

HEWN TIMBER CABINS

**MATHEMATICS
GRADES 4-6**

**FRANCIS MARION UNIVERSITY
FLORENCE, SOUTH CAROLINA**

SOUTH CAROLINA FRAMEWORK STANDARDS

CONTENT STANDARDS

- **NUMBER AND NUMERATION SYSTEMS**
- **NUMERICAL AND ALGEBRAIC CONCEPTS AND OPERATIONS**
- **PATTERNS, RELATIONSHIPS, AND FUNCTIONS**
- **GEOMETRY AND SPATIAL SENSE**
- **MEASUREMENT**

ACTIVITY 1
IT'S ALL IN A DAY'S WORK
DETERMINING PAY SCALE

ACTIVITY 2
HAVE YOU GOT THE TIME?
ELAPSED TIME PROBLEMS

ACTIVITY 3
GIVE ME SOME SPACE
MEASURING AREA

ACTIVITY 1
IT'S ALL IN A DAY'S WORK
DETERMINING PAY SCALE

OBJECTIVE

Students will solve mathematical equations involving money.

PROCEDURES

- Present the pay scale artifacts found in the hewn timber cabins. Discussions should involve comparisons to present pay scales and labor requirements.
- Complete provided activity sheets.
- Students should prepare weekly budgets based on artifact information.

MATERIALS NEEDED

- Artifact information (May be obtained from internet site.)
- Copies of activity sheets (One for each student or students may work in pairs.)
- Access to internet site or copies of site

<http://www.fmarion.edu/>

<http://www.agcom.purdue.edu>

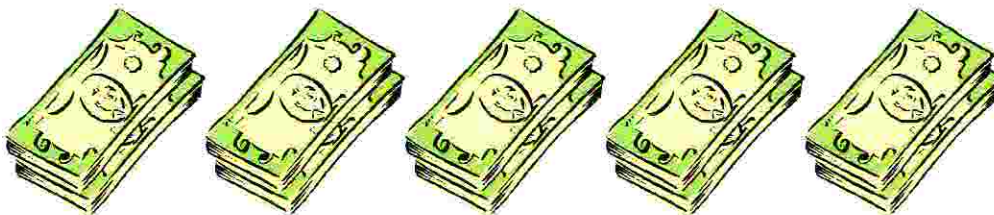
<http://www.sccotton.org/>

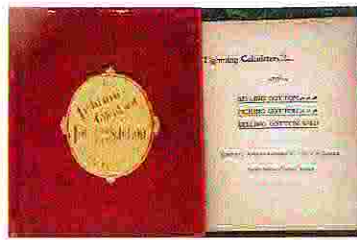
<http://ohioteach.history.ohio-state.edu/lessons/cottongin>

<http://www.cottonman.com/cottonhistory.htm>

EVALUATION

Student's prepared budgets should be graded for accuracy and completeness. (See included format.)





PAY FOR PICKING COTTON

A book called *The Lightning Calculator* was published in 1899.

This book gave the pay scale for picking cotton.

For picking:

100 pounds - \$0.25

75 pounds - \$0.19

The artifact found on the cabin wall does not include any poundage the workers might have picked. The wage is determined by days worked.

Use the information to answer the following questions:

1. What were the workers paid for a day's work?
2. Were there any accommodations made for not working a complete day? How do you know?
3. What could account for the difference in pay between two workers that have worked the same amount of days?
4. What is the credit label on the artifact for?

PAY SCALE ARTIFACT

The following artifact is posted on the wall of one of the hewn timber cabins. It shows the weekly pay scale for picking cotton. The artifact is dated 1929.

