 10 choices.

EXTENSIONS AND VARIATIONS

1. Have pairs or teams of students complete the survey as if they were another kind of living thing. Assign student pairs roles such as deer, cow, horse, oak tree, tomato plant, raccoon, worm, ladybird beetle, and so on. Identify the most important uses of agriculture for different kinds of animals and plants.
2. Have pairs or teams of students select the five most important contributions of agriculture if they were students: 1) in 1900; 2) in 2050; and 3) from another culture (identify the culture).
3. Have pairs or teams of students use the frequency data on the **Agriculture Survey** sheets to make

other kinds of graphs, such as bar graphs, pictographs or pie charts (circle graphs; see **Pie Chart** located in the Appendixes). Have pairs or teams of students determine the proportions (or percentages) of the most popular choices for each group surveyed. Graph results using computer programs with graphing options.

4. Invite a panel of agricultural experts (e.g., farmer, rancher, grocer, horticulturist, feed dealer, scientist) to your classroom. Have students survey the experts, find the frequencies, create a histogram, and categorize the contributions. How do their results differ from Our Class data? From the Other Group data?
5. Have students record the number of agriculture-related products, jobs, and benefits and/or comforts they notice in their daily lives for one week. They should consider these items at home, in school, on the road, and in grocery and other stores. At the end of the week, have them make their own list of survey items and categorize them in preparation for teaching another class how to do this survey.
6. Students can prepare a report “Agricultural Research in Our Classroom” or community by describing the survey subjects, gathering data, doing the data reduction and analysis, reporting the findings, generalizing the conclusions, and making recommendations.
7. Students can survey senior citizens and compare their data to another group such as young adults. The survey can be used as an interview tool.
8. See the FLP lesson “Step by Step” to discover the sequence of steps involved in transferring a product from the field to the consumer (path of production). Follow the path of fiber production in the FLP lesson “From Fiber to Fashion.” Students can build connections between farming, food, land, and people in the FLP lesson “Expression Connection.” See the FLP lesson “Trading Favorites” to help students develop an understanding of global trade and agricultural geography with the FLP lesson

“From Sea to Shining Sea.” An understanding of the economics of the food system can be initiated using the FLP lesson “What Piece of the Pie?”

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EDUCATOR'S NOTES

AGRICULTURE SURVEY

Name: _____

Directions

1. Select the 10 most important things you think agriculture provides you. Check those off in the second column. Use blank spaces to add other choices.
2. Find out what other students on your team selected. Record these choices in the Team tally column.
3. Working from the **Tally and Frequency Chart** transparency, complete the Class frequency column.
4. Identify the top 10 choices for the class. Record in the last column.

Provided by agriculture	Most important things to me	Team tally	Class frequency	Top 10 choices
air quality				
beautiful scenery				
corn				
cotton				
exports				
farmers' markets				
fish				
flowers				
footballs				
fruits				
glue				
golf courses				
greenhouses				
hay				
hides/leather				
jobs				
landscaping				
meat				
medicines				
milk				
pizza				
printer's ink				
shoes				
sod				
sugarcane				
vegetables				
water quality				
wheat				
windbreaks				
wood and wood products				
wool				

TALLY AND FREQUENCY CHART

Provided by agriculture	Our Class		Other Group	
	Tally	Frequency	Tally	Frequency
air quality				
beautiful scenery				
corn				
cotton				
exports				
farmers' markets				
fish				
flowers				
footballs				
fruits				
glue				
golf courses				
greenhouses				
hay				
hides/leather				
jobs				
landscaping				
meat				
medicines				
milk				
pizza				
printer's ink				
shoes				
sod				
sugarcane				
vegetables				
water quality				
wheat				
windbreaks				
wood and wood products				
wool				

THE IMPORTANCE OF AGRICULTURE

Is agriculture important to people? You bet! It's necessary to survive. Three general categories of contributions of agriculture follow.

FOOD, FIBER AND OTHER AGRICULTURAL PRODUCTS...all the things we eat and use that start with the land. Did you know?

