

# In Strawberry Fields

## Objective

Students will read about strawberries and research pollination. Students will learn the difference between gross and net pay and between hourly wages and piece work for agricultural workers. Student will solve math problems related to wages.

## Background

The strawberry we know today is a cross between two native American species—one from Chile, in South America, and one from Virginia, in North America. The two met by accident—in faraway France!

Early 17th Century English colonists enjoyed the large strawberries they found growing in Virginia and sent them back to Europe for the people back home to enjoy. One hundred years later, a French naval engineer and amateur botanist named Frezier was exploring Chile, in South America, and found strawberries growing there much larger than the strawberries that grew wild in Europe. Although very tasty, the European strawberries were tiny and filled with seeds. Frezier gathered five of the Chilean plants to take home with him to France. He chose the plants with the biggest blossoms, not realizing they were all female plants. When they were planted in France, they flourished and bloomed but produced no berries.

Thirty years later, a Virginia strawberry plant was accidentally placed in the garden where the offspring of Frezier’s fruitless strawberry plants were still growing. When the two plants cross-pollinated, they produced the delicious strawberries we know today.

There are several stories about how the strawberry got its name. Some say it is named after the straw often used as mulch around the plants. Others say it refers to the plant’s habit of “strewing” its runners about. Another story is that children in England poked straws in the berries as a convenient way to carry them around in open markets and sell them.

Strawberries will grow almost anywhere in Oklahoma. Many people raise strawberries in their home gardens because they are easy to grow and produce fruit earlier than other fruits. The largest strawberry-producing operations in the state are in eastern Oklahoma, in Adair and Sequoyah counties.

Strawberry plants purchased for planting are called crowns. Once the crown is planted it becomes the mother plant, sending out runners, which take root and form new plants. New plants will produce fruit the second year after they are planted. They begin to ripen in May—about 18-45 days after the flowers appear.

Strawberries are harvested when they are totally red. They are picked

## Oklahoma Academic Standards

### GRADE 6

Algebraic Reasoning: 3.1

### GRADE 7

Algebraic Reasoning: 2.2  
Life Science: 1-4,5; 3-1,2; 4-4,5,6

### GRADE 8

Pre-Algebra: 3.3  
Earth Science: 3-1

## Vocabulary

**amateur**—a person doing something for pleasure rather than payment

**botanist**—a plant scientist: an expert whose scientific knowledge is in plants

**calyx**—the outer protective leaves at the top of the strawberry, sometimes called its cap

**convenient** —useful or suitable, because it makes things easier, is close by, or does not involve much effort or trouble

**cross-pollinated**—the transfer of pollen from an anther of one flower to the stigma of another

**crown**—the roots and lower stem of a plant, or a plant consisting only of these parts, used especially for propagation

**fiber**—coarse fibrous substances, largely composed of cellulose, that are found in grains, fruits, and vegetables, and aid digestion

**flat**—a tray which holds eight quart baskets

**flourish**—be healthy or grow well, especially because conditions are right

**potassium**—a soft silver-white, metallic chemical element needed by the body to maintain health; found in fruits like strawberries and bananas

**seasonal workers**—employees who work only during the season when crops are ready to be harvested

**U-pick**—a farming operation where customers are allowed to pick their own fruits and vegetables

with the calyx still attached. Calyx is the name for the outer protective leaves at the top of the strawberry, sometimes called its cap. Workers fill quart baskets arranged on trays called flats. Each flat holds eight quart baskets. The flats are then stacked in boxes.

Some farmers have U-pick operations, where customers are allowed to come into the fields and pick their own strawberries. Picking strawberries is hard work, requiring a great deal of stooping and bending. For this reason, many people prefer buying strawberries picked by someone else.

Workers who pick strawberries are called seasonal workers because they work only during the season when strawberries are ready to be picked. Some seasonal workers are paid according to how many flats of strawberries they pick, and some are paid by the hour.