May 2 to 31, '29

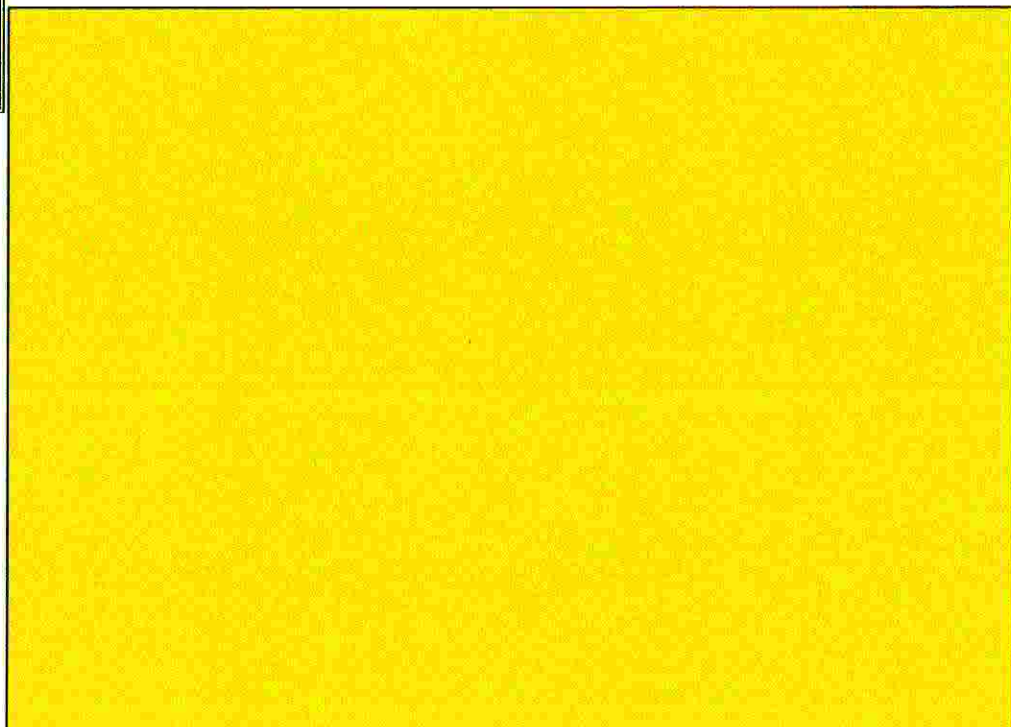
Lip	1	1	1	1	4.9	4.20	pd
Al	1/2	1	1	1/2	4.9	7.85	pd
hark	3/4	1	1	0	2.8	3.50	pd
atin	1	1	1	0		6.25	pd
Co.	1	1	1	1/4	4.9	5.40	pd
Hun	1	1	1	1/2	4.9	4.40	pd
Ed	1	1	1	1/2	4.4	5.50	pd
jk	1	1	1	1/2	4.9	5.35	pd
Path	60					60	pd
Jell	60	45				1.05	pd
Conall	60					70	pd
Dina	60					60	pd
Rly	50					30	pd
Will	60					60	pd
Clay	60					60	pd
man	30					30	pd
Dave	50					30	pd
Mae	60					60	pd
Conal	50					50	pd
rudie	50					50	pd
Pony	50					0	pd
P-Oca	50	1/2	1	1/4		1.75	pd
Wright		1/2	1	1/4		1.45	pd
Alex		1/2	1	1/4		1.15	pd
Cows						2.00	pd
JWS						2.00	pd
Credit						(5.00)	pd
						61.65	

IT'S ALL IN A DAY'S WORK

Use the information below to prepare a weekly budget for Ms. Tena.
Plan your budget around a 5-day work -week.

Ms. Tena receives \$0.60 a day for working as a field hand. She needs to purchase groceries and miscellaneous items for the week. Prepare a weekly budget.

GROCERY PRICES	MISCELLANEOUS
EGGS - \$0.20 A DOZEN	YARN (FOR SOCKS) - \$0.05 A SKEIN
CORNMEAL - \$0.05 A POUND	COTTON MATERIAL - \$0.50 A YARD (2 ½ YARDS FOR A WOMAN'S DRESS)
GRITZ - \$0.05 A POUND	THREAD - \$0.05 A SPOOL
MILK - \$0.10 A QUART	MEN'S COVER-ALLS - \$2.00 A PAIR
BAKING SODA - \$0.05 A BOX	NEWSPAPER - \$0.05 \$0.15 (ON SUNDAY)
BREAD- \$0.10 A LOAF (\$0.12 IF SLICED)	HARD CANDY - \$0.01 A PIECE
CHICKEN - \$0.24 A POUND	CHICKEN FEED (FOR RAISING YOUR OWN CHICKENS) - \$1.00 A BAG (2 BAGS WILL MAKE A DRESS FOR A SMALL GIRL)
CORN - \$.77 A BUSHEL	
SUGAR - \$0.05 A POUND	
RICE - \$0.10 A POUND	
LARD - \$0.29 FOR 5 POUNDS	
LYE- \$0.10 A PACKAGE (FOR MAKING SOAP)	



