



# IN STRAWBERRY FIELDS

**GRADE LEVEL:** 4-5

**SUBJECT:** Mathematics

**NATIONAL STANDARD(S):**

(3-5) MA: 3.1, 3.3-5, 3.9, 3.11, 3.12

**THEME:** Strawberries

**FOOD AND FIBER TOPIC:** I-B,D,E; II-B,D,E; III-B,E; IV-A,B,D

## LEARNER OBJECTIVE

The student will calculate wages of agricultural workers by the hour and by the piece.

## VOCABULARY

**botanist**—A person who studies the science of plants.

**calyx**—The outer, usually green, leaf-like part of a flower

**cross-pollinate**—Transfer pollen between two separate plants.

**crowns**—Strawberry plants purchased for planting.

**flats**—Shallow box-like trays designed to hold eight quart baskets or containers of certain fruits and vegetables, like strawberries.

**seasonal workers**—The labor required at a particular season, as at fruit picking, grain harvesting, sheep shearing, etc.

**U-pick**—A farming operation in which the customer picks his or her own fruit, vegetables or other food.

## BACKGROUND

The strawberry we know today is a cross between two native American species—one from Chile in South America, and one from Virginia. The two met up 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 that were much larger than the strawberries which 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 most 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.

Strawberry plants purchased for planting are called crowns. Once the crown is planted it becomes the mother plant, sending out runners that 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 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.

### **STEP-BY-STEP INSTRUCTIONS**

1. Hand out student worksheets.
2. Share background material, and discuss the difference between gross pay and net pay and the difference between getting paid by the hour or the piece and getting paid a salary. Ask students what kinds of jobs they have had and how they normally get paid.
3. Instruct students to complete the student worksheets, using the formulas provided. Students may use calculators on one or both worksheets.

### **RELATED ACTIVITIES**

1. Invite an accountant to class to answer questions about payroll—the difference between net and gross pay, the rate of state and local taxes withheld, etc. Have students prepare questions ahead of time.
2. Have students 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?
3. Ask students to 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.)
4. If there is a U-Pick strawberry operation in your area, arrange for students to visit and pick their own strawberries.
5. In May, bring fresh strawberries, whipped cream, and shortcake, biscuits or shortbread cookies to class and let students prepare strawberry shortcake.

### **RESOURCES**

#### ***Student Books***

- Bial, R. (1991). Corn Belt Harvest. Houghton Mifflin.
- Brittain, B. (1979). All the Money in the World. Harper Collins.
- Burnie, D. (1988). Plant. Eyewitness Books, Knopf.
- Coldrey, J. and Bernard, G. (1989) Strawberry. Silver-Burdett.
- Smith, D. (1973). A Taste of Blackberries. Harper Collins.
- Williams, S. A. (1992).. Working Cotton. Harcourt, Brace, Jovanovich.

#### ***Teacher Resources***

- McLelland, Dorothy, “*Good as Gold: Foods the Americas Gave the World,*” National Museum of American History, Smithsonian Institution, Washington, DC, A Smithsonian Quincentenary Publication, 1991 (pamphlet).

### ***Related Internet Websites***

California Strawberry Commission. Answers to all of your strawberry questions, health, nutrition, facts, farm tours, etc. <http://www.cal.strawberry.com/>

Florida Strawberry Growers Association. Facts about strawberries grown in Florida.  
<http://www.cftnet.com/~fsga/stberrie.html>

Strawberries. Seeds of Change Garden. Strawberry plant history.  
<http://horizon.nmsu.edu/garden/history/strawberries.html>

### **EVALUATION**

An answer key is provided for each student worksheet.

### **ACKNOWLEDGMENT**

This lesson adapted from Oklahoma Ag in the Classroom, Department of Agricultural Education, Communications and 4-H Youth Development, Oklahoma State University, Stillwater, OK 74078.

Name \_\_\_\_\_

# In Strawberry Fields

# B

Some employees at Lockard Farms are paid by the number of flats of strawberries they pick. This is called *piece work*. Each week, Jennifer finds the gross income for these employees by multiplying the number of flats they pick by the rate per flat. The rate paid per flat is the same for every employee.

