FARM ACCOUNTS

SMITH & THOMAS

LAUREL BOOK CO.

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Book 56

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FARM ACCOUNTS

BY

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A WORD AS TO THE USE AND PURPOSE.

No successful merchant attempts to conduct his business without some system of bookkeeping. It is one of the first essentials of his work, by means of which he is able to find out what part of his business is paying and what part is losing.

Every prosperous manufacturer determines, with the greatest possible care, the cost of producing the things which he manufactures.

It is just as essential that the farmer keep accounts, by means of which, he can tell the things that are profitable to raise and those enterprises he is conducting at a loss.

FARM ACCOUNTS should show two things:

- (1) What the farmer is producing or dealing in.
- (2) On what the farmer is gaining or losing in his business.

To keep a complete account of the various enterprises of the farm requires some time and considerable training. But the training consists more in **getting the habit** than in learning the method.

The purpose of this book, FARM ACCOUNTS, is to present the simplest methods of keeping accounts, and to provide school work of so practical and interesting a character, that the boys and girls in our rural schools will be able to learn those methods and also will acquire the **habit** of using them.

If accounts are to be kept on the farm, our schools must teach FARM ACCOUNTS to the children of to-day—the farmers of tomorrow.

If conservation is to be observed where it means most to all of the people, the farmer must be provided a way to learn how to conserve that vital requisite to human life and comfort—the farm.

A knowledge of FARM ACCOUNTS constitutes the beginning of an education for economy by showing what pays and how wisely to save.

This book may be very profitably used in rural schools, state graded schools and by high school review classes in arithmetic. In the schools where the course of study seems to be already overcrowded, the following suggestions may be helpful:

FARM ACCOUNTS is not intended as an extra study, but rather as a substitute for the much less important topics usually found in the ordinary textbooks on arithmetic. Among the topics that may be profitably omitted, and FARM ACCOUNTS taught, are Exchange, True Discount, Bank Discount, Longitude and Time, the second case in Commission, Compound Interest, Stocks and Bonds, Partial Payments with more than two payments, Cube Root, and all of the most difficult and non-practical miscellaneous problems.

The wise educator will no doubt think of many other things being taught that are of far less value than FARM ACCOUNTS.

TO THE TEACHER.

We cannot too earnestly urge upon the teacher, who uses this book, the necessity of careful preparation for every recitation. Plan the work so that every assignment of the next lesson is fully understood by teacher and pupils, and also, so that it is a step from the known to the next new topic to be learned.

Make the work real by getting real business paper such as bills, accounts, notes, etc., that have been made out in real business.

Do everything possible to inspire in the pupils, pride in doing correct, neat and praiseworthy work.

GENERAL DIRECTIONS.

Both the teacher and the pupils should thoroughly understand and fully appreciate :

1. That the standard for marking answers in multiplication, addition, subtraction, and division should be either 100% or zero. Accounts in business when footed up, are either right, or they are wrong.

2. All definitions and explanations given in this book are for the purpose of directing the pupil to **do** certain things. Pupils will learn definitions of terms by using the terms.

3. You are to begin actual work at once. That is, instead of drilling pupils to repeat the definition of a bill, get them to copy a form of a bill, and afterwards to make up other bills with items coming within their own

experience by using the names of places and merchants familiar to them. It is practice in doing real business work that results in the mastery of the work.

4. Practice makes perfect only when it is perfect practice. Insist upon careful, painstaking work in every paper you accept as "good enough." Papers that are lacking in accuracy or neatness, or show evident carelessness in preparation should be corrected, again and again, if necessary.

5. Every pupil is interested in what he is learning to do well. Here are the three stages in learning a thing which requires practice:

First, Novelty, when all are enthusiastic.

Second, Drudgery, when weak natures get tired and quit.

Third, Skill, when enthusiasm returns and success results.

THE EIGHT DIRECTIONS, IN THEIR ORDER OF IMPORTANCE.

1. Add, subtract, multiply and divide correctly.
2. Spell every word correctly.
3. Capitalize correctly.
4. Punctuate correctly.
5. Rule with ruler, using comparatively the same spaces between the ruled lines, and between the words, as in this book.
6. Be neat, write on the line, do not erase but take another paper and try again to do your best. Write with ink.
7. Rewrite the example until you have made a perfectly correct copy.
8. Make up other examples or bills, using different items, persons and places.

FARM ACCOUNTS

ORDERS, BILLS AND RECEIPTS.

Copy the following bill. It is an itemized store bill received by W. H. Moreland, a farmer, from J. W. Dalton, a merchant, who deals in shoes. Begin by following Direction 5, found on page 8. If you prefer, use lead pencil to rule paper with, but write with ink.

Note—It is always best to use good paper about eight inches by ten inches—the kind that has ruled lines.

Example 1.

Portage, Wis., *April 2, 1914.*

W. H. Moreland,

In account with,

J. W. DALTON,

Dealer in Up-To-Date Shoes in All Styles.

Jan.	3	3 pr. Men's Shoes @	\$3.00	\$	9 00
"	"	2 " Boys' "	@ \$2.75		5 50
"	"	5 Shoe Laces @ 5c			25
Feb.	1	1 pr. Women's Rubbers			75
"	"	2 pr. Children's Shoes @ \$1.00			2 00
Am't due				\$	17 50

Example No. 1 is an itemized bill because it gives each item bought, with the price and total cost of each, and the date on which every item was purchased. Notice that the names of the things, mentioned in the bill as the objects bought, are capitalized. Follow all of the *Eight Directions* in your work with Example No. 1.

Questions, Example No. 1.

1. Where are the double lines placed?
2. Where are the single lines placed?
3. Which parts in the heading of the bill will remain in Mr. Dalton's bills and which parts or words will change in making out his different bills?
4. Where are the apostrophies placed in forming the possessives and why? (Find out from your grammar if you do not know.)
5. Which is the dollars column and which is the cents column?
6. Which of the two columns is wider, dollars or cents? Why?
7. Why is there not a column for mills?
8. What abbreviations are used? Which have periods after them?
9. Did Mr. Moreland pay the bill? Why do you think so?
10. Count the capital letters in your copy and those in the book; are they the same in each?
11. Name the branches, which you have studied in school, that you are learning to apply in studying FARM ACCOUNTS.

Example 2.

Portage, Wis., *Apr. 3, 1914.**W. H. Moreland,*

In account with,

J. W. DALTON,

Dealer in Up-to-Date Shoes in All Styles

Apr.	2	To Mdse	\$	17 50
		Rec'd payment, <i>J. W. Dalton</i>		

Example No. 2 is a Statement, that is, a bill which is not itemized. We may suppose that Mr. Dalton sent the statement to Mr. Moreland because the latter did not pay the bill before this date.

Copy Example No. 2 and follow the *Eight Directions*.

Questions, Example No. 2.

1. Who made out the statement?
2. Who paid the \$17.50 and to whom was it paid?
3. Why is the word "who" used in one place and "whom" in the other in question 2?
4. Why did not Mr. Dalton send an itemized bill the second time?
5. Who kept this statement after it was paid? Why?
6. Is your copy of Example No. 2 better writing than of No. 1?

The reason Mr. Moreland kept the statement after he had paid it is, that Example No. 2 is a receipt, or a receipted statement, or a receipted bill. With it Mr. Moreland can prove that he has paid Mr. Dalton for the shoes and other things he bought.

Example 3.

\$17.50

Portage, Wis., *May 3, 1914.*

Received of *W. H. Moreland,*

Seventeen and _____ $\frac{50}{100}$ Dollars,
in full of all account.

J. W. Dalton.

Example No. 3 is a form of a receipt. It is not a bill nor a statement, but a simple receipt showing that Mr. Moreland has paid the sum of \$17.50 to Mr. Dalton, on May 3, 1914.

Copy Example No. 3 and follow all of the *Eight Directions*.

ONE WAY TO MAKE PRACTICE INTERESTING.

Have the class in Farm Accounts number. Then suppose No. 1 owes \$2.00 for instance, to No. 2; No. 2 owes the same to No. 3, No. 3 to No. 4, and so on around the class, the last one owing the \$2.00 to No. 1.

Then suppose every one pays his debt and gets a receipt for the same. In this way every pupil is doing actual business with some one in the class. If a receipt is not correct in every respect, the pupil to whom it is given should hand it back for correction.

These numbers should be kept, for they will be needed in future work in the class for practice in making out orders, bills, etc. When each member of a class gets the habit of inspecting every piece of written work carefully, to see whether it is correct, success is sure.

Questions, Example No. 3.

1. Who keeps a receipt, the one who pays, or the one who receives?
2. Who signs a receipt, the payer or the receiver of the money?
3. Have you ever seen a store bill?
4. Should farmers keep receipts when they pay bills? Why?
5. What are the essential things, or words, in a receipt? You can buy a small receipt book for five or ten cents.

Example 4.

Fergus Falls, Minn., Jan. 20, 1914.

Wm. Toole & Son,
Baraboo, Wis.

Gentlemen: Please send me the following goods by mail. I enclose P. O. Order for forty cents in payment of the same.

No. 12 Bronze Pansy Seed, 1 pkt.	15c
No. 16 Cardinal Pansy Seed, 1 pkt.	10c
No. 31 Rose Lilac Pansy Seed, 1 pkt.	5c
No. 314 Double Hollyhock Seed, 1 pkt.	10c

Total	<hr/> 40c
-------	-----------

Address

William D. Carlson,

Example No. 4 is an order for goods. Wm. Toole & Son, are seedsmen and make a specialty of pansy seeds. The numbers used at the left, in the order, are taken from their catalogue. "Pkt." stands for packet.

Copy the above order and follow the *Eight Directions*.

Example 5.

Baraboo, Wis., *Jan. 23, 1914.*

William D. Carlson,
Fergus Falls, Minn.

In account with,

WILLIAM TOOLE & SON
Pansy Specialists, Plants and Seeds.

Jan.	23	To 1 pkt. Bronze Pansy Seed,	15c
"	"	" " " Cardinal, " "	10
"	"	" " " Rose Lilac, " "	05
"	"	" " " Double Hollyhock Seed,	10
Total			40c
Rec'd Payment,			

Wm. Toole & Son,
per J. T.

Questions, Examples Nos. 4 and 5.

1. Why is not order No. 4 ruled like a bill?

Ans. It may be, but more often the farmer writes his orders for goods on common letter paper.

2. What do the letters "P. O." mean?

3. What is a postoffice order and where is it obtained?

4. What would be the cost of a P. O. order for forty cents?

5. Would the above order come by regular mail, or by parcel post? (It is well to get a book of your postmaster and learn about this.)

