



You are the Farmer

**Audience:** 4<sup>th</sup> and 5<sup>th</sup> -grade math and social studies students

**Activity Length:** 45-50 minutes

**TEKS:**

Math

4.1.A. Apply mathematics to problems arising in everyday life, society, and the workplace

4.1.C. Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems

4.1.F. Analyze mathematical relationships to connect and communicate mathematical ideas

4.4.A. Add and subtract whole numbers and decimals to the hundredths place using the standard algorithm

4.4.D. Use strategies and algorithms, including the standard algorithm, to multiply up to a four-digit number by a one-digit number and to multiply a two-digit number by a two-digit number. Strategies may include mental math, partial products, and the commutative, associative, and distributive properties

4.4.H. Solve with fluency one- and two-step problems involving multiplication and division, including interpreting remainders

4.10.A. Distinguish between fixed and variable expenses

4.10.B. Calculate profit in a given situation

5.1.A. Apply mathematics to problems arising in everyday life, society, and the workplace

5.1.C. Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems

5.1.F. Analyze mathematical relationships to connect and communicate mathematical ideas

5.2.C. Round decimals to tenths or hundredths

5.3.B. Multiply with fluency a three-digit number by a two-digit number using the standard algorithm

5.3.C. Solve with proficiency for quotients of up to a four-digit dividend by a two-digit divisor using strategies and the standard algorithm

5.3.E. Solve for products of decimals to the hundredths, including situations involving money, using strategies based on place-value understandings, properties of operations, and the relationship to the multiplication of whole numbers

5.3.G. Solve for quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using strategies and algorithms, including the standard algorithm

Social Studies

4.11.A. identify how people in different regions of Texas earn their living, past and present



5.12.A. compare how people in different regions of the United States earn a living, past and present

**Objectives:**

- The student will understand that farming is a business which requires many different math computations.
- The student will perform basic and multi-step math operations in calculating the expenses of farming.
- The student will understand that there are many occupations related to agriculture besides actual production of food and fiber.

**Introduction:**

Operating a farm is a multi-faceted business. Like any business, farmers must purchase supplies and services and sell products. Farmers need a good understanding of agri-business and economics to make a profit. They work with many individuals and companies to supply the needs of their farm and sell their products. Farmers must know how to keep an organized budget, compare prices, and make wise financial decisions.

Farmers use math in many of their day-to-day operations. For example, farmers use math to determine the amount of seed they need to plant their crop and how much it will cost. They also need math to purchase equipment and make payments. Math is important for determining taxes and insurance. It also helps farmers keep track of how much their livestock weighs, how much milk their cows produce, their crop yields per acre, etc.

Students will learn that there is much more involved in farming than simply raising a few animals or planting some crops. By reading and completing the following story problems, teachers can reinforce basic math operations, while showing student some examples of how math is used in the “real world”.

Additionally, students will learn that there are many careers in agriculture that they might not be aware of. Agriculture is everywhere and many people make their living in an agriculture-related career. This activity can be used to help students understand how various agricultural careers might be more prevalent in different regions.

**Materials Needed:**

“Ag Careers Are Everywhere” worksheet

“You Are the Farmer” worksheet



**Activity Outline:**

1. Initiate a discussion with your students about occupations that require math. Have them name the occupations. Then turn the discussion to agricultural occupations that require math. Ask a volunteer or several students share what agriculture is. Explain that agriculture is the growing of food and fiber (wool, cotton, etc.). Ask them to name some agriculturally related occupations and which of these occupations require math skills.
2. Make a list of the agriculturally related occupations that require math on the board. If the class needs help, suggest the agricultural occupations found on the handout, "Ag Careers Are Everywhere!"
3. Once the students have a better idea of what agriculture is and know some agricultural occupations that require math, have them complete the worksheet "You Are the Farmer." The worksheet will give the students a better idea of the expenses a farmer incurs just to plant a crop in the field. When the students are done with the worksheet, go over the answers so they understand them. Discuss how a farmer needs to know math to run his or her business.

**Discussion Questions:**

1. What is agriculture?
2. What are some occupations related to agriculture?
3. How does a farmer use math to run his or her business?

**Related Activities:**

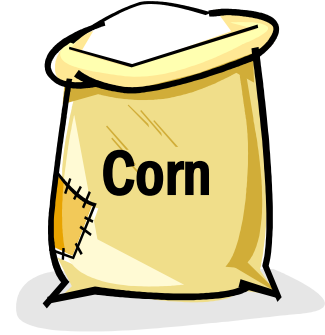
1. Ask a local farmer to come talk share about his/her job and the importance of math in his/her work. Your local county Farm Bureau can help connect you to a speaker.
2. Have students use their knowledge to make new story problems of their own. Then have them trade with a partner and solve.
3. Research some of the agricultural occupations listed on the handout that the class is not familiar with.



**You are the Farmer**

You are a farmer in Texas who grows soybeans, wheat, and corn. This year you make the decision to plant corn on your farm. Use the following information to complete the activity. You will have to round some answers to the nearest whole dollar and full container.

- \*Seed corn \$70 per acre.
- \*Fertilizer costs \$95 per acre.
- \*Fuel, lube, and labor cost \$50 per acre.
- \*Herbicide costs \$345 for a 60-ounce container that treats 40 acres.
- \*Insecticide costs an additional \$20 per acre.
- \*Your farm is in Texas and the average size is 523 acres.



