

**Overview:**

In villages like San Martin Alto, Heifer International is working to empower families by providing them with tools to raise themselves out of poverty. Heifer International often helps families become producers of goods or services, which they can then sell to support themselves. One project that Heifer International is implementing in different locations is an alpaca-raising project. Before Heifer International decides to sponsor a project like this, it is important to determine whether a profit can be made from the project. This lesson examines what profit means, how to forecast profit or loss, and how to choose between different products to produce.

Economics Standards:

- People respond predictably to positive and negative incentives.
- Responses to incentives are predictable because people usually pursue their self-interest.
- Changes in incentives cause people to change their behavior in predictable ways.
- Incentives can be monetary or non-monetary.
- Effective decision-making requires comparing the costs of alternatives with the benefits.
- Profit is an important incentive that leads entrepreneurs to accept the risks of business failure.

Math Standards:

- Compute fluently and make reasonable estimates.
- Formulate questions that can be addressed with data and, organize relevant data to answer them.
- Solve problems that arise in mathematics and other contexts.

Materials:

- “Alpaca Products — Calculating Profits”
- “Incentives — Why People Do Things”

Procedure:

1. Discuss incentives—both monetary and non-monetary.

Explain to the class that today they will be learning about incentives. Start by asking students to name several things they do during a normal day. Then ask the students why they do these things. What are their incentives for doing these things?

Distribute “Incentives — Why People Do Things” handout and have students fill out the chart. The students should understand that there are both monetary and non-monetary incentives that people have for doing things.

Both monetary and other incentives are important in Heifer International’s work with communities worldwide.

TYPES OF INCENTIVES

- **Self-Reliance:**
Monetary profit is important because development projects funded by Heifer International must become self-supporting after some time. This means that while Heifer International will provide livestock and other training support initially, the community eventually will be expected to run the project on its own.
- **Protecting the Environment:**
Environmental incentives are important to all Heifer International projects. Heifer International believes that sustainable development means improving people's lives without harming the environment, so that future generations can enjoy the benefits of the earth as well.
- **Sharing and Caring:**
Caring about people and their culture is a strong part of Heifer International's work. Heifer International believes that many traditional cultures have great strength in areas such as medicine, technical abilities in farming and livestock raising, environmental protection, and societal governance, and that these strengths should not be discounted but instead should be used in development work to the advantage of the project and the community.

2. Discuss different types of profits.

One of the biggest incentives in our society is monetary profit. The reason most people work is to make money. People need to earn money so that they can have a better life. People make choices as to what kind of work they will do and how they will earn money. Ask the class to recall some of the ways that people made a living in the story of Luis and Isabel.

Answers include:

- Growing crops for sale
- Raising cattle for milk
- Raising sheep for wool
- Raising guinea pigs for protein¹

Remind the class how people in San Martin Alto were considering whether to raise alpacas for their valuable wool.

Before people decide to become producers of a product (i.e., alpaca wool), they must determine how much profit they would earn. This way they can predict if the benefits of their endeavor will outweigh the costs. Explain to the class that they are going to help figure out how much the villagers could earn if they decide to raise alpacas. (Note: Since the alpacas are provided by Heifer International, the cost of acquiring alpacas is not included. Although the alpacas are provided, the community must take into consideration how they will "pay back" the loan. They usually have to pass on the same amount of alpacas to another community.)

¹ In talking to your students about raising guinea pigs for meat, it may help to relate this story about cultural differences. When the team from Heifer International and the Center for Teaching International Relations was in Ecuador conducting research for this curriculum, we met with several groups of school children. In one school, a teenage girl raised her hand and asked, "Is it true that in the U.S. people actually keep guinea pigs as pets?" One of the Americans answered that yes, it was certainly true, and that people usually give their guinea pigs names and like to play with them. The village school children laughed and laughed at this response, thinking this behavior to be quite absurd. Explain to your students that guinea pigs have been prized as a local delicacy for centuries in Ecuador and wherever you travel in the world, you will experience different cultures and different tastes in food.

Emphasize that monetary profit is not the only incentive. Ask students to think of factors other than monetary profit that might be an incentive to produce alpaca products rather than sheep and cattle products. Some answers include:

- Alpacas hooves do not tear up the fragile *páramo* land, and therefore help to preserve the *páramo*.
- Culturally, alpacas are an important part of the Andes region. Alpacas were considered sacred animals in the Incan empire.
- Keeping alpacas would mean continuing the tradition of owning some land communally instead of individually.

