

Hence under the given conditions

$$x = -m = -(n^2 - n + 1).$$

N.B.—The answer given in the text-book is only another form of this result, for

$$\frac{n^2 - n + 2}{n^2 + n} = \frac{m + 1}{K - 1} = -m, \text{ when we substitute } -\frac{1}{m} \text{ for } K.$$

Solution II. Write K for $n^2 + n + 1$, and m for $n^2 - n + 1$, and hence $Km - 1$ for $n^4 + n^2$, and the given quantity becomes $Kx^2 + (Km - 1)x - m$ which equals $(Kx - 1)(x + m)$. Now, when this product is a perfect square $Kx - 1 = x + m$, whence

$$x = \frac{m + 1}{K - 1} = \text{as above.}$$

No. 76. Let the given fraction = K for all values of z. Clear of fractions. Then, since the expression is true for every value of z, it is an identity, hence the coefficients of z and z^2 are identical. Thus $3K = 2$, or $K = \frac{2}{3}$; $x - a = (y - b)K$, or $3x - 2y = 3a - 2b$; $2bx - 4bc = (3ay - 9ac)K$, or $2bx - 2ay = -6ac + 4bc$. From these two equations we easily get $x = a + 2c$, $y = b + 3c$.

No. 77. By W. E. COBBAN. From the horizontal line RMY draw verticals PR, SM, and XY to represent the statures, in order, of A., B., and C. Draw XQ and SD perp. to PR.

Then XY is A.'s height $5' 3\frac{1}{2}"$
SM is B.'s " $5' 9"$
PR is C.'s " $6' 1\frac{1}{2}"$

∴ SO is $5\frac{1}{2}"$ and PD is $4\frac{1}{2}"$

PDS and SOX are similar Δ 's

∴ PD : SO :: DS : OX

i.e., $4\frac{1}{2} : 5\frac{1}{2} :: DS : 10'$

$$\therefore DS = \frac{4\frac{1}{2} \times 10}{5\frac{1}{2}} = 8\frac{1}{2}'. \text{ Ans.}$$

No. 78. By W. E. COBBAN. The field can be divided into 3 equal squares whose total area is 10 acres, or 1,600 square rods,

∴ area of one square is $\frac{1600}{3}$ square rods

$$\therefore \text{side of one square, i.e., side of field} = \frac{40}{\sqrt{3}} \text{ rds.}$$

But perimeter of field is 8 times width,

$$\therefore \text{perimeter is } \frac{40}{\sqrt{3}} \times 8 = \frac{320}{\sqrt{3}} \text{ rds.} = \frac{1760}{\sqrt{3}} \text{ yds.}$$

$$\therefore \text{for 5 wires high } \frac{8800}{\sqrt{3}} \text{ yds.} = 5080.68 \text{ yds.}$$

Primary Department.

READING.

RHODA LEE.

LESSON V.—LETTER "H."

Introductory story.—A little boy who was very fond of baked potatoes was so hungry one day that he could not wait for them to cool, and so burnt his mouth. He said: "h—h—h" to cool it.

New words.—Hat, ham, has. (The sound of s here is not, strictly speaking, that already taught, but is so close as to make recognition quite easy.)

Sentences for sight reading.—Sam has a hat. Sam's pa has a hat. Sam has a map. Sam's mama has a stamp.

LESSON VI.—LETTER "C."

Introductory story.—A little girl got her feet wet going to school one morning, and when night came she had a very sore throat. Her mother showed her how to gargle her throat. She made a sound like this. (Teacher makes the sound of c; children imitate.)

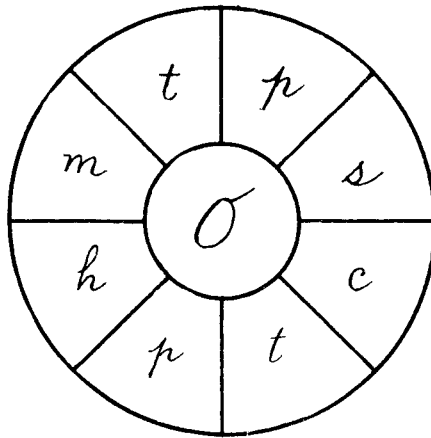
New words.—Cat, cap, camp, scamp, cast, scat, tack, sack, pack, stack, smack. (Letters in italics are silent.)

Teach the word "the" in this lesson.