One cup of strawberries provides more than the recommended daily requirement of vitamin C. Strawberries also provide good amounts of dietary fiber, potassium and folicin. To store strawberries, cover them loosely with plastic and place them in the refrigerator. Do not remove their caps until you are ready to use them. Strawberries taste best at room temperature.

## Math

1. Read and discuss background information and vocabulary.
2. Discuss the difference between gross pay and net pay.
  - What is the difference between getting paid by the hour or the piece and getting paid a salary?
  - Discuss the kinds of jobs students have had and how they normally get paid
  - Discuss the advantages and disadvantages to the employer of paying workers by the hour (the worker may not work as fast) or paying by the piece (the worker may pick strawberries that aren't ready to be picked). What are the advantages and disadvantages for the worker?
  - Invite an accountant to class to answer questions about payroll (difference between net and gross pay, the rate of state and local taxes withheld, etc.) Students will prepare questions ahead of time.
3. Hand out the student worksheets included with this lesson.
  - Students will complete the worksheets individually or in small groups. Calculators may be used at the discretion of the teacher.
4. On the back of the “Hourly Wages Worksheet,” students will compute the “net pay” for each employee by deducting 22 percent of the pay for taxes, social security, and benefits.

## Science

1. Students will research pollination and find out why the plants Frezier took back to France would not produce any berries.
  - Do all fruit-bearing plants need both male and female plants before they can bear fruit? (Cultivated strawberries have perfect, complete flowers and don't need a pollinator plant.)

## Extra Reading

Alvarez, Julia, *Return to Sender*, Yearling, 2010.

Atkin, S. Beth, *Voices from the Fields: Children of Migrant Farmworkers Tell Their Stories*, Little Brown, 2000.

Bernier-Grand, and David Diaz, *Cesar: Si, Se Puede! Yes, We Can!*, Marshall Cavendish, 2005.

Burnie, David, *Plant*, Eyewitness Books, Dorling Kindersley, 2003.

DeFelice, Cynthia, *Under the Same Sky*, Farrar, Straus and Giroux, 2005.

Denenberg, Barry, *So Far From Home: The Diary of Mary Driscoll, An Irish Mill Girl, Lowell Massachusetts, 1847*, Scholastic, 2003.

Halfmann, Janet, *Plant Tricksters*, Franklin Watts, 2004.

Krull, Kathleen, and Yuyu Morales, *Harvesting Hope: The Story of Cesar Chavez*, Harcourt, 2003.

Ryan, Pam Munoz, *Esperanza Rising*, Scholastic, 2002.

# Hourly Wages Worksheet

*Jennifer Baker has an important job. She works as a payroll clerk at Lockard Farms. At Lockard Farms they grow and sell strawberries. It is Jennifer's job to compute the gross income for each employee each week.*

*Gross income is the total amount of money an employee has earned.*

1. Write an algebraic formula for computing gross income.

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \text{Gross Income}$$

2. Use the formula to complete the table below. Give the gross income for each employee.

Employee's Name	M	T	W	Th	F	Total Hours	Hourly Rate	Gross Income
Allen, S.	8	7	4	10	6		\$5.85	
Ball, G.	7	8	7	7	7		\$6.05	
Duran, J	7	7	6	8	5		\$5.95	
Jones, R.	9	4.5	12	3	8		\$6.25	
Lee, C.	6.5	5	8	7	8		\$6.31	
Lucero, R.	8	8	8	8	8		\$6.51	
Martinez, R.	7	6.5	9	6.5	8		\$5.97	
Pickens, B	8	8	8	8	8		\$6.75	

3. Why might the rate of hourly pay be different for each employee?

4. What is the difference between the highest and lowest rate of hourly pay?

# Hourly Wages Worksheet (answers)

*Jennifer Baker has an important job. She works as a payroll clerk at Lockard Farms. At Lockard Farms they grow and sell strawberries. It is Jennifer's job to compute the gross income for each employee each week.*