6. Who wrote order No. 4 and who wrote the bill?

7. Why does the date in the order differ from that of the bill?

8. What is the meaning of the letters "J. T." in the bill?

Ans. These are the initials of the person who filled out and signed the bill. In this bill they mean "John Toole," who is one of the firm.

9. What are the small dots in the order called?

Ans. They are called "leaders" and are used for convenience. Of what use are they?

10. What are the little marks that look like double apostrophies called? Ans. They are called "ditto" marks and mean "the same." After this when you use either of these marks call them leaders or ditto marks.

Copy the order and the bill for it and follow the *Eight Directions*.

Take the same numbers you had in writing the receipts. No. 1, may order of No. 2; No. 2, of No. 3, and so on as in the previous use of the numbers. These orders may be for different kinds of goods, and should be for about six to ten items each. Each pupil who receives a perfectly correct order is then to make out a correct bill for the same, to be given to the one ordering the goods. If you can get envelopes, it is a good practice to have each order and bill correctly folded and placed in correctly directed envelopes.

Example 6.

Dubuque, Iowa, *June 26, 1914.**J. H. Houghton, Dr.*TO T. M. GRAVES,
Dealer in Dry Goods, Groceries, &c.

			Dr.	Cr.
June	6	2 pairs Horse Blankets, @ \$3.50	\$ 7 00	
"	13	Overcoat.....	22 50	
"	16	25 yards Cotton Cloth, @ \$.12	3 00	
Total.....			\$ 32 50	

In Example 6, notice the heading. In place of the words, "In account with," the term **debtor**, or Dr., is used. It means that Mr. Houghton is in debt to, or Dr., to Mr. Graves for the goods named in the bill.

Another correct way and more often used by business firms, is to place the term Dr. after the merchant's name as in the next example.

Example 7.

Dubuque, Iowa, *June 6, 1914.**J. H. Houghton*

TO T. M. GRAVES, Dr.

Example No. 7, means exactly the same as example No. 6, differing only in form. Example No. 6 says: "J. H. Houghton is debtor to T. M. Graves. Example No. 7, says: "J. H. Houghton to T. M. Graves, is debtor."

Examples 1, 6, and 7, are different forms of bill heads.

If possible, pupils should be sufficiently encouraged to get actual bills from some farmer, or other business man, and notice the different headings. Always work as close to the **REAL THING** as your facilities and your pupils' abilities will permit.

Questions on Previous Work

1. Who writes a receipt, the one who pays money or the one who receives it?

Ans. Either one may write the receipt, but usually the one who gets the money writes it.

2. Who signs the receipt?

3. Who keeps the receipt, and why?

4. What is a receipted bill?

5. How does a statement differ from an itemized bill?

6. Do clerks in stores have to make out receipts?

7. Have you ever known any one to be compelled to pay the same bill twice?

8. What is a school order? What is an order book?

9. What is meant by a **stub** of an order book or check book?

10. How are teachers, town officers and county officers paid? Do they sign a receipt when paid? Who pays them?

Example 8.

Carlton, Minn., *July 7, 1914.**Geo. M. Ray,*TO FORD & NEUMANN, Dr.
Hardware, Plumbing, &c.

June	23	To 1 White Mt. Freezer, 4 qt.	\$2 00		
"	26	" 15 Milk Pans, @ 20c	3 00		
July	7	" 2 Hammers, \$1.50 and \$1.00	2 50		
"	"	Cr. by Cash.....		\$ 7 50	
				\$ 5 00	
		Amt due,.....		\$ 2 50	

In Example No. 8, notice the double columns, and note too, just where the double lines are placed. The bill is not receipted for it is not all paid. Mr. Ray paid \$5.00 on this bill and he is given credit for this where the bill says: "Cr. by Cash." Business men say Cr. by, and Dr. to.

Let each pupil have the number given in Example No. 5, then suppose all of the even numbered pupils are grocers, and all of the odd numbered are farmers. Have each farmer order a bill of goods of the grocer whose number follows his. In this way each odd numbered farmer will order of each next numbered grocer. If the last number is odd then No. 2 will get two orders. In this way each grocer receives an order, and his work is to make out a bill for the order and send it to the farmer.

If more work is required, let each even number order of each odd number, and also each odd number order of each even number, next following his. In this way, each pupil receives an order and each must make out a bill. To vary this so that every pupil will finally get an order from every other pupil, let No. 1, order of No. 4, and No. 3, of No. 6, and so on.

It is well to limit the number of items to from six to ten and the amount of orders from \$20.00 to \$100.00 for each order.

Suppose the bill, Example No. 8, is not paid by July 31, 1914; make out a statement to be sent to Geo. M. Ray. Then suppose Mr. Ray pays the bill on Aug. 3, 1914, make out a receipt for him supposing you are Messrs. Ford & Neumann's clerk.

Example 9.

Suppose No. 1 is John Flynn, and No. 2 is Julia Carroll. This might be the order. John Flynn orders of his grocer, Julia Carroll, as follows:

Faribault, Minn., Aug. 5, 1914.

Miss Julia Carroll,

Northfield, Minn.

Dear Madam: Please send me, at once:

One sack Gold Medal Flour, 50lb.	\$1.55
3 doz. Fruit Jars, quart, @ \$1.25	3.75

Yours truly,

John Flynn

Faribault, Minn.

Example 10.

No. 2 pupil orders of No. 1.

Northfield, Minn., Aug. 5, 1914.

Mr. John Flynn,

Faribault, Minn.

Dear Sir: Please bring me, when you come to town next time:

50 bu.	Early Rose Potatoes,
2 bu.	Wild Plums,
2 doz.	Hubbard Squashes.

I will give you market price for the above.

Yours truly,

Julia Carroll

The above order you see is not paid and will not be until the farmer goes to town. No. 1 may suppose the goods have been delivered and he should then make a bill of the same, supplying the prices and the total cost. This bill might be like the following:

Example 11.

Faribault, Minn., *Aug. 7, 1914.*

Miss Julia Carroll,

TO JOHN FLYNN, Dr.

Aug. 7,	To 50 bu. Early Rose Potatoes @ 50c	\$25	00		
" "	" 2 " Wild Plums, @ 75c	1	50	\$26	50
	Cr.				
" 5	By 1 Sack Flour,	1	55		
" "	" 3 doz. Fruit Jars, qt., @ \$1.25	3	75	\$ 5	30
	Balance due			21	20
	Rec'd Payment,				
	<i>John Flynn</i>				

According to the bill in Example No. 11, the farmer, John Flynn, had a balance due him from Julia Carroll, of \$21.20, which she pays and Mr. Flynn receipts the bill.

Questions, Examples Nos. 9, 10 and 11.

1. Explain the use of the words "To" and "By" in Example No. 11.

2. Why did Mr. Flynn leave out the squashes which Miss Carroll ordered? Ans. We will suppose he could not supply them, as is often the case. He therefore made no charge for them.

3. What do the following words mean—Messrs., Madam, Early Rose?

4. Have you followed the *Eight Directions* in your work?

5. Do you find that your writing is improving?

If possible, get some store bills and compare them with these in this book or with the ones you have made.

Mr. Flynn might have sent Miss Carroll a brief statement of their accounts but it is best to send an itemized bill first and then if it is not settled, a statement may be sent at the end of each month until paid.

Do not go on to the next topic before you have mastered the topic, **Orders, Bills and Receipts**. It would be far better for you to spend all of the time you have in getting this topic well learned, than to go on and not master anything.

Do well what you do do;

That's the line to hew to.

NOTE.—You will notice that many more commas are used in the examples in this book than in the usual business. You must learn to know the difference between the important things and the unimportant ones. Many little points in punctuation and capital letters are not followed by the busy business man since they are in no sense so important as the correct additions etc., or the statements of facts in accounts and the correct dates. Learn to know the important and the unimportant things in business forms, and then follow the right forms in both small and large points, and in unimportant and important things.

EXPENSE ACCOUNTS.

Every one must use money in the transaction of business. There are only **two** transactions performed with money.

People receive money, and

People pay out money.

An **Expense Account** is a correct record of what has been **received** and what has been **paid out**. You may receive and pay out other things besides money, as shown in Example No. 11, but everything received and everything paid out must be recorded in its money value before we can add them, or find the difference between them.

Example 12.

CASH EXPENSE ACCOUNT.

The following is a **Personal Expense Account** kept by a boy who was attending a business college.

		(Rec'd) (Paid Out)	
		Dr.	Cr.
1913			
Jan.	1	Received from Home,	\$ 45 75
"	"	Paid for Overcoat,	\$ 12 50
"	"	" " Suitcase	5 00
"	"	" " Shoes	3 50
"	"	" " Stationery,	65
"	"	" " Candy and Popcorn	20
"	"	" " Picture Show,	05
"	4	Rec'd for 22 Muskrat Skins,	8 80
"	"	Paid for Books,	3 72
"	"	" One Week's Board,	4 00
"	6	Monday, Balance on hand,	24 93
		54 55	54 55
"	"	Balance brought down,	\$ 24 93

Study carefully Example No. 12. Notice that the ruling is the same as in the double column bill.

The sums **received** are all placed in the **left hand** column, called the **Dr. column**.

The sums **paid out** are all placed in the **right hand** column, called the **Cr. column**.

Fix the above facts in your mind so they will stay there. Say this over to yourself: "Dr. left, and Cr. right," "Dr. left, and Cr. right," until you cannot forget it.

Add the Cr. column. Add the Dr. column. Each one comes to \$54.55. Now add the Cr. column all except the \$24.93. This you find is \$29.62.

This \$29.62 is what the boy had **paid out**. Now since he received \$54.55 and paid out \$29.62, he had on hand the difference between these two sums or \$24.93. Stick to this until you master the idea.

When we add the Dr. column and then add the Cr. column, and then find the difference between the two sums, we know what is received, what is paid out, and also what is left on hand.

You must see clearly that what is left on hand, added to what is paid out, must be equal to what is received. Here is another way to say the same thing: Add the difference between two numbers to the smaller number and it gives the same as the larger number.

The above process is called **balancing the account**.

To Balance an Account,

1. Find the sum of the Dr. column.
2. Find the sum of the Cr. column.
3. Find the difference between the above two sums.
4. Go over the process again to be absolutely sure you are right.
5. Now enter this difference underneath the last number of the column which is the smaller in amount; enter it in red ink or pencil.
6. Draw a single line under this last entry, from left to right, using a ruler always and making a straight line through both columns. Add, placing the amounts under columns, tens under tens, &c. Beginners may rule with pencil at first until they get some skill in the work.
7. If the two amounts are the same, the work is said "to balance" and is called correct.
8. Draw a double line under the two sums and enter balance in the proper column below.