This is the formula Jennifer uses:



$$\text{FLATS PICKED} \times \text{RATE PER FLAT} = \text{GROSS INCOME}$$

Use Jennifer’s formula to complete the table below. Give the gross income for each employee.

Employee’s Name	M	T	W	Th	F	Total	Rate per Flat	Gross Income
Cannon, S.	12	9	10	16	13	60	\$5.00	\$300.00
Cunningham, J.	7	8	10	12	15		\$5.00	
Diego, M.	13	15	21	19	15		\$5.00	
Teel, S.	17	15	13	16	16		\$5.00	



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.

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 (\$6) or regular rate(\$5). Give the gross income for each employee.

Employee’s Name	M	T	W	Th	F	Total	Last Week’s Total	Rate per Flat	Gross Income
Cannon, S.	15	12	10	15	16	68	60	\$6.00	\$360.00
Cunningham, J.	6	9	8	11	12				
Diego, M.	15	18	20	20	15				
Teel, S.	18	16	14	15	20				

Adapted from Oklahoma Ag in the Classroom.



Name \_\_\_\_\_

# In Strawberry Fields (answers)

# B

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Cannon, S.	12	9	10	16	13	60	\$5.00	\$300.00
Cunningham, J.	7	8	10	12	15	52	\$5.00	\$260.00
Diego, M.	13	15	21	19	15	83	\$5.00	\$415.00
Teel, S.	17	15	13	16	16	77	\$5.00	\$385.00



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.

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 (\$5.00) or regular rate(\$4.00). Give the gross income for each employee.

Employee's Name	M	T	W	Th	F	Total	Last Week's Total	Rate per Flat	Gross Income
Cannon, S.	15	12	10	15	16	68	60	\$6.00	\$340.00
Cunningham, J.	6	9	8	11	12	46	52	\$5.00	\$184.00
Diego, M.	15	18	20	20	15	88	83	\$6.00	\$440.00
Teel, S.	18	16	14	15	20	83	77	\$6.00	\$415.00

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Name \_\_\_\_\_

# In Strawberry Fields

# A

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. Jennifer computes this by multiplying the employee's hourly wage by the number of hours the employee worked during a week.



This is the formula Jennifer uses:

$$\text{NUMBER OF HOURS WORKED} \times \text{HOURLY RATE} = \text{GROSS INCOME}$$

Use Jennifer's formula to complete the table below. Give the gross income for each employee.



Employee's Name	M	T	W	Th	F	Total	Hourly Rate	Gross Income
Allen, S.	8	7	4	10	6	35	\$5.50	\$192.25
Ball, G.	7	8	7	7	7		\$5.75	
Duran, J.	7	7	6	8	5		\$5.00	
Jones, R.	9	4.5	12	3	8		\$5.25	
Lee, C.	6.5	5	8	7	8		\$5.31	
Lucero, R	8	8	8	8	8		\$6.51	
Martinez, R	7	6.5	9	6.5	8		\$5.37	
Pickens, B.	8	8	8	8	8		\$6.75	



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# In Strawberry Fields (answers)

# A

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Use Jennifer's formula to complete the table below. Give the gross income for each employee.



Employee's Name	M	T	W	Th	F	Total	Hourly Rate	Gross Income
Allen, S.	8	7	4	10	6	35	\$5.50	\$192.25
Ball, G.	7	8	7	7	7	36	\$5.75	\$207.00
James, D.	7	7	6	8	5	33	\$5.00	\$165.00
Jones, R.	9	4.5	12	3	8	36.5	\$5.25	\$191.63
Lee, C.	6.5	5	8	7	8	34.5	\$5.31	\$183.20
Morgan, K	8	8	8	8	8	40	\$6.51	\$260.40
Newman, R	7	6.5	9	6.5	8	37	\$5.37	\$198.69
Pickens, B.	8	8	8	8	8	40	\$6.75	\$270.00



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