## New Math

Words and Music by Tom Lehrer
(Note: Except for the refrain there is no melody to this song. The words are to be spoken rhythmically to an underlying $2 / 4$ beat, except for the words in italics, which are spoken freely. The specific accompaniment used by the author on his recording would require too many pages to write out and is therefore omitted.)

You can't take three from two,
Two is less than three,
-173
169
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 tens...
(And you know why four plus minus one Plus ten is fourteen minus one?
'Cause addition is commutative, right! )...
And so you've got 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!
(Sing refrain)


Now, actually, that 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?

## $342_{\text {eight }}$ <br> $-173_{\text {eight }}$ <br> $147_{\text {eight }}$

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.

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 eights,
And you add those eights 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, right!
Whoever got one can stay after class and clean the erasers.
(Sing refrain) 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!