In the 5th direction above, the column which is least in amount is the credit column in such accounts as Example No. 12, but not in some other kinds that follow in this book. It is not necessary to use red ink to enter the balance on hand. A colored pencil is safer and may be more conveniently used.

Copy Example No. 12, and follow the *Eight Directions*.

Example 13.

Cash Expense Account.

1913.

Nov. 21	To Cash on hand,	\$143 57	
" "	By 5 Pigs, six months old, @\$8.50		\$42 50
" 24	To 3 Tons Alfalfa, " \$9.75	29 25	
" 28	" 4 bu. Clover Seed, " \$6.00	24 00	
" 29	By Jas. Wood, wages for Nov.		32 00

Remembering that "By" means a Cr. item and "To" means a Dr. item, complete Example No. 13, by supplying the ruling and balance the account according to the directions given in previous example.

Example 14.

Cash Account.

1913.

Oct. 1	To Cash on hand	\$197 27	
" "	" Interest rec'd on L. J.'s Note,	10 60	
" 6	By 3 Tickets to Lecture Course,		
	@ \$2.00		\$ 6 00
" "	" 2 Neckties, @ 50c		1 00
" 8	By <i>Balance on hand</i>		
" 9	To Balance brought down		
" 10	" 15 doz. Eggs, @ 30c	4 50	
" 15	By 4 Halters, @ \$1.75		7 00
" 16	By <i>Balance on hand</i>		

Complete the above Example, No. 14, and balance as directed before.

Questions on Previous Work.

1. Are you improving in writing?
2. Where are double lines used and where single lines, in ruling?
3. What is the difference between a single line and a single column?
4. Give the *Eight Directions* preceding Example No. 1.
5. Give the directions for balancing an account.
6. Suppose you are the boy or girl away from home visiting for a week, make out your expense account; as, traveling, hotel, street car, &c.
7. Give the present market prices for the following farm products: Hay, potatoes, oats, wheat, eggs, butter, chickens dressed, beef dressed, beef on foot, working horse, dairy cow, farm land, sugar beets.

Examples 13 and 14 are of the simplest kinds of expense accounts.

Any housekeeper, doctor, boy or girl, hired man, farmer, or other person, can follow the form given in Example 13 or 14, and know at the end of every week just how much has been received, how much has been paid out and how much is on hand.

If the amount on hand in cash does not exactly equal the amount on hand in the Expense Account there is some mistake. Something has been omitted or there is some incorrect entry or a mistake has been made in figuring.

Insist upon absolute accuracy.

ACCOUNTS WITH MATERIALS.

Suppose you wish to keep an account with a herd of cows, or with one cow. You want to know exactly what the cow is receiving in cash value and what she is paying to you in cash value; then you can tell what your net profit is.

Or, suppose you plant a field of corn. You wish to know just what that field receives in work, seed and fertilizer. You also must know just what that field of corn pays back to you and then you can find out just what the cash balance in profit or loss that field has been to you.

Study the next example.

Example 15.

OLD PET. (Year's Acc't.)	Cow Rec'd Dr.	Cow Paid out Cr.
Hay, one-half ton @ \$12.00	\$ 6 00	
Ensilage, 3 tons @ \$3.00	9 00	
Grain, meal and bran.	17 60	
Pasture estimated	4 50	
Soil crops (Green fodder)	1 20	
Cost Hired help, per cow	10 00	
Sold 280.4 lb. Butter fat @ 28c		78 51
“ 4360 lb. Skim milk @ 20c cwt.		8 72
	\$ 38 93	
<i>Balance, Net Profit</i>	<u>\$ 87 23</u>	<u>\$ 87 23</u>

In Example 15, Old Pet is the name of the cow. Keep in mind that the account is with Old Pet. She it is that received certain values in feed and attendance and she is made Dr. to what she received. She **paid out** in butter fat and skim milk and she is made Cr. for what she paid out.

The cow paid out\$87.23

The cow received 48.30

The cow made for her owner a profit of.\$38.93

The difference between what the cow received, and what she paid out, is \$38.93, or the net profit to her owner. Make up another account like this of a Flock of Chickens; a shotgun.

Suppose your account is with a shotgun. All that goes to buy ammunition, repairs and hunting license, and the time spent hunting is Dr. and the game paid back to you by the gun is Cr.

Example 16.

Wm. Thomson gave his boy, Andrew, one acre of ground for potatoes on condition that he keep a strict expense account. The following is his account:

1912-13. ONE ACRE POTATO FIELD			Dr.	Cr.
Sept.	9	To $\frac{1}{2}$ day plowing	\$ 1 50	
May	20	" $\frac{1}{2}$ " cultivating	1 25	
"	27	" Work planting seed	1 50	
"	29	" Fixing fence	1 75	
June	24	" Work cultivating	50	
"	26	" Work hoeing	2 00	
July	15	" Paris Green	1 60	
"	29	" Work hoeing	1 60	
Aug.	19	" Work digging 20 bu.	75	
Sept.	1	By Sold 20 bu. @ 58c		\$ 11 60
"	30	To Work digging and hauling	7 90	
Oct.	7	By Sold 153 bu. @ 38c		58 14
<i>To Balance, Net Profit</i>			49 39	
			<u>\$ 69 74</u>	<u>\$ 69 74</u>

In Examples 15 and 16, notice that the word "To" is used before the Dr. item and "By" before the Cr. item and the words "Paid for," and "Rec'd" are not used. They are not really necessary yet often used, as in Examples 13 and 14. Make up other examples of Cornfield, Trapping Outfit, Newspaper Route, Travel Expense Account, Fourth of July Stand, Corn Contest.

Use the words "To" and "By"

Example 17.

Mary Williams kept this account with a flock of chickens. She was a school girl in the seventh grade. Balance the account she kept.

POULTRY ACCOUNT.

1913		Poultry Rec'd. Dr.	Poultry P'd. Out Cr.
Mar.	8	By Balance of cash on hand	\$ 16 50
"	20	To 20 Chickens (bot) @ 36c	\$ 7 20
"	"	" 2 doz. Eggs @ \$1.50	3 00
"	"	" 1 bu. Chicken Feed	40
"	"	" Wire Screens	1 50
"	28	By 3 doz. Eggs sold @ 75c	2 25
"	"	" 1 Hen for house	30
April	2	To Work, estimated	2 00
"	6	" Lime and Gravel	50
"	12	By 1 Setting of Eggs	2 00
"	23	" 3 doz. Eggs @ \$1.00	3 00
"	30	" 1 doz. Eggs @ \$1.00	1 00
May	1	Balance on hand	
"	"	By balance of Cash on hand ..	

Example 18.

The following is taken from a household expense account kept by a woman whose husband allowed her sixty dollars a month for expenses.

HOUSEHOLD EXPENSE ACCOUNT.

Cash.

1913

Dec.	1	To Bal. on hand last month -----	72 46	
"	1	By bill of T. Gillson Groceries -----		18 48
"	"	" " " W. Brayton, Meat -----		6 30
"	9	" " " R. Yale, Electricity -----		1 32
"	"	" " " Gas Co. Gas -----		3 90
"	"	" " " R. F. Shultz, Milk -----		2 42
"	"	" Church -----		40
"	"	" Cloth for Apron -----		30
"	"	" Pattern -----		10
"	"	" Postage Stamps -----		1 25
"	"	" Post Cards -----		25
"	12	" Silk for Waist -----		2 00
"	"	" Yarn -----		25
"	"	" Money Order to "Youth's Companion" -----		1 75
"	"	" Fee for Money Order -----		05
"	"	" Christmas Stamps -----		10
"	"	" Envelopes, 1 doz. -----		05
"	23	" Bowl and Pitcher -----		1 25
"	24	" Laundry Collars -----		18
"	"	" Rolls for Church -----		50
"	"	" R. R. Fare to Branch Camp -----		28
"	30	To Month's Allowance -----	60 00	

Balance the above account and make up others of this kind taken from your own home.

Questions.

1. Is it possible for a housekeeper to keep a regular daily account of expenses? Do you know of one who keeps such an account?

2. Give some reasons why a household expense account should be kept.

3. What is an income tax?

Ans. An income tax is a tax on the net income a citizen receives in his business or profession as a farmer, manufacturer, merchant, employe, lawyer or doctor.

4. Is it necessary to keep an expense account in order to know how to make out an income tax report?

5. Can farmers keep an expense account? Do you know one who keeps an expense account?

6. If you have an income tax assessor get some report blanks from him and learn something about the subject.

7. Have you improved your penmanship since you began this study?

LUMBER MEASUREMENTS.

Questions.

1. How many laths in a bunch?
 2. How many shingles in a bunch?
 3. How many bunches in a thousand?
 4. What is meant by board measure?
 5. What is the general rule for measuring lumber, timbers, &c, sold by the thousand feet of board measure?
- To get the cost of lumber sold by the thousand square feet of board measure—*Multiply together the number of pieces, feet long, inches wide, inches thick and price per thousand; then divide the product by 12, and point off three places.*

Note—If you do not know the answers to these questions ask someone to tell you.

Example 19.

Find the cost of 25 joists, 16 in. wide, 3 in. thick, 24 ft. long, at \$18 per M.

Operation.

$$\frac{25 \times 3 \times 16 \times 24 \times 18}{12} = 43^{200}$$

Pointing off three places and supplying the name, we have \$43.20.

The above example in a bill of lumber, would usually be written as follows:

25 pcs., 3x16's, 24 ft. @ \$18.00 per M.

Measurement Problems.

1. Find the cost of the following bill of lumber, using the rule on the preceding page.

6 pcs. 2 x 4's, 14 ft., @ \$20.00 per M.

21 pcs. boards, 8 in. 16 ft., @ \$24.00 per M.

4 pcs. 4 x 8's, 24 ft., @ \$18.00 per M.

Make out the bill in proper form in ruling, names and date.

2. Find the cost of 20 bunches of shingles at \$5.00 per M. First find out how many shingles in a bunch by asking someone who knows.

3. A walk is 12 rods long, five feet wide. It is made of 2 inch plank laid close together with three layers of 2 x 4's on which the walk is nailed. What is the cost of material at \$14.00 per M?

4. What would it cost to seal overhead your school room if the lumber is \$40.00 per M?

5. What is the cost of lumber that will make a box 6 feet long, 5 feet wide and 4 feet high, at \$48.00 per M? It is not necessary to allow for the corners.

6. Estimate the cost of lumber for a hog pen, choosing a size large enough for about five hogs. The sides should be made of inch lumber, the floor of 2 inch plank, with 2 x 4's and 4 x 4's for the frame. Make a drawing of the plan if you can, also a bill of the lumber.