*Gross income is the total amount of money an employee has earned.*

**1. Write an algebraic formula for computing gross income.**

$$\text{(Number of hours worked) X (hourly rate) = Gross Income}$$

**2. Use the formula to complete the table below. Give the gross income for each employee.**

Employee's Name	M	T	W	Th	F	Total Hours	Hourly Rate	Gross Income
Allen, S.	8	7	4	10	6	35	\$5.85	\$204.75
Ball, G.	7	8	7	7	7	36	\$6.05	\$217.80
Duran, J	7	7	6	8	5	33	\$5.95	\$196.35
Jones, R.	9	4.5	12	3	8	36.5	\$6.25	\$228.13
Lee, C.	6.5	5	8	7	8	34.5	\$6.31	\$217.70
Lucero, R.	8	8	8	8	8	40	\$6.51	\$260.40
Martinez, R.	7	6.5	9	6.5	8	37	\$5.97	\$220.89
Pickens, B	8	8	8	8	8	40	\$6.75	\$270.00

**3. Why might the rate of hourly pay be different for each employee?**

experience, responsibility

**4. What is the difference between the highest and lowest rate of hourly pay?**

90 cents

# Piece Work Worksheet

*Some employees at Lockard Farms are paid by the number of flats of strawberries they pick. This is called “piece work.”*

1. Write an algebraic formula for finding the gross income for each employee from “piece work.”

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \text{Gross Income}$$

2. Use the formula to complete the table below. Compute the gross income for each employee.

Employee's Name	M	T	W	Th	F	Total Flats	Rate per Flat	Gross Income
Cannon, S.	12	9	10	16	13		\$6.00	
Cunningham, J	7	8	7	7	7		\$6.00	
Diego, M.	13	17	16	18	15		\$6.00	
Teel, S.	17	14.5	12	13	18		\$6.00	

*Gene and Mary Lockard are the owners of Lockard Farms. They are expecting bad weather and want to get the strawberries out of the field this week. They offer to add a bonus of \$1 per flat for every worker who picks at least five flats more than he or she picked last week.*

3. Complete the table below. Use the table above to record last week's total for each employee and decide whether each one gets paid the bonus rate (\$7) or the regular rate (\$6). Give the gross income for each employee.

Employee's Name	M	T	W	Th	F	Total Flats	Rate per Flat	Gross Income
Cannon, S.	15	12	10	15	16			
Cunningham, J	6	9	8	6	10			
Diego, M.	15	18	20	20	15			
Teel, S.	18	16	14	15	20			

# Piece Work Worksheet (answers)

*Some employees at Lockard Farms are paid by the number of flats of strawberries they pick. This is called “piece work.” The rate paid per flat is the same for every employee.*

1. Write an algebraic formula for finding the gross income for each employee from “piece work.”

$$\text{Number of flats picked} \times \text{price per flat} = \text{Gross Income}$$

2. Use the formula to complete the table below. Compute the gross income for each employee.

Employee's Name	M	T	W	Th	F	Total Flats	Rate per Flat	Gross Income
Cannon, S.	12	9	10	16	13	60	\$6	\$360
Cunningham, J	7	8	7	7	7	36	\$6	\$216
Diego, M.	13	17	16	18	15	79	\$6	\$474
Teel, S.	17	14.5	12	13	18	74.5	\$6	\$447

*Gene and Mary Lockard are the owners of Lockard Farms. They are expecting bad weather and want to get the strawberries out of the field this week. They offer to add a bonus of \$1 per flat for every worker who picks at least five flats more than he or she picked last week.*

3. Complete the table below. Use the table above to record last week's total for each employee and decide whether each one gets paid the bonus rate (\$7) or the regular rate (\$6). Give the gross income for each employee.

Employee's Name	M	T	W	Th	F	Total Flats	Rate per Flat	Gross Income
Cannon, S.	15	12	10	15	16	68	\$7.00	\$476
Cunningham, J	6	9	8	6	10	39	\$6.00	\$234
Diego, M.	15	18	20	20	15	88	\$7.00	\$616
Teel, S.	18	16	14	15	20	83	\$7.00	\$581