How much will it cost to plant seed corn on your farm? \_\_\_\_\_

Corn rootworms have been a problem in the past. They eat the roots and cause the corn to die. You decide to purchase seed with insecticide, controlling rootworms. How much will this cost? \_\_\_\_\_ What will this increase your seed cost to? \_\_\_\_\_

You need to purchase a new tractor and planter. The bank will loan you the money to buy the equipment, but you are required to make payments of \$18,500 every year for seven years. In addition, you have payments on previous purchases of \$5,500 per year. What is your total annual equipment cost for one year? \_\_\_\_\_

You need to put fertilizer on your corn crop. How much will this cost? \_\_\_\_\_

Weeds are starting to grow in your corn field. You need to apply an herbicide. How many containers will you need? \_\_\_\_\_ How much will it cost to control weeds? \_\_\_\_\_

You cash lease your farmland for \$50 per acre. What is the total rent for your farm? \_\_\_\_\_

What is the total cost for fuel, lube, and labor? \_\_\_\_\_

Your corn crop is great! You harvest 130 bushels per acre. What is the total number of bushels of corn harvested? \_\_\_\_\_ There are 56 pounds in one bushel. How many pounds of corn did you harvest? \_\_\_\_\_

You received \$3.75 per bushel for your corn. How much did you get for your crop? \_\_\_\_\_

How much were your expenses for raising corn? \_\_\_\_\_

How much profit did you make from your corn crop? \_\_\_\_\_



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You Are the Farmer  
KEY

How much will it cost to plant seed corn on your farm? 36,610

Corn rootworms have been a problem in the past, eating the roots, causing the corn to die. You decide to purchase seed with insecticide, controlling rootworms. How much will this cost? 10,460 What will this increase your seed cost to? 47,070

You need to purchase a new tractor and planter. The bank will loan you the money to buy the equipment, but you are required to make payments of \$18,500 every year for seven years. In addition, you have payments on previous purchases of \$5,500 per year. What is your total annual equipment cost for one year? 24,000

You need to put fertilizer on your corn crop. How much will this cost? 49,685

Weeds are starting to grow in your corn field. You need to apply a herbicide. How many containers will you need? 14 How much will it cost to control weeds? 4,830

You cash lease your farm land for \$50 per acre. What is the total rent for your farm? 26,150

What is the total cost for fuel, lube and labor? 26,150

Your corn crop is great! You harvest 130 bushels per acre. What is the total number of bushels of corn harvested? 67,990 There are 56 pounds in one bushel. How many pounds of corn did you harvest? 1,214

You received \$3.75 per bushel for your corn. How much did you get for your crop? 254,963

How much were your expenses for raising corn? 177,885

How much profit did you make from your corn crop? 77,078



**Ag Careers Are Everywhere!**

Agriculture is the art and science of growing food and clothing. You don't have to come from a farm to have an occupation in agriculture. Any occupation that involves growing, harvesting, raising, transporting, processing, making, selling, trading or researching of food and/or fiber (for clothing) are agricultural occupations. When you stop and think about it, agriculture is all around us! Take a look at the list of agricultural occupations below. Most agricultural occupations require math, but the ones listed here are the most prevalent.

<p><u>Agricultural Production Specialists</u></p> <ul style="list-style-type: none"> <li>• Aquaculturalist</li> <li>• Greenhouse Manager</li> <li>• Rancher</li> <li>• Fruit and Vegetable Grower</li> <li>• Farm Manager</li> <li>• Specialty Animal Producer</li> <li>• Grain and/or Livestock Farmer</li> <li>• Turf Producer</li> </ul>	<p><u>Managers and Financial Specialists</u></p> <ul style="list-style-type: none"> <li>• Accountant</li> <li>• Retail Manager</li> <li>• Policy Analyst</li> <li>• Consultant</li> <li>• Banker</li> <li>• Wholesale Manager</li> <li>• Food Service Manager</li> <li>• Economist</li> <li>• Insurance Agency Manager</li> <li>• Computer Systems Analyst</li> </ul>
<p><u>Marketing, Merchandising, and Sales Rep</u></p> <ul style="list-style-type: none"> <li>• Grain Merchandiser</li> <li>• Market Analyst</li> <li>• Restaurant Manager</li> <li>• Insurance Agent</li> <li>• Commodity Broker</li> <li>• Sales Representative</li> <li>• Export Sales Manager</li> <li>• Landscape Contractor</li> <li>• Advertising Manager</li> </ul>	<p><u>Scientists, Engineers, &amp; Related Specialists</u></p> <ul style="list-style-type: none"> <li>• Agronomist</li> <li>• Animal Scientist</li> <li>• Agricultural Engineer</li> <li>• Research Technician</li> <li>• Environmental Scientist</li> <li>• Water Quality Specialist</li> <li>• Landscape Architect</li> <li>• Plant Scientist</li> <li>• Food Scientist</li> </ul>
<p><u>Communication &amp; Education</u></p> <ul style="list-style-type: none"> <li>• Information Specialist</li> <li>• Computer Software Designer</li> <li>• Agricultural/Horticultural Teacher</li> <li>• Radio/Television Broadcaster</li> </ul>	<p><u>Social Services Professionals</u></p> <ul style="list-style-type: none"> <li>• Dietitian</li> <li>• Food Inspector</li> <li>• Regulatory Agent</li> <li>• Outdoor Recreation Specialist</li> </ul>