7. Inquire how to estimate the number of shingles to cover a roof, then find the cost of shingles laid six inches to the weather to cover a roof each side of which is ten feet long and six feet wide, at \$5.00 per M.

8. Suppose you wish to build a Fourth of July stand. Make a drawing of it, then make a bill of the lumber it would require.

9. To find the number of cords of wood in a pile only two dimensions are needed, the length and the height. Of course the longer the sticks are, the more it costs per cord. The rule is: Multiply together the length and height in feet and divide by 32. The answer is the number of cords.

What is the cost of a pile of wood 64 feet long and 8 feet high @ \$6.00 per cord?

10. How many cords of wood in a pile of six rows, each 48 feet long and 9 feet high?

11. How much will it cost to paper your school room with paper at 25c per roll if each roll covers 36 sq. feet?

12. How much lumber, board measure, is there in your school woodshed?

BUSINESS LETTERS.

Much practice of the careful painstaking kind should be given to letter writing.

Write with ink on letter paper which is about 8 inches by 10 inches in size. Get paper that is ruled. Do not waste time on poor paper that is too small and is sure to get pupils into bad habits.

Example 20.

Duluth, Minn., Nov. 3, 1913.

Carroll & King, Portage, Wis.,

Gentlemen: Please quote me prices on boys' sweaters. Do you send goods by mail?

Yours truly,

T. W. Higgins

Carefully copy Example 19, and follow the *Eight Directions*.

Notice the spacing between words. In your original examples, be careful to write the name of place and date on the same line and never skip a whole line. Business letters should be as brief as possible.

Example 21.

516 Kedzie Avenue

Chicago, Ill., Dec. 16, 1913.

Supt. Chas. V. Brown,

Cambria, Wis.,

My Dear Mr. Brown: I am informed that you are considering a proposition from the Laurel Book Co., to take a position in their office in Chicago. If you accept the position, I should be glad to have you make your home with us until you are permanently settled.

Yours truly,

Geo. W. Bronson

1. Write to your nearest book seller asking for prices of books which you use in school.
2. Write to a friend describing your schoolhouse.
3. Write to a friend inviting him or her to visit you.
4. Write to a merchant asking prices of things you would like to buy.

Note: It is useless to copy or write letters for practice unless you make perfect each letter written, by rewriting several times, before you write a different one. If you get the habit of careful, painstaking work, it will be of very great value to you in all things you do.

CHECKS, NOTES, DUE BILLS, &c.

Example 22.

(Stub.)		(Check.)	
No.-----	\$-----	No.-----	
-----	191-----		
To-----			
For-----			191-----
Bal. in Bank \$-----			
Amt Deposited-----		Pay to-----	or order, \$-----
Total-----			Dollars.-----
Amt. this check-----			
Bal. in Bank-----			

The above is a form of **bank check**. If you had \$50.00 in the bank and deposited \$20.00 more and you wish to pay some one, William Thompson, for instance, \$6.00, you could write out a check for \$6.00 and give it to Mr. Thompson. He would take this check to the bank and get \$6.00 for it.

The part of the check on the left of the dotted line is called the stub. This stub is left in the check book as a record of the checks paid out.

Example 23.

Stub		Check	
No. 2	\$6.00	The First National Bank Duluth, Minn.	No. 2
April 24, 1914			
To William Thompson			
For Rent, for April			
Bal. in Bank	\$50.00		
Amt D'posit'd	20.00	Pay to ----- William Thompson ----- or order, \$6.00	Duluth Minn., April 24, 1914
Total	70.00		
Amt this check	6.00		
Bal. in Bank	64.00		
		Six, and -----	no 100 Dollars.
		Charles Graves	

The above form is made out for William Thompson by Charles Graves.

A DUE BILL is the simplest form of written evidence of debt.

Example 24.

Des Moines, Iowa,

Dec. 2, 1915.

Due *Charles Bradley* or order, *Six and* $\frac{45}{100}$ dollars

\$6.45

Samuel Clemens.

Example 24 is the form of a due bill. It shows that Samuel Clemens owes Charles Bradley six dollars and forty-five cents.

A due bill may be given by one who borrows money for a short time, to the one who lends it. Or a due bill may be given to a merchant by one who gets goods on credit. Due bills do not draw interest, and are not often used.

Make out other checks after ruling the blanks like Example No. 22, then fill in, like Example 23.

In all schools where this book is used we especially urge the teachers to get real bank checks of some bank and have pupils use them. Of course the forms will differ somewhat from the forms in this book, but the purpose is essentially the same. Use real commercial forms as far as possible.

Promissory Notes.

This topic is probably the least important of any in this book yet it is often used by farmers. However it is well to practice upon writing notes and to have them written when pupils are studying interest. Only one form of note is given here. Other forms may be found in text-books. Have pupils hunt up other forms in other books or bring real notes to school if they can. Make it real.

Copy this note. It is one that might have been given by one whose bill is given on another page.

\$22.47

Portage, Wis., *Feb. 1, 1912.*

Sixty Days after date, I promise to pay to
Loomis Company, Portage, Wis., _____

Twenty-two and _____ $\frac{47}{100}$ dollars

for value received, with six per cent interest per annum until paid.

D. R. Boothe

QUESTIONS.

1. What is meant by "or order," found in notes, checks &c.?
2. Give four conditions under which due bills may be used.
3. Do people who give checks always have money in the bank? Ask about this.
4. Does a check draw interest?
5. What is meant by "per annum?"
6. What is meant by "for value received?"
7. Name other kinds of notes given in your arithmetic.
8. Why should bank checks be cashed soon after receiving them?

THE MEMORANDUM BOOK.

Every person who keeps an account should provide himself with a pocket Memorandum Book. It should be of the right size to be easily carried in the pocket and be ruled in Day Book form. On the inside of the front cover should be a calendar for the year.

In this book may be placed the transactions of each day, such as payments or receipts of money, contracts with hired help, time spent in fields or in caring for stock, special dates as of breeding, planting or other items worthy of remembering.

The items in such a book become the basis for keeping another and larger book of FARM ACCOUNTS.

The following shows what might be recorded in a Memorandum Book for the first three days in January, 1912:

Jan. 1, 1912. Bought of A. M. Bellack, underwear \$4.00. Of H. C. Lange, breakfast food \$1.25. Sold Mercantile Co. on account 20 lbs. butter, at 34¢. Labor with cattle, 3 hrs., with hogs, 1 hr., hens, ½ hr., 26 eggs.

Jan. 2. Bought 2 tons bran \$22.00. Labor, cattle, 3 hrs., hogs, 2 hrs., hens, 1 hr., eggs 20. Weather 16 below. Read Hoard's Dairyman.

Jan. 3. Paid taxes \$63.74 (2 dollars less than last year). Labor, hogs, 3 hrs., cattle, 2 hrs., hens, ½ hr., cleaning wheat, 2½ hrs., eggs 27. Weather moderating. John and Mary returned to Training School. Gave Mary \$15.00 for her and John, for board. H. M. (hired man) left today for a week's visit, paid him \$3.00, now due him \$10.34. Sold bay colt \$145.00 (pretty good for two year old). Put \$100.00 in Farmers & Merchants Union Bank, Columbus. Estimated cost of colt \$58.00.

ACCOUNT PROBLEMS.

1. James Ashley hires out to Richard Marr at \$32.00 per month and board. He begins work March 15th and receives his pay on the 15th of each month for six months. He has \$12.95 cash when he begins his work. April 2, he buys hose, 50 cents, collars and tie, 75 cents; April 5, he purchases one pair of overalls, \$1.10; April 12, pays \$1.16 for sundry articles; March 1, buys a colt from Mr. Marr for \$50 which Mr. Marr agrees to keep for \$1.00 per month, and allow him to pay for out of his monthly wages; May 15, purchases hat for 50 cents; June 18, buys suit of clothes, \$18.00 July 4, expenses for day, \$2.35; August 1, sells colt for \$72.00, and pays Mr. Marr for pasture account due him; Aug. 18, buys bicycle for \$16.00; Aug. 31, buys knife, \$1.25.

Write out this account and balance it Sept. 15.

Of course, the above is only an imagined example. No attempt can be made to advise how to keep an account book or memorandum book that would suit everyone. There are as many right ways to keep accounts as there are men who keep them. The only hope is that this book may lead to a more universal practice of keeping some kind of a record of what goes out from and what goes into the farm.

If a farmer does not keep a memorandum book, it would be well for him to keep a slate hung in some handy place. On one side of the slate may be placed the credit items and on the other side the debit items for the farm. These accounts may be written up once a week. The advantage of keeping a permanent memorandum is that it may be used at a future time in case of disputes.

2. Make up an account of ten articles purchased by a farmer at a grocery store during the month of April. Place in the account five articles he sells to the store. Write up the account in proper form, supplying names and dates and balance the same.

3. Make out a bill for the following items and find its amount:

May 16, Mrs. John Perkins, Sycamore, Ill., bought of Marshall Field, Chicago:

25 yds. table linen @ \$1.45 per yard;

5 small rugs @ \$3.25;

28 yds. of curtain material @ 75¢;

23 yds. of silk @ \$1.25;

1 rug 9x12, \$45.00.

4. If you purchase several articles at a store and pay for them at the time of purchase, what would be the advantage of having a bill made out and receipted and of taking it away with you?

5. The following are the items in an account with a flock of sheep as they appeared in A. Shearer's memorandum. Write up this account and balance it. Before doing so read the *Eight Directions*.

Sheep Memoranda.

Jan. 1, 1913, value of 56 ewes and 56 lambs on hand, \$740.00—Jan. 19, sold 53 lambs, \$310.60—Jan. 31, fed during month 28 bu. of corn @ 46¢, 48 bu. oats @ 39¢, $\frac{1}{2}$ ton hay @ \$9.00; value of time spent in care of sheep during month, \$3.65—Feb. 4, paid for rock salt, 71¢—Feb. 28, fed during month $18\frac{5}{7}$ bu. corn @ 48¢, 6 bu. and 20 lbs. oats @ 38¢; value of time spent in care of sheep during month, \$2.80—Mar. 5, recd. for sheep pelt, \$1.75—Apr. 29, paid for bran and shorts \$1.75—Apr. 30, fed during month 36 bu. oats @ 26¢, 25 bu. corn @ 52¢; value of time spent in care of sheep during month, \$1.39—May 8, recd. for 2 sheep pelts, \$2.75—May 20, paid for wool twine, 60¢—May 22, paid for shearing 52 sheep @ 15¢—May 31, value of time spent in care of sheep during month, \$2.84—June 6, recd. cash for 431 lbs. wool @ 22¢; paid for frt. on wool sacks, 25¢—June 30, value of time spent in care of sheep during month, 36¢—July 30, paid cash for salt, 56¢—Aug. 29, paid cash for 14 sheep \$46.40; value of one sheep killed for home use \$3.10—Sept. 1, paid for 18 sheep \$75.00—Sept. 30, value of time spent in care of sheep during month 72¢—Oct. 17, recd. for five sheep pelts \$3.60—Oct 21, recd. cash for 74 sheep \$496.24—Nov. 8, paid for four lambs \$22.00—Nov. 30, value of time spent in care of sheep last two months \$3.10—Dec. 22, recd. cash for 11 sheep \$49.00—Dec. 30, paid cash for 23 sheep \$109.00—Dec. 31, value of pea ensilage fed to sheep since leaving pasture \$36.00, fed during this month 31 bu. corn @ 49¢; value of time spent in care of sheep during month \$2.82; value of sheep on hand \$612.00.