COTTON PICKERS'S TABLE

POUNDS	\$.25	\$.30	\$.35	\$.40	\$.45	POUNDS	\$.25	\$.30	\$.35	\$.40	\$.45
05	.01	.02	.02	.02	.02	205	.51	.62	.72	.82	.92
10	.03	.03	.04	.04	.05	210	.53	.63	.74	.84	.95
15	.04	.05	.06	.06	.07	215	.54	.65	.76	.86	.97
20	.05	.06	.07	.08	.10	220	.55	.66	.77	.88	1.00
25	.06	.07	.09	.10	.12	225	.56	.67	.79	.90	1.02
30	.07	.09	.10	.12	.14	230	.57	.69	.80	.92	1.04
35	.09	.11	.12	.14	.16	235	.59	.71	.82	.94	1.06
40	.10	.12	.14	.16	.18	240	.60	.72	.84	.96	1.08
45	.11	.13	.16	.18	.20	245	.61	.73	.86	.98	1.10
50	.13	.15	.18	.20	.23	250	.63	.75	.88	1.00	1.13
55	.14	.16	.20	.22	.25	255	.64	.76	.90	1.02	1.15
60	.15	.18	.21	.24	.27	260	.65	.78	.91	1.04	1.17
65	.16	.19	.23	.26	.30	265	.66	.79	.93	1.06	1.20
70	.17	.21	.25	.28	.32	270	.67	.81	.95	1.08	1.22
75	.19	.22	.26	.30	.35	275	.69	.82	.96	1.10	1.25
80	.20	.24	.28	.32	.37	280	.70	.84	.98	1.12	1.27
85	.21	.25	.30	.34	.39	285	.71	.85	1.00	1.14	1.29
90	.22	.27	.32	.36	.41	290	.72	.87	1.02	1.16	1.31
95	.24	.28	.34	.38	.43	295	.74	.88	1.04	1.18	1.33
100	.25	.30	.35	.40	.45	300	.75	.90	1.05	1.20	1.35
105	.26	.31	.37	.42	.47	305	.76	.91	1.07	1.22	1.37
110	.27	.33	.39	.44	.50	310	.77	.93	1.09	1.24	1.40
115	.29	.35	.40	.46	.52	315	.79	.95	1.10	1.26	1.42
120	.30	.36	.42	.48	.55	320	.80	.96	1.12	1.28	1.45
125	.31	.37	.44	.50	.57	325	.81	.97	1.14	1.30	1.47
130	.32	.39	.46	.52	.59	330	.82	.99	1.16	1.32	1.49
135	.34	.40	.48	.54	.61	335	.84	1.00	1.18	1.34	1.51
140	.35	.42	.50	.56	.63	340	.85	1.02	1.20	1.36	1.53
145	.36	.44	.51	.58	.65	345	.86	1.04	1.21	1.38	1.55
150	.37	.45	.53	.60	.68	350	.87	1.06	1.23	1.40	1.59
155	.39	.47	.55	.62	.70	355	.89	1.07	1.25	1.42	1.60
160	.40	.48	.56	.64	.72	360	.90	1.08	1.26	1.44	1.62
165	.41	.50	.58	.66	.74	365	.91	1.10	1.28	1.46	1.64
170	.42	.51	.60	.68	.76	370	.92	1.11	1.30	1.48	1.66
175	.44	.53	.62	.70	.80	375	.94	1.13	1.32	1.50	1.70
180	.45	.54	.63	.72	.82	380	.95	1.14	1.33	1.52	1.72
185	.46	.55	.65	.74	.84	385	.96	1.15	1.35	1.54	1.74
190	.47	.57	.67	.76	.86	390	.97	1.17	1.37	1.56	1.76
195	.49	.58	.68	.78	.88	395	.99	1.18	1.38	1.58	1.78
200	.50	.60	.70	.80	.90	400	1.00	1.20	1.40	1.60	1.80

FOLLOW-UP ACTIVITY

TECHNOLOGY AND MATH

Students should research the History of Cotton. (Web sites given) After obtaining information on the amount of cotton that could be picked in a select amount of time, students should use the table above and figure the possible wage a field hand could earn.

