“New Math” – What were they thinking?

In the early 1960s, mathematics was taught with new emphasis. The media, comedians, and schools called it “New Math”.

The idea of New Math was to teach young students the abstract concepts that remained constant throughout all studies of mathematics first. Later students could learn how the concepts applied as they began to learn computations and show how they followed the overall number theory concepts.

Two topics that were emphasized then were modular math and the study of other bases besides base 10 in order to give perspective to what we considered regular computation.

Tom Lehrer was a mathematics student at Harvard when he began writing parodies about mathematics and science. He wrote the song, “New Math” in 1959. We’ve written out the words to the song below but you can listen to his performance with some animation at; http://www.youtube.com/watch?v=SXx2VVSWDMo

Let’s see if we can still understand and interpret the 1960’s New Math program.

Some of you who have small children may have perhaps been put in the embarrassing position of being unable to do your child's arithmetic homework because of the current revolution in mathematics teaching known as the New Math. So as a public service here tonight I thought I would offer a brief lesson in the New Math. Tonight we're going to cover subtraction. This is the first room I've worked for a while that didn't have a blackboard so we will have to make due with more primitive visual aids, as they say in the "ed biz." Consider the following subtraction problem, which I will put up here: 342 - 173.

Now remember how we used to do that. three from two is nine; carry the one, and if you're under 35 or went to a private school you say seven from three is six, but if you're over 35 and went to a public school you say eight from four is six; carry the one so we have 169, but in the new approach, as you know, the important thing is to understand what you're doing rather than to get the right answer. Here's how they do it now.

$$\begin{array}{r} 342 \\ -173 \\ \hline \end{array}$$

You can't take three from two,
Two is less than three,
So you look at the four in the tens place.
Now that's really four tens,
So you make it three tens,
Regroup, and you change a ten to ten ones,
And you add them to the two and get twelve,
And you take away three, that's nine.
Is that clear?

Now instead of four in the tens place
You've got three,
'Cause you added one,
That is to say, ten, to the two,
But you can't take seven from three,
So you look in the hundreds place.

From the three you then use one
To make ten ones...

(And you know why four plus minus one
Plus ten is fourteen minus one?
'Cause addition is commutative, right.)
And so you have thirteen tens,
And you take away seven,
And that leaves five...

Well, six actually.
But the idea is the important thing.

Now go back to the hundreds place,
And you're left with two.
And you take away one from two,
And that leaves...?

Everybody get one?
Not bad for the first day!

Hooray for new math,
New-hoo-hoo-math,
It won't do you a bit of good to review math.
It's so simple,
So very simple,
That only a child can do it!
Now that actually is not the answer that I had in mind, because the book that I got this problem out of wants you to do it in base eight. But don't panic. Base eight is just like base ten really - if you're missing two fingers. Shall we have a go at it? Hang on.

8^4	8^3	8^2	8^1	8^0
4,096	512	64	8	1
10^4	10^3	10^2	10^1	10^0
10,000	1,000	100	10	1

You can't take three from two,
Two is less than three,
So you look at the four in the eights place.
Now that's really four eights,
So you make it three eights,
Regroup, and you change an eight to eight ones,
And you add them to the two,
and you get one-two base eight,
Which is ten base ten,
And you take away three, that's seven. Ok?

$$\begin{array}{r} 342_{\text{base}8} \\ \underline{-173_{\text{base}8}} \end{array}$$

Now instead of four in the eights place
You've got three,
'Cause you added one,
That is to say, eight, to the two,
But you can't take seven from three,
So you look at the sixty-fours.

"Sixty-four? How did sixty-four get into it?" I hear you cry.
Well, sixty-four is eight squared, don't you see?
(Well, you ask a silly question, and you get a silly answer.)

From the three you then use one
To make eight ones,

And you add those ones to the three,
And you get one-three base eight,
Or, in other words,
In base ten you have eleven,
And you take away seven,
And seven from eleven is four.
Now go back to the sixty-fours,
And you're left with two,
And you take away one from two,
And that leaves...?

Now, let's not always see the same hands.
One, that's right!
Whoever got one can stay after the show and clean the erasers.

Hooray for new math,
New-hoo-hoo-math,
It won't do you a bit of good to review math.
It's so simple,
So very simple,
That only a child can do it!

Come back tomorrow night. We're gonna do fractions.
Now I've often thought I'd like to write a mathematics text book someday because I have a title that I know will sell a million copies. I'm gonna call it Tropic Of Calculus.

Source: http://www.lyricsfreak.com/t/tom+lehrer/new+math_20138395.html