DAIRY PROBLEMS.

Note—If time or ability of class is limited, the problems under this heading may be omitted.

	Old Pet	Dot	Sue	Roan	White	Bess	Nell	Kate	Pink	Mollie	Doll	Floss
June												
1. morning	12	9	13	16	8	14	20	16	15	20	8	10
evening	10	8½	12	14	9	12	19	12	14	12	6	12
2. m.	11	10	13	19	9	14	20	16	14	20	8	10
e.	10	9	12½	14½	9	13	20	14	14	13	8	10
3. m.	11	9½	12	15½	8	13	21	15	15	19	8	12
e.	10	9	12½	15	9	14	20	16	14	12	7	11
4. m.	11	10	13	16	9	12	20	15	14	19	8	12
e.	11	9	13	15	7	11	18	14	14	14	8	12
5. m.	12	9½	12½	16	9	14	18	13	15	20	8	10
e.	10	9½	13	15	8½	13	19	12	16	12	9	11
6. m.	10	10	12½	15	8½	12	10	16	15	20	8	10
e.	10	9	13	15	9	12	17	12	12	14	7	11
7. m.	12	8	12	15	8	13	20	14	14	20	8	12
e.	10	9	13	14	7	12	20	13	15	14	8	10
Total lb. of milk	150											
Test or % of butter fat	3.8	3.2	4	3.4	4.2	4.1	3.6	4.8	3.3	3.5	4.3	3.7
Lb. butter fat	5.7											
Value @ 32c per lb.	1.82											

1. Add each column to find the total number of pounds of milk each cow gives in seven days. When we say milk tests 3.8% butter fat, it means that 3.8 lb. in every hundred

pounds of milk is butter fat or that 3.8% (.038) of the number of pounds of milk is butter fat. 3.8% of 150 lb. of milk, the quantity of milk Old Pet gives, equals 5.7 lb. of butter fat.

2. Using the tests given, determine the quantity of butter fat produced by each cow.

3. What is the value of the butter fat produced by each cow at the price per lb. given?

4. Make a neat copy of the above and fill in the blank spaces with correct results.

5. Rule a piece of card board or heavy paper on which a similar record could be kept for a herd of eight cows for the month of September.

6. What would be the value of the butter fat in "Old Pet's" milk if it tested the same as Dot? as Sue? as Roan? as White? as Bess? as Nell? as Kate? as Pink? as Mollie? as Doll? as Floss?

7. In reading the butter fat, in Babcock test bottle, the mark at the top of the column of fat and the mark at the bottom is read. The difference between these two marks gives the % of fat or the test. The fat in a test bottle is between 9.4% and 3.6%. What does the milk test?

8. Determine the test of the milk when the following are the upper and lower readings of the test tube:

(a) 7.8%, 2.6%; (b) 5.9%, .4%; (c) 6.8%, 1.9%; (d) 6.3%, 2.4%; (e) 7.7%, 4.6%.

9. Which is more profitable and how much, a cow that gives daily 16 lb. of milk testing 4.8% or one that gives 20 lb. of milk testing 3.1%? The milk is to be delivered to the creamery and paid for at the rate of 30 cents per lb. fat. At the above rate, what would be the difference in the earnings of these two cows for 300 days, if it costs the same to feed each?

10. After separating the milk with a hand separator, the skim milk was tested and found to contain .3 per cent fat. If 600 lbs. of milk were run through the separator daily, how much butter fat was lost? How much was lost in a month of 30 days? How much in one year?

11. After the separator was repaired, the loss was .06%. What was the daily loss? The monthly loss? The yearly loss? How much butter fat was saved in a year by having the machine repaired? What was this worth at 28 cents per pound?

12. A farmer separated the butter fat from 500 pounds of 4% milk. How many pounds of butter fat should the cream contain? The cream weighed 80 pounds. What part of the cream was butter fat? What per cent was butter fat?

13. How many pounds of butter fat are there in 330 pounds of cream testing 32%?

14. One hundred pounds of 5% milk was run through a separator and the cream weighed 20 pounds. The skim milk contained .05% fat. Figure out how much the skim milk weighed and what per cent of fat the cream contained.

15. A dairyman delivered to a creamery 8 cans of milk daily. Each can weighed 20 lb., which was deducted from the gross weight of each can to find the net weight of the milk in each can. The gross weight delivered each day was as follows; 775 lb., 760 lb., 760 lb., 765 lb., 770 lb., 780 lb.,

17. Find the total number of pounds delivered during the first fourteen days of the month by each of the ten patrons.

18. Using the total number of pounds each patron delivered during the 14 days, find how much butter fat each delivered according to the tests given.

19. In a similar manner, find the number of pounds of milk and also the pounds of butter fat delivered during the last sixteen days of the month.

20. What is the total number of pounds of butter fat delivered by the ten patrons during the month?

21. The butter manufactured during the month sold for \$2,101.23. The total expenses of running the factory were \$175. What sum of money was left for the farmers if this creamery was a co-operative one?

22. Using the total number of pounds of butter fat, find out what should be paid to each farmer for every pound of butter fat delivered. Express your answer in ten thousandths dollars.

23. How much should each farmer get for all the butter fat he delivered?

24. After finding the share of each, find the total paid to all. Compare this total with the \$1,926.23 with which they are to be paid. If your total is more than this, your work is not correct. There should be about 12 cents left. This is due to the fact that only four decimal places were used.

25. Make a copy of the milk sheet given, and fill in all of the blank spaces.

26. Take a sheet of paper and make 3 columns, each $\frac{1}{2}$ an inch wide. In the first column, place the numbers corresponding to the patrons, as in Exhibit 17, in the second, the quantity of butter fat credited to each, and in the third, the value of each patron's butter fat. Indicate at the bottom of columns two and three the totals of each.

27. M. Prentice, of Anamosa, Iowa, shipped to Cedar Rapids, one can of cream daily for one week. The gross weight of the can was as follows: 69, 72, 59, 64, 66, 68, 67 lb. The can weighed 12 pounds. The cream tested 34% butter fat, for which he received 32 cents per pound. The express charges for cans filled were 30 cents per hundred pounds and 5 cents for the return of each empty. What was received for the cream after taking out the express charges?

28. A butter maker gets a greater number of pounds of butter than he has butter fat. This increase is called the overrun, and is due to the salt and water added to the fat.

How much butter will a creamery man get from 428 pounds of butter fat if he gets an overrun of 20% of the butter fat? How many pounds of butter does he make? Butter fat is worth 31 cents per pound and butter 29 cents. What is the value of each of these products in this problem?

29. How many pounds of butter can a man make from 1,640 pounds of 4% milk if he gets an overrun of 15 per cent?

30. If in a year a cow eats $2\frac{1}{2}$ tons of hay worth \$12 $\frac{1}{2}$ per ton, $\frac{1}{2}$ ton of ground feed worth \$22 per ton, and is pastured 5 months at \$1 $\frac{1}{2}$ per month, what is the cost of her feed?

31. If the cow in Problem 30 produces 16 pounds of milk daily for 300 days during the year, and it sells for \$1.40 per hundred, does the farmer make or lose on the cow? How much? This does not cover the interest on his investment and the time he spends in caring for the cow.

32. Another cow gave 6,000 pounds of milk testing 4.2%. Her cost of keeping was six dollars more than the cow in Problem 30. Did the farmer make or lose on this cow and how much, if butter fat sold for 29 cents per pound?

33. Which of the above two cows should the farmer keep?

CORN PROBLEMS.

1. How many hills of corn are there on an acre of ground, when corn is planted 3 ft. 8 in. each way? Note—Each hill occupies an area of $3\frac{2}{3}$ times $3\frac{2}{3}$ sq. ft., which is $13\frac{4}{9}$ sq. ft.

2. If the average number of stalks for each hill is $2\frac{1}{4}$, how many stalks of corn are there on the acre?

3. Each stalk averages $1\frac{1}{2}$ ears, what is the number of ears per acre?

4. How many bushels of corn are there on the field, if it takes 125 ears to make a bushel?

5. If by testing his seed, a farmer could get his field to average $2\frac{3}{4}$ stalks to the hill and $1\frac{1}{2}$ ears to the stalk, how many bushels would he raise on an acre?

What is the increase in yield in problem 5 as compared with problem 4?

6. What would this increased yield be worth when corn is worth 62 cents a bushel?

7. Find out the present market price of corn and determine the value of the increase on the above acre.

8. If a man raised 30 acres of corn instead of 1 acre, determine how much better off he would have been if his seed was well selected and could raise on the 30 acres a crop such as example number 5 described instead of number 4. Value the corn at 56 cents a bushel.

9. Solve example 8, using the present price of corn.

10. A field of corn was planted in check rows $3\frac{2}{3}$ feet each way. How many square feet did each hill occupy?

11. A field of 18 acres of corn was planted in check rows 3 ft. 8 in. apart. Each hill averaged $2\frac{1}{4}$ stalks and each stalk $1\frac{1}{2}$ ears and it took 105 ears to make a bushel. How many bushels of corn were raised? Find its value at 48 cents a bushel, and at the present market price.

12. By raising a better variety of corn, but 90 ears would have been required to make a bushel in problem 11. What would be gained by raising this better corn at 48 cents a bushel? How much would be gained for the same acreage for 15 years?

13. A crop of corn has been increased 8 bu. to the acre by careful selecting. What would be the increase on 25 acres? Determine its value at 52 cents per bushel. How many hours could be spent in selecting seed for the 25 acres if paid for from the increased yield? Value the labor at 18 cents per hour.

14. Get an ear of corn. Count the number of rows of corn on the ear. Shell off the butts and tips of the ear. Count the number of kernels in a row. How many kernels on the ear? How many hills would the ear plant if three kernels were dropped in a hill? How many such ears would be required to plant an acre if one hill occupies $13\frac{4}{9}$ sq. ft. of space?