ALPACAS

Alpacas are part of the camel family and are indigenous to the Andes mountains. Alpacas grow to about 150 pounds and are gentle animals that eat grass and straw. They are prized for their coats of luxurious fiber that produce wool as soft as cashmere and stronger and warmer than sheep wool. Alpaca herds live high up in the *páramo* lands above the cities and villages. Unlike sheep and cattle hooves, which are sharp, alpaca hooves are padded and thus do not harm the fragile soil in the *páramo*.

3. Calculate potential profits.

Using the “Alpaca Products — Calculating Profits” handout, have the students determine the amount of profit they can earn from different products they make with the alpaca wool. Discuss the conclusions of the mathematical formulations:

- Would you recommend that villagers participate in this alpaca raising project?
- Can you predict which product might be the most profitable to make and sell?



Incentives — Why People Do Things

People take actions throughout the day based on incentives. Incentives are reasons or motivations for doing something. Fill out the chart below by listing some incentives people have for doing the actions listed on the left side. Then list some more actions and the incentives people have for doing them.

THINGS PEOPLE DO	INCENTIVES (WHY PEOPLE DO IT)
Practice hard (at sports, music, chess, art, etc.)	
Help the family do chores (take out the trash, wash dishes, etc.)	
Babysit or do yardwork for other families	
Read books	
Watch T.V.	
Recycle	
Go to work	
Study for a test	
Hold a garage sale	

Not all incentives are based on money. Look at your list of incentives. What kinds of things other than monetary profit motivate people to do things?

Alpaca Products — Calculating Profits (p. 1)

The villagers in a community are considering raising alpacas to help them earn a living. Alpacas can be used to produce different products, including:

- Raw alpaca wool
- Yarn made by spinning the alpaca wool
- Sweaters made from alpaca yarn

Using the information below, help the villagers determine if participating in alpaca raising will be profitable for them. Also help them determine which product would bring the most profit.

RAW WOOL	
If the villagers just want to produce and sell plain alpaca wool, this is what they can expect:	
Selling price of alpaca wool at market:	\$2.50 per pound
Costs of producing alpaca wool (per pound of wool):	
Annual medical shots for alpacas	\$0.50 per pound
Feeding alpacas	\$0.25 per pound
Shearing the wool (equipment and time)	\$0.50 per pound
Selling the wool (transportation to market and time)	\$0.10 per pound
Total Costs:	_____
Profit from Alpaca Wool:	_____

Calculate the profit for producing and selling alpaca wool.



Alpaca Products — Calculating Profits (p.2)

YARN MADE FROM WOOL

If an individual wants to buy wool from the community and add in extra value by spinning the wool into yarn, here is what that person can expect:

Selling price of alpaca yarn at market:	\$8.00 per pound
Costs of producing alpaca yarn:	
Cost of the raw wool	\$3.00 per pound
Time and labor in spinning the wool	\$3.00 per pound
Dye to color the yarn	\$0.50 per pound
Selling the yarn (transportation to market and time)	\$0.10 per pound
Total Costs:	_____
Profit from Yarn:	_____

Calculate the profit for producing and selling alpaca yarn.

Explain how you solved the problem.

Alpaca Products — Calculating Profits (p.3)

SWEATERS MADE FROM ALPACA YARN

If an individual in the community wants to buy alpaca yarn from someone in the community and add extra value by knitting it into a sweater, here is what the person can expect:

Selling price of alpaca yarn at market:	\$12.00 per sweater
Costs of producing an alpaca sweater:	
Yarn	\$6.00 per sweater
Knitting (time and labor)	\$4.00 per sweater
Selling the sweater (transportation to market and time)	\$0.10 per sweater
Total Costs:	<input type="text"/>
Profit from Sweaters:	<input type="text"/>

Calculate the profits for producing and selling alpaca sweaters.



Alpaca Products — Calculating Profits (p.4)

Look at the data on the different alpaca products. Discuss what product you would sell, and why.

What factors other than profit might enter into your decision whether or not to get involved in an alpaca-raising project?

Teacher Instructions Alpaca Products — Calculating Profits

To calculate the profit, use the following formula:

$$\text{Price} - \text{Total Cost} = \text{Profit (or Loss)}$$

RAW WOOL

$$\$2.50 \text{ per pound} - \$1.35 \text{ per pound} = \$1.15 \text{ per pound of PROFIT}$$

YARN MADE FROM SPINNING ALPACA WOOL

$$\$8.00 \text{ per pound} - \$6.60 \text{ per pound} = \$1.40 \text{ per pound of PROFIT}$$

SWEATERS MADE FROM ALPACA YARN

$$\$12.00 \text{ per sweater} - \$10.10 \text{ per sweater} = \$1.90 \text{ per sweater of PROFIT}$$