Sentences.—Sam has a cat. The cat has a mat. The cat has a ham. Scamp has a cap.

SCRIPT AND PRINT.

If the printed form were what is used commonly in writing, we would certainly train the child from the outset to print. As it is not, we teach him to write the



script that he is going to use constantly, and train his eye to recognize the forms found in printed matter. We hear occasionally of a "transition from script to print." There should not be any such step. If the reading be taught properly there is a gradual acquaintance made with both the written and printed forms of the letter, and at the end of the regular phonic teaching the children are able to take up their books and read without any trouble.

As we wish to avoid any possibility of confusing the little ones, we do not give them printed matter until they have had about six weeks of phonic teaching. We then give them the First Reader. Towards the end of the lesson at the board slates are exchanged for books. As a first exercise we lead the children to see how "a" is made in print. After impressing the form, and giving a little exercise with it, ask the pupils to find all the words they can which contain "a," and, if possible, write them (in script) on their slates. The searching for words is very interesting "busy-work." As every new letter and its sound is taught, we turn to the book and give some such exercise as the above to fix the printed form. Hunting for words, the children begin to read for themselves, and I have been surprised sometimes on taking up the regular book lessons to find how perfectly some of them knew the lessons without any direct teaching.

UNPHONETIC WORDS.

There are a few words that can only be taught by the word method. Some of these we require very soon for the formation of short sentences, or, as we call them, "stories." Such are the, was, you, some, one, two, to, do, does, there, and would. These should be taught one at a time, and placed on an unused part of the blackboard or on the reading chart, to be convenient for the frequent drill which they require.

LESSON VII.—LETTER "O."

Introductory story.—This is a little girl's letter. She had a very bad habit. Whenever she was asked to do anything she did not wish to, she would screw up her face as though she was going to cry, and say, "O—O—O."

New words.—Tom, top, hot, hop, stop,

spot, pot, cot, cost, scot, sock, stock, toss, moss, mock.

Sentences.—Stop Tom. Tom has a top. Tom has Sam's top. Tom's cat has a sock. Tom has a cot. Sam mock's Tom's cat.

Seat work.—(a) Make words with m, a, t, s, p, h, c, and o.

(b) Write as many words as possible containing "o."

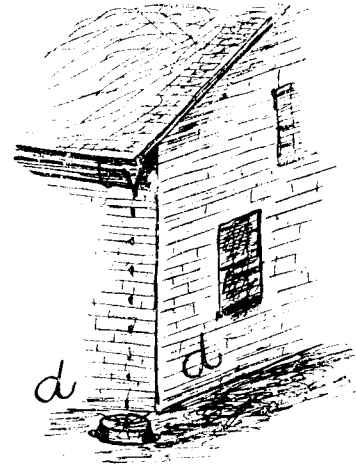
(c) Make words with the letters in the wheel.

LESSON VIII.—LETTER "D."

In introducing this letter compare the sound to the dropping of water from a broken eaves-trough into a tin pan below. Teach the use of "I."

New words.—Mad, pad, sad, had, damp, pod, hod, sod, cod, dock.

Sentences.—Tom had a hod. I had ten pods. Sam had a mad cat.



LESSON IX.—LETTER "N."

Develop the new sound in the following way:

Teacher—Write pat.

" pan.

(Children write pa and then stop; cannot write the letter that gives the last sound.)

Teacher—Let me hear the sound.

Children—p—a—n.

Teacher—I will write them as you give them, again. Slowly, p—a—n. What does the last one say?

Children—n (giving sound of letter).

Teacher—Who can make a letter on the board that is something like this one (a pupil writes m). Now our new letter is just like this, only we need but two walking-sticks instead of three, and instead of keeping our lips closed as we did when we said what m says we show our teeth in this way.

New words.—Man, pan, tan, can, Nan, Ann, nap, not, nod, scan, stand, span, hand, sand.

Sentences.—The man can not stand. Ann has a hot pan. Tom has Nan's hand. The man had a nap. I had a nap.

LESSON X.—LETTER "E."

Develop the sound as in Lesson IX.

New words.—Men, ten, pen, hen, net, pet, tent, sent, spent, nest, test, met, den, dent, send, spend, mend, deck, speck, step, Ned.

Sentences.—Ned can mend a net. Ned has ten hens. I had a pet hen. The hen has a nest. I met ten men. The men had a tent. Set the hen on the nest. Ned has a pet hen.