15. What is the cost of seed corn per acre, when a bushel, worth \$3.00, will plant 6 acres?

16. If a good ear of corn weighs 12 oz., how many such ears does it require to make a bushel? (72 lb. to the bushel).

17. Twenty ears of good corn will plant an acre of ground. How many bushels of corn does it require to plant 35 acres, if it takes 120 ears to make a bushel?

18. A man spent two days in testing 800 ears of corn. What was this work worth at \$2 per day?

19. He took out 50 ears that did not germinate well. He figured that 125 ears made a bushel. How many bushels of good seed corn had he?

20. How many acres would this plant, if a bushel of seed plants six acres?

21. What part of the 800 ears was taken out? What part did he keep? What was the per cent of germination? What per cent of a crop would he have had if he had shelled his corn and planted it without taking out the poor ears?

22. A farmer plants 36 acres of corn which averaged, by properly testing his seed, 75 bushels to the acre. How many bushel does he raise? Find its value at 72 cents per bushel.

23. If 93% of the seed on the field of a neighbor, who did not test his seed, grew, how many bushels was he out on 36 acres, if his land could have produced 75 bushels if he had tested his seed?

24. Corn was worth 72 cents a bushel. How many dollars was he out by not testing his seed?

25. How much more did the first farmer get for his crop by testing his seed? What was the original cost of this added value? See example 18.

26. Seven of the ten kernels taken from an ear of corn germinate. What per cent germinate? What per cent do not?

27. A man plants 30 acres of corn. Seventy per cent of the kernels germinate. How many of the thirty acres are wasted because all of the corn did not germinate? How many acres planted with perfect seed would produce the same crop as the thirty acres planted?

28. What is the yield of nine acres of corn, each acre producing 80 bushels? What is it worth at 61 cents per bushel? What is it worth at the present average market quotation?

29. How many bushels of shelled corn will a wagon box 2 ft. by 3 ft. by 12 ft. hold? A cu. ft. holds $\frac{4}{5}$ bushel.

30. A bushel of ear corn makes $\frac{1}{2}$ bushel of shelled corn. How many bushel of ear corn would a wagon box 2 ft. by 3 ft. by 12 ft. hold?

31. One cubic foot holds what part of a bushel of ear corn? Read problems 29 and 30 before trying to answer this.

32. How many bushels of ear corn can be stored in a crib 10 ft. by 12 ft. by 20 ft.?

FENCING.

1. How many acres are there in a field 40 rods square? What is the distance around the field? If posts are set one rod apart, how many posts would it take to fence the field? What is the cost of these posts at 15 cents each?

2. Single barbed wire weighs about 1 lb. to the rod. Determine the cost of wire for a 4 wire fence on the above field, when barbed wire is quoted at $3\frac{1}{2}$ cents per lb.

3. Two men with a team can string, stretch, and staple 12 rods of 4 barbed wires per hour. Determine the cost of putting on the wire if each man's time is worth 15 cents per hour and each horse's time 10 cents per hour.

4. Determine the cost of digging the post holes and setting the posts on the above field, if a man can dig the holes and set four posts every hour. Labor is worth 15 cents an hour.

5. What is the total cost of fencing the above field of 10 acres?

6. How many acres in a field 20 rods by 80 rods? How does the area of this field compare with field in problem 1? What is the distance around this field? How does the distance around this field compare with the distance in problem 1? How many posts, set one rod apart, would it take to fence the field? Determine their cost at 15 cents each.

7. In Example 6 what is the cost of a 4 wire fence similar to that in problem number 2?

8. Determine the cost of putting on the wire and digging the post holes. The cost of labor is to be at the same rate as problems 3 and 4.

9. Compare the cost of fencing the above two fields. Which is the greater and how much?

10. What is the shape of a four-sided field which is cheapest to fence?

11. The above fences last 20 years. What is the annual cost per year of each? ($1/20$ of the cost of each fence is spoken of as its annual depreciation.)

12. If money is worth 6%, what is the yearly interest on the money invested in fences on each of the above fields?

13. How many rods of fencing are required per acre in each of the above fields?

14. What would be the cost of woven wire at 30¢ per rod instead of barbed wire on the above two fields?

15. In a cash expense account would the depreciation and interest on your fence investment on the above fields be Dr. or Cr.?

16. How many acres are there in a section of land? How many in a quarter section?

17. How far would a man travel in going around a section of land?

18. How many rods of fence would it take to fence a section of land?

19. How many fence posts would be required to fence the section, if placed one rod apart?

20. Determine the value of the posts required in problem 19 at 15¢ per post.

21. It costs 35 cents a rod to fence. Determine the cost of fencing a field 40 rd. by 80 rd.

22. The fence in problem 21 lasts 15 years. What is the annual depreciation?

23. What is the interest at 6% per year on the money invested in problem 21?

WEEDS AND SEEDS.

1. A quart of water weighs 2 pounds. What is the weight of 25 gallons?

2. Iron sulphate costs \$16.00 per ton. Determine the cost of one hundred pounds.

3. If a person mixes 25 gallons of water with 50 pounds of iron sulphate, what part of the mixture by weight is each? What per cent of the mixture is iron sulphate?

4. A man plants 20 acres of oats on a field that measures 40 rods by 80 rods. He purchases a spraying machine at a cost of \$100. It throws a spray $16\frac{1}{2}$ feet.

(a) How many times would he have to travel the length of the field to spray it?

(b) How far would the team travel?

(c) A man can spray this field in one day. The labor of the man and team costs \$4.00. The interest investment on the machine is \$3.00. He uses $1\frac{1}{2}$ tons of iron sulphate, to spray with, at \$18 per ton. What is the total cost of spraying 20 acres? What is the cost per acre?

5. If an acre of wheat produces 24 bushels, and $12\frac{1}{2}$ per cent of it is weed seed, how many bushels are weed seed? How much would the farmer have to deduct from his sale of 160 acres of wheat, at \$1.04 per bushel?

6. It takes two hours to clean enough grain to plant 3 acres. What does it cost at 15 cents per hour for labor? What would be the cost of cleaning enough wheat to plant 30 acres?

7. A farmer hires a man to pull weeds out of his corn-field. The man works 3 days of ten hours each at $12\frac{1}{2}$ cents per hour. What was the cost?

8. A tree sparrow eats $\frac{1}{4}$ oz. of weed seed in a day. It is estimated that in the state of Iowa there are 500,000 tree sparrows. If they make their home in the state 200 days, how many tons of weed seed will be destroyed during their stay?

9. A quail was killed and from its crop were taken 10,000 pig-weed seeds. At this rate daily, how many pig-weed seeds would a flock of 25 quail eat in one week?

10. Estimating the damage done by insects at 61 cents per acre, how much would this amount to on a quarter section of land? On a section of land?

11. If there are 50 birds to the square mile in the county in which you live, how many birds are there in your county?

12. A bird was seen to feed 30 locusts to her young in one hour. If 25 nests were found on each square mile, how many insects would the birds feed to their young in a county having an area of 336 square miles? What is the weight in pounds of the locusts fed, if each weighs 15 grains?

13. In round numbers, the area of Wisconsin is 56,000 square miles. Counting 20 broods of young birds to the square mile, and each brood eating 30 locusts an hour during 15 hours of the day for 100 days, how many pounds of insects were destroyed if the average weight of an insect is 16 grains?

14. Each insect destroyed in the preceding problem would eat 4 times its own weight of crops. How many tons of crops were saved if the birds did the work indicated above? What would be the value of the crops at \$8 per ton?

15. A farmer has 800 bushels of oats to thresh. Four pounds in each bushel are weed seeds. What % of his crop is weed seed?

16. One bushel of heavy seed oats gives an increased yield of 8.5 bushels. What is the increase from 3 bu. of heavy seed oats?

17. Wheat is worth 90 cents per bushel. It costs 25 cents an acre to harrow land. How many times can one afford to harrow land to increase the yield 3 bushels per acre?

18. How far will a team have to travel to plow a field 18 rods wide by 32 rods long with a 16-inch plow?

19. A strip of land 18 rods long and 32 rods wide contains how many acres?

20. A man with 4 horses can plow 5 acres in a day of 10 hours. What does it cost per acre to plow if a man's time is worth $17\frac{1}{2}$ cents an hour and a horse's time 10 cents an hour?

21. A field containing five acres is 20 rods long. How wide is it?

22. How many times must a man go across a field 80 rods square with a harrow 14 ft. wide? How far will he travel?

23. Corn is worth \$.50 per bushel. It costs \$.25 per acre to harrow the land. How many times can one afford to harrow the land to get an increase of 4 bushels per acre?

24. How many pounds of wheat are produced on 25 acres yielding 22 bushels per acre? A bushel of wheat weighs 60 pounds.

25. Fifty-five bushels of oats are raised on each of 25 acres. How many pounds are raised? A bushel of oats weighs 32 pounds.

26. Mr. Jones plants $\frac{3}{4}$ of an acre of potatoes. It yields 132 bushels of potatoes which he sells at 45 cents per bushel. At this rate, what would he have received for an acre? What would he have received for two and one-half acres?

27. The cost of raising the above $\frac{3}{4}$ acre of potatoes was \$27. What was the profit? What would be the profit on $3\frac{1}{2}$ acres at the same rate?

28. One bushel of heavy seed oats yields 8 bushels more than a bushel of light seed oats. What would be the added value on 30 acres sown with 60 bushels of heavy seed oats?

29. How many furrows must one turn to plow a strip 48 rods wide, if a plow turns a furrow 16 inches wide? How far will a team travel if the length of the field is 80 rods?

30. How many square rods in a field 40 rods square? How many acres does it contain?

31. On a field of 14 acres of potatoes, the following were used in spraying 5 times:

500 lb. of copper sulphate, @ 6¢;

8 bu. of lime, @ 35¢;

12 lb. of arsenic (white), @ 8¢;

100 hr. of labor, man and team, @ 35¢;

Wear of machinery (estimated), \$5.00.

32. What was the total cost of the spraying?

33. What was the cost per acre for spraying 5 times?

34. What did it cost to spray each acre once?

35. The sprayed potatoes yielded 147 bu. per acre. Un-sprayed potatoes yielded 83 bu. per acre. What increase per acre did spraying give? How many bushels increase resulted from the 14 acres? What was the value of this increase at 50 cents per bushel? After deducting the cost of spraying for the 14 acres from this increase, what was gained on the 14 acres by spraying? What was this per acre?