ACTIVITY 2

HAVE YOU GOT THE TIME?

ELAPSED TIME PROBLEMS

OBJECTIVE

Students will solve mathematical equations involving elapsed time.

PROCEDURES

- Discuss what the residents of the hewn timber cabins would experience during typical day's schedule. What would be some influential determiners to this schedule? (For instance: hours of sunlight, weather, etc.)
- Complete provided activity sheet.
- Students should prepare a daily schedule for the residents of the hewn timber cabins.

MATERIALS NEEDED

- Copies of activity sheets (One for each student)

EVALUATION

Student accuracy on worksheet determined by the following grading scale.

5 items	A	100
4 items	B	90
3 items	D	70
2 items	F	65
1 items	F	60



HAVE YOU GOT THE TIME?

ELAPSED TIME ACTIVITY SHEET

HOW MANY HOURS AND MINUTES ARE THERE BETWEEN THESE TIMES?

1. Ms. Tena gets up to go to work at 4:30 a.m. She goes to bed at 9:30 p.m. How many hours and minutes have passed?
2. Ms. Catherine begins working in her garden at 7:40 a.m. She Decides to stop at 9:50 a.m. How many hours and minutes have passed?
3. Ms. Tena sets a gourd out to dry at 11:48 a.m. She brings it in the house at 10:06 a.m. the next day. How many hours and minutes passed?
4. The field hands start picking cotton from a field at 8:00 a.m. They had the field cleared by 2:30 p.m. How many hours and minutes passed?
5. The kids played a game of hide-n-seek. They began playing at 4:20 p.m. and stopped playing for dinner at 6:15 p.m. How many hours and minutes passed?

ANSWER KEY:

1. 7 hours
2. 1 hour and 50 minutes
3. 22 hours and 4 minutes
4. 6 hours and 30 minutes
5. 1 hour and 55 minutes

ACTIVITY 3
GIVE ME SOME SPACE
MEASURING AREA

OBJECTIVE

Students will solve mathematical equations involving measurement.

PROCEDURES

- Review measurement formulas:
Area = length x width $l \times w$
Perimeter of a square = $4 \times l$
Perimeter of rectangle $p = 2l + 2w$
- Complete provided worksheet.
- Students should calculate area and perimeter of the hewn timber cabins.

MATERIALS NEEDED

- Formulas displayed or copies for each student.
- Copies of worksheet (one for each student).
- Access to hewn timber cabins
- Measuring tapes

EVALUATION

Answer key for work sheet

Grading scale – 5 item scale (see 2nd activity)

Measuring of hewn timer cabins should be accurate and recorded appropriately.



MEASUREMENT PROBLEM SOLVING

1. Mrs. Catherine's spring garden is rectangular shape and has an area of 31.25 square feet. If the length of one of the sides is 2.5 feet, what is the length of the other side?
2. One of the field hands had the job of checking the cotton field by walking around the perimeter . The rectangular field is 45.6 feet wide and 103.9 feet long. If the field hand walks the perimeter 7 times, how far has he walked?
3. Two square crates are the same size and have a length that is a whole number of feet. The crates are put next to each other to be used as a table. They form a rectangle whose perimeter is 18 feet. What is the length of each side of the crates?
4. Mrs. Tena's garden is a square with sides that are 15 meters long. A row of beans divides the garden into two rectangular portions. One portion had the width of 3 meters. What is the area of that portion?



MEASUREMENT

TAKE THE FOLLOWING MEASUREMENTS. USE FEET AND INCHES TO RECORD YOUR FINDINGS.

1. HEIGHT OF CABIN WALL –

2. WIDTH OF FRONT WALL –

3. WIDTH OF LEFT WALL –

4. WIDTH OF RIGHT WALL-

5. WIDTH OF BACK WALL-

6. PERIMETER OF CABIN-

7. AREA OF CABIN

ANSWER KEY:

- 1. 12.5 FEET**
- 2. 2,093 FEET**
- 3. 3 FEET**
- 4. 4.5 M²**

Ms. Catherine's House : 20ft wide and 17ft long, 14 ft height

Ms. Tena's House: 20ft wide and 18ft long, 14ft height