- American farmers produce 16 percent of the world's food on just 7 percent of the world's land. A total of 1.31 billion acres in the United States are devoted to agriculture as cropland, rangeland, pastureland, timberland or fish farms.
- There are more than 150,000 supermarkets in the United States, and they offer about 26,430 different foods.
- Cotton's share in apparel and home furnishings has grown every year since the early 1980s. Demand for denim jeans has helped cotton achieve a 65 percent share of the total apparel market.

ECONOMICS, JOBS AND TRADES...workers and businesses that change the raw products into forms we can use and get them into our hands. Did you know?

- Agriculture, along with its related occupations, is the nation's largest industry, generating billions of dollars each year. One out of every five jobs depends on it in some way. Agriculture is America's largest employer, with almost 23 million people working to grow food and fiber, process it into products, and transport or sell those products to every one of us.
- The United States exported \$53 billion and imported \$39 billion in agricultural products in 2001, continuing its unbroken 35-year record of a positive agricultural trade balance.

QUALITY OF LIFE...the things that make Earth not only beautiful, but a planet that can provide what we need to live healthy lives. Did you know?

- By 2000, farmers had placed 32.7 million acres of their land in reserve to protect the environment and provide habitat for wildlife.
- One acre of trees can absorb about 13 tons of dust and gases every year from the air through photosynthesis, making our air cleaner to breathe.
- Plants and trees are renewable natural resources. With proper management and wise use, they continue to return.

AGRICULTURE CATEGORIES

Names: _____

Directions: Place the top 10 choices from the **Histograms** into one of these three categories.

Top 10 choices	Food, fiber and other agricultural products	Economics, jobs and trades	Quality of life
Our Class			
Other Group			

OTHER GROUP SURVEY

Names: _____

Directions

1. Survey two people. Write the last name of one person next to #1 and the other person next to #2 in the second column. Read the list to each person and check off the most important things they think agriculture provides.
2. With your team, tally the choices of all people surveyed by making tally marks in the Team tally of Other Group column.
3. Working from the **Tally and Frequency Chart** transparency, complete the Other Group frequencies column.
4. Identify the top 10 choices of the Other Group. Record in the last column.

Provided by agriculture	Last name of persons #1 _____ #2 _____	Team tally of Other Group	Other Group frequencies	Top 10 choices
air quality				
beautiful scenery				
corn				
cotton				
exports				
farmers' markets				
fish				
flowers				
footballs				
fruits				
glue				
golf courses				
greenhouses				
hay				
hides/leather				
jobs				
landscaping				
meat				
medicines				
milk				
pizza				
printer's ink				
shoes				
sod				
sugarcane				
vegetables				
water quality				
wheat				
windbreaks				
wood and wood products				
wool				

SUMMING IT UP

Directions: Discuss the following questions with your team. Make notes and be prepared to share your thoughts with the class. Your teacher will tell you if you are to prepare written responses.

1. Look at the information in the tallies, the frequencies, and the histograms. Which method of reporting the findings of your surveys do you prefer? Why?
2. Compare the **Histograms** results of your Class Histogram with those of the Other Group Histogram. What do the lists have in common? How are they different? Why might they be different? Do you agree that the top 10 items of the Other Group are the most important?
3. Compare **Agriculture Categories** sheets of the most important items of Our Class with those of the Other Group. Which group chose more items that are food, fiber or other agricultural products? Which group chose more items that are economics, jobs or trade? Which group chose more items that are quality of life? Why?
4. Why is agriculture important to other people?
5. Working with the **Agriculture Survey** and **Other Group Survey** sheets, try to determine what things affected the selection of the top 10 choices of our classmates? Of the Other Group?
6. How do you think you would answer this survey when you are 30 years old? 50 years old?
7. What kind of case could you make for your top 10 choices that were entirely different from another person's top 10 choices?
8. What were some things you knew before this survey? What did you learn by doing this survey? How are your knowledge and beliefs about the importance of agriculture to people different now from what they were before this lesson? Why?

Our salvation can only come through the farmer.

*Neither the lawyers, nor the doctors,
nor the rich landlords are going to secure it.*

Mohandas Gandhi (1869-1948), nationalist, moral and spiritual leader in India. *The Wit and Wisdom of Gandhi.*