36. Twenty bushels of halved potatoes are required to plant an acre. How many bushels are required to plant $7\frac{1}{2}$ acres? When planted, they produced 317 bu. of potatoes per acre. How many bu. were produced on the $7\frac{1}{2}$ acres? What was the net yield in excess of seed per acre?

GARDEN AND ORCHARD.

1. A quart of fresh strawberries costs $12\frac{1}{2}$ cents. Fifteen quarts of canned berries are obtained from 30 quarts of fresh berries. What is the cost per quart for the fruit?

2. To can 15 quarts of strawberries required $2\frac{1}{2}$ hours time. What is the cost of labor and fuel at 15 cents an hour to can a quart of berries?

3. One pound of sugar is required for each quart of canned berries. What is the cost of the sugar used in canning the 30 quarts of berries, if 16 pounds of sugar cost one dollar? What is the cost of the sugar in one quart of the canned berries?

4. What is the total cost for a quart of the above berries?

5. A crate of strawberries containing 32 boxes was purchased for $11\frac{1}{4}$ cents per box. It took $3\frac{3}{4}$ hours labor and fuel at 16 cents per hour to do the canning. $16\frac{3}{4}$ pounds of sugar were used which cost at the rate of 18 lb. for \$1.00. What did it cost to put up the berries?

6. What is the value of an acre of ground planted to black raspberries and producing yearly 2,000 quarts of berries at 12 cents per quart?

7. The first year the berries were planted, there was no cash return. What was the average value of the crop for nine years, including the first?

8. The total cost for caring for the berries during the nine years was \$1,179.90. What was the average yearly cost? What was the annual net return from the berries?

9. An acre of bearing gooseberries cost its owner the following items in one year:

Labor	\$33.33
Marketing (man and horse)	23.88
Boxes	11.00
Picking overseer	15.87
Pickers	30.00
Interest and taxes	16.00

What was the total cost of the acre for one year?

10. The gross returns from the acre were 3,000 quarts of berries which sold for 8 cents per quart. What was received for the berries?

11. What was the net income from the above acre of gooseberries?

12. An acre of strawberries cost during the first two years as follows:

Int. on investment and taxes 2 yrs. . .	\$ 32.00
Preparing land	2.00
Plants and planting	25.00
Cultivating	3.15
Hoeing	39.20
Covering	9.18
Hauling mulch for covering	19.20
Uncovering	3.06
Weeding	11.43
Picking overseer	14.00
Pickers	50.00
Boxes and making	14.66
Marketing	18.00

What was the total expense for the two years?

13. The second year the acre yielded 4,000 quarts of berries which sold for 9 cents per quart. What did they bring?

14. What was the net profit for the two years when one crop of berries had been produced? What was the annual profit on the above bed at the end of the second year? If the above acre produced 4,000 quarts of berries the third year, and these sold at $8\frac{1}{2}$ cents, what did the crop bring? The cost for this year was \$184. What was the profit the third year? What was the net annual profit for the three years?

15. How many rows of currant bushes on a field 8 rods wide, if the rows are five feet apart? Each row is 20 rods long. How long would it take to cultivate between the rows, if a team travels $2\frac{1}{2}$ miles per hour? What would it cost to cultivate this piece, if a man and team are worth 35 cents an hour?

16. Determine the number of apple trees set 20 feet apart on an acre of ground.

17. If set 25 feet apart, how many trees will be required?

18. An average yield for an apple tree is $3\frac{1}{2}$ bushels. How many bushels would a five-acre orchard set with trees, planted 25 feet apart each way, and each tree producing an average, yield? What would the crop be worth at 75 cents per bushel?

19. How many barrels would it take to pack the crop from the orchard in problem 18, if each barrel held 3 bushels? What would these barrels cost at 22 cents each?

SCALE TICKETS.

1. Mr. Jones delivered ten loads of oats at a warehouse at 35 cents per bushel. The following were the weights given him for each load:

Gross weight of Load in lb.	Weight of Wagon.	Net Weight lb.	Net Weight bu.	Value 35c.
3785	1225	2560	80	\$28.00
3780	1300			
3800	1270			
3750	1290			
3810	1260			
3740	1240			
3645	1310			
3740	1250			
3660	1280			
3720	1315			
Totals				

The net weight of each load is the difference between the weight of the load and the weight of the wagon.

To find the number of bushels divide the net weight of the load by the weight of a bushel of oats (32 lb.).

Find the total gross weight of the ten loads.

Find the total weight of the wagons.

What is the total weight of all the oats hauled? What is the total number of bushels hauled? What is the value of this number of bushels? Compare this answer with the sum of the values of each of the ten loads as found in the last column. The answers should be the same.

2. Mr. Jones' neighbors helped him haul 6 loads of hogs to town, on a market day.

The gross weights of the loads were 3,020 lb., 3,960 lb., 2,840 lb., 3,165 lb., 2,844 lb., 2,954 lb.; wagon weights were, 1,280 lb., 1,296 lb., 1,140 lb., 1,340 lb., 1,242 lb., 1,215 lb.

Find the value of the six loads of hogs at \$8.45 per hundred. Find the value of the hogs at the present market price. Check your work by comparing the sum of the values of the several loads with the value of the total net weight of all six loads.

Make a scale ticket.

3. Mr. Adams delivered 4 loads of seed peas to the Leonard Seed Company. The gross weight of each load was as follows:

4,100 lb.	4,210 lb.	3,864 lb.	3,970 lb.
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The wagon weights were:

1,290 lb.	1,310 lb.	1,254 lb.	1,267 lb.
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What did he receive for the peas at \$1.75 per bushel? 60 pounds of peas make a bushel.

Make a scale ticket.

4. Make a scale ticket and find the value of 7 loads of ear corn, 72 lb. to the bushel at 65 cents per bushel. Gross weights:

3,880 lb., 3,760 lb., 3,884 lb., 3,850 lb., 3,910 lb., 3,924 lb., 3,824 lb.

Wagon weights: 1,140 lb., 1,154 lb., 1,178 lb., 1,112 lb., 1,200 lb., 1,180 lb., 1,206 lb.

What is the value of the above seven loads of corn at the present market price for ear corn?

5 If the above were seven loads of shelled corn, what would be their value at 68 cents per bushel? What would be their value at the present market price for shelled corn?

(Any daily or weekly paper gives present market quotations.)

6. Make a scale ticket for the following: 6 loads of hay weighed on the Eastman Lumber Company scales at Platteville, Wisconsin.

Gross weights:

3,260 lb., 3,140 lb., 3,380 lb., 2,978 lb., 2,460 lb.; 2,956 lb.

Wagon weights:

1,240 lb., 1,210 lb., 1,290 lb., 1,238 lb., 1,240 lb., 1,266 lb.

What is the value of the six loads of hay at \$12.75 per ton? What is the value of the same at the present price quoted for marsh hay? What is the value at the price quoted for timothy hay?

FOOD REQUIREMENTS.

DAIRY CATTLE.

Note—These problems are designed for advanced pupils.

1. Professor Haecker, of Minnesota, found that for maintenance, a cow required for every 100 pounds of her weight a daily allowance of .07 of a pound of protein, .7 of a pound of carbohydrates, and .01 of a pound of fat.

What would a cow weighing 1,000 pounds require of each of the substances named? A cow weighing 1,100 lb.? A cow weighing 1,200 lb.? A cow weighing 1,150 lb.? A cow weighing 950 lb.?

2. He also found from a number of tests that it took more feed for a cow producing a greater quality and quantity of milk. The following table shows this relationship:

Daily Allowance of Digestible Nutrients for One Pound of Milk.

		Lb. Protein.	Lb. Carbohydrates	Lb. Fat
Testing	3 %	0.040	0.19	0.015
"	3.5%	0.042	0.21	0.016
"	4.0%	0.047	0.23	0.018
"	4.5%	0.049	0.26	0.020
"	5.0%	0.051	0.27	0.021
"	5.5%	0.054	0.29	0.022
"	6.0%	0.057	0.31	0.024
"	6.5%	0.061	0.33	0.025
"	7.0%	0.063	0.35	0.027

If a cow gave 20 pounds of 3.5% milk daily, we find by referring to the above table that she would require:

20 times .042 lb. of protein which is .84 lb. protein;

20 times .21 lb. carbohydrates which is 4.2 lb. carbohydrates;

20 times .016 lb. fat which is .32 lb. of fat.

3. Without considering the weight of a cow, determine how much protein, carbohydrates and fat she should be fed to produce

(a)	25 lb. of 4 % milk daily		
(b)	16 lb. of 4½% "	"	"
(c)	24 lb. of 3 % "	"	"
(d)	32 lb. of 3 % "	"	"
(e)	28 lb. of 5 % "	"	"
(f)	21 lb. of 3½% "	"	"
(g)	14 lb. of 6½% "	"	"
(h)	19 lb. of 5 % "	"	"
(i)	18 lb. of 4 % "	"	"
(j)	32 lb. of 3½% "	"	"

4. A cow weighing 1,250 pounds gives 28 lb. of 4% milk. How much protein, carbohydrates and fat should she receive daily for bodily maintenance and for the production of the milk?

5. How much protein, carbohydrates, and fat should be fed daily to a cow weighing 1,200 pounds and producing 35 lb. of 4% milk.

6. In the above problems, what three factors enter into the problem of how much digestible nutrients should be fed a cow?

Table of Digestible Nutrients in One Pound of Feed.

	Protein lb.	Carbohydrates lb.	Fat lb.
Alfalfa	.105	.405	.009
Mangles	.011	.05	.001
Red Clover	.071	.378	.019
Soy bean hay	.106	.409	.012
Corn Fodder—ears	.025	.346	.012
Corn Fodder—without ears	.014	.312	.007
Corn silage	.014	.142	.007
Mixed Hay	.042	.42	.013
Bran	.119	.42	.025
Oats	.088	.492	.043
Oil Meal	.315	.357	.024
Shorts	.13	.457	.045
Corn	.078	.668	.043
Barley	.084	.653	.016
Gluten Meal	.297	.425	.061
Corn Meal	.061	.64	.035

7. How much of each of protein, carbohydrates and fat in one ton of alfalfa? Of bran? Of red clover? Of corn silage?

8. How much of each, protein, carbohydrates and fat in:

- (a) 50 pounds of soy bean hay?
- (b) 20 pounds of oil meal?
- (c) 25 pounds of oats?
- (d) 80 pounds of mangles?
- (e) 150 pounds of corn fodder without ears?

9. From the table of digestible nutrients, make out a daily ration that will properly supply a cow weighing 1,100 pounds and giving 30 lb. of 4½% milk, with the proper quantities of protein, carbohydrates, and fats.

