CAN YOU READ MATH-ESE?

A tutorial on how to read math.

When a math teacher gives you an assignment from a textbook, what do you do?