10. The cow mentioned in problem 9 is fed the following:

- 45 pounds of corn silage;
- 10 pounds of clover hay;
- 4 pounds of corn meal;
- 4 pounds of wheat bran;
- 2 pounds of gluten meal.

What is the quantity of protein, of carbohydrates, and of fats in each of these feeds? What is the total quantity of carbohydrates, of protein, and of fats? How does this compare with what you found the cow needed in problem 9?

HOUSEHOLD PROBLEMS.

1. What is the value of 27 eggs at 15¢ per doz.?
2. What is the value of 3 lb. and 5 oz. of butter at 18¢ per lb.?
3. What will it cost to supply sheets for four beds if the cloth is 24¢ per yd. double width? First find the size of an ordinary sheet and the number needed.
4. What will a set of common dishes cost? Inquire at home or at a store.
5. Covering for a couch 6 feet by $2\frac{1}{2}$ feet costs 35¢ per yard, and is 40 inches wide. Find the cost of the material.
6. A girl wishes to crochet a shawl. How many skeins will it take and what will it cost at the average size and price?
7. A girl picked raspberries on shares. She received every tenth quart for herself, and in all picked 473 quarts. If she received 10¢ per qt. for her berries, what did she receive in all?
8. A girl was given a room for her own if she would paper the walls and paint the wood work. The room was 12 ft. by 14 ft. and 8 ft. high. There are two windows 3 ft. by 5 ft. and one door 3 ft. by 7 ft. The conditions also were that she should make out a bill of the cost of paint, one paint brush, paper, carpet and window shades necessary for the room. Make such a bill with material as low in price as you can get at your nearest trading place.

9. One girl works out for \$4 per week and her board, and works 52 weeks in a year. Another girl teaches 36 weeks in a year at \$10 per week and pays \$4 per week for her board for 52 weeks. If the teacher's expenses were \$50, besides her board, and the other girl's expenses were \$30, what is the difference between their savings?

10. What is the average cost of a common sized cake, frosted on top and sides? Which would be cheaper for a society: to contribute food for a supper, or each pay 40¢, supposing there were 25 members in the society and they sell 53 tickets at 25¢ each for the supper?

11. Make up ten household problems and distribute to members of the class. These household problems require careful thinking to get the answers that would be obtained in real work in the farm house. Talk these over with your folks at home.

MISCELLANEOUS PROBLEMS.

1. The number of sheep of shearing age in the United States in 1911 was 39,761,000. The average weight of a fleece was 6.98 pounds. What was the number of pounds of wool produced? What was its value at 21 cents per pound?

2. What is the value of five hogs weighing 261 pounds, 243 pounds, 236 pounds, 232 pounds and 218 pounds, at \$8.75 per hundred?

3. What were the 20,509,000 horses in the United States in 1912 worth at \$105.94 per head?

4. In 1911, North Dakota grew 9,150,000 acres of wheat averaging 8 bushels to the acre. What was it worth at 89 cents per bushel?

5. What is the height of a horse in inches that stands $15\frac{3}{4}$ hands high?

6. What is the approximate number of tons of clover hay in a mow 40 feet by 36 feet by 18 feet deep?

(There are about 600 cu. ft. in a ton of well-settled clover hay, 500 cu. ft. in a ton of timothy hay, and 400 cu. ft. in a ton of wild hay.)

7. A load of wild hay is 12 feet wide, 16 feet long and 9 feet high. What is its approximate value at \$12.75 per ton?

8. How many tons in a cone-shaped stack of timothy hay, 36 feet high and 14 feet in diameter?

9. A hog loses about 20% of its live weight when dressed. A hog weighing 296 pounds and costing \$9.25 per hundred is killed by a butcher. It retailed for an average price of $13\frac{1}{4}$ cents per pound. Did the butcher gain or lose on the hog and how much?

10. What is the cost of carpeting a room 12 ft. by 14 ft., with carpet $\frac{3}{4}$ of a yard wide, at \$1.25 per yard?

11. Two cups of sugar weigh 1 pound, two cups of butter weigh 1 pound, four cups of flour weigh 1 pound.

Find the cost of the following recipe when butter is 32 cents per pound, eggs 27 cents per dozen, flour \$1.85 per hundred, 2 teaspoonfuls of baking powder \$ $.00\frac{2}{3}$ and spices \$ $.00\frac{1}{3}$.

1 cup butter, 4 cups flour, 2 cups of sugar, 2 teaspoonfuls baking powder, 1 teaspoonful spices, 5 eggs.

12. A pound of wheat removes about $\frac{1}{20}$ of a pound of potash from the soil. How much potash will be removed from a 160-acre field producing 20 bushels of wheat to the acre. What is its value at 6 cents per pound?

13. If the straw weighs $1\frac{1}{2}$ times the grain, what is the weight of the straw on the field in problem 12? Every 1,000 pounds of straw removes 6.3 pounds of potash. How much potash does the crop of wheat in this problem remove? What is its value at 6¢ per lb.?

14. Wheat removes 2.2 lbs. of phosphoric acid for straw and 7.9 lb. of phosphoric acid for grain in every 1,000 lb. How much phosphoric acid is taken from the farm in problem 12 when the wheat crop is sold? What is its value at $5\frac{1}{2}$ ¢ per lb.?

15. Determine how much nitrogen is removed from the 160 acres in problem 12, allowing 20.8 lb. for 1,000 pounds of grain and 4.8 lb. for 1,000 pounds of straw. What is its value at 16 cents per pound?

16. What is the total value of the nitrogen, phosphorus and potash in problems 12, 13, 14, and 15?

17. A ton of barnyard manure contains 10 pounds of nitrogen, 6 pounds of phosphoric acid and 9 pounds of potash. What is the value of the load if the potash is worth 6 cents, phosphoric acid $5\frac{1}{2}$ cents and nitrogen 16 cents per pound?

18. At the above prices, what is the value of an acre of clover hay yielding 2 tons for manuring purposes, if clover hay contains 40 lb. of nitrogen, 10 pounds of phosphoric acid and 40 pounds of potash per ton?

19. What is the dressed weight of a beef weighing on foot 1,560 pounds, if it loses 40% of its weight in dressing?

20. A piece of land is 80 rods long. It is 45 rods wide at one end and 35 rods at the other. How many acres does it contain?

21. A pasture in the form of a triangle has a base 140 rods long and an altitude of 32 rods. How many acres does it contain?

22. The average weight of silage is about 40 pounds per cubic foot. How many tons of silage in a circular silo $17\frac{1}{2}$ ft. in diameter and 25 ft. high?

23. If an animal eats 40 pounds per day, how long would the silo in problem 22 feed 25 head of stock?

24. It takes about 400 pounds of water to mature one pound of wheat. How many tons of water would be required to mature an acre of wheat producing 18 bushels?

25. How many barrels of water does a rectangular cistern 10 ft. by 8 ft. by 6 ft. contain?

26. How many barrels of water does a circular cistern 7 ft. in diameter and 6 ft. deep contain?

ABBREVIATIONS.

pr.	pair
@	at
acct.	account
Bal.	balance
Pd.	paid
Pres.	president
Sec.	secretary
in.	inch
ft.	foot or feet
lb.	pound or pounds
oz.	ounce or ounces
Mdse.	merchandise
yd.	yard
bu.	bushel
bbl.	barrel
Amt.	amount
M.	thousand
C.	hundred
cwt.	hundred weight
cd.	cord
pkg.	package
sq.	square
qt.	quart
pt.	pint
hr.	hour
P. P.	parcel post
rec'd.	received
pkt.	packet

GLOSSARY.

- Bill**—A written record of buying or selling with names of buyer and seller and material bought, with date.
- Bond**—A written obligation of a government or corporation bearing a fixed rate of interest.
- Butter fat**—The part of milk of which butter is composed.
- Capitalize**—To use capital letters correctly in written language.
- Conservation**—The careful use of natural resources, such as soil, wild life, plants, etc., so that they will never become extinct.
- Conserve**—To save for future use.
- Cash**—Legal money.
- Corporation**—A company of persons, organized by law to transact business, manufacture or trade.
- Crate**—A frame for holding fruit or produce boxes, etc.
- Dairyman**—One who keeps cows for the production of milk, from which butter, cheese or cream is made.
- Depreciation**—The amount or per cent which a building, machine or animal decreases in value because of use or age.
- Discount**—The amount or per cent by which a sum is lessened or made smaller.
- Dry Goods**—Goods that are made to wear, not groceries.
- Due Bill**—A mere statement that a debt is due one person from another with date.
- Example**—Something to be followed for practice or drill.
- Expense**—That which is paid out for help, or material which is not to be sold for profit.
- Facilities**—Tools or conditions with which one has to work.
- Farm Produce**—Anything raised on a farm.
- Fertilize**—To enrich the soil by any process that helps plant growth.

- Firm**—A company organized to do business in trade or industry.
- "Foot Up"**—To add a column of figures and place sum in the proper place.
- Groceries**—Whatever is kept to sell for food or to use in eating.
- Halved Potatoes**—Potatoes that are cut up for planting.
- Hardware**—Metal goods used for building, fencing, etc.
- Itemize**—To name each item bought or sold in a bill.
- Iron Sulphate**—A chemical used for spraying to destroy insects.
- Milk Sheet**—A sheet on which is kept the number of pounds of milk one or more cows give each day, with dates.
- Milk Tester**—A machine which separates butter fat from milk and determines the per cent of fat in 100 pounds of milk.
- Net Proceeds**—The amount left after the expense is subtracted.
- Order**—A written form of request for goods, or of money to be paid, sent or given by one person to another named in the order, with date.
- Pelts**—The skins of sheep or other animals.
- Plumber**—One who works putting in pipes, furnaces, etc., for heating, gas, water, etc.
- Practical**—That which pertains to the daily life and work of the ordinary citizen; useful or beneficial in the necessary things of living.
- Problem**—Something to be done, or found out by arithmetic or otherwise.
- Punctuate**—To use correctly the punctuation marks in written language such as, comma, period, question mark, semicolon, colon, dash, quotation marks, apostrophe and parenthesis.

Raw Material—Material that is not yet manufactured for final use or consumption.

Receipt—A written statement of payment of some value from one person to another with date, place and name of persons.

Requisite—That which is required or necessary.

Scale Ticket—A written statement of the total weight of a load of produce and weight of wagon when weighed on scales. It may contain price or cost also.

Soil Crop—Green fodder.

Statement—A form of bill in which the things bought or sold are not itemized.

Stocks—A written statement of shares in a company or corporation not bearing interest. Stocks may or may not pay dividends or profits.

Tested Seed—Seed which has been selected from a field or plot, a part of whose crop has been found, by testing, to germinate or grow well.

Transactions—Acts of buying, selling or trading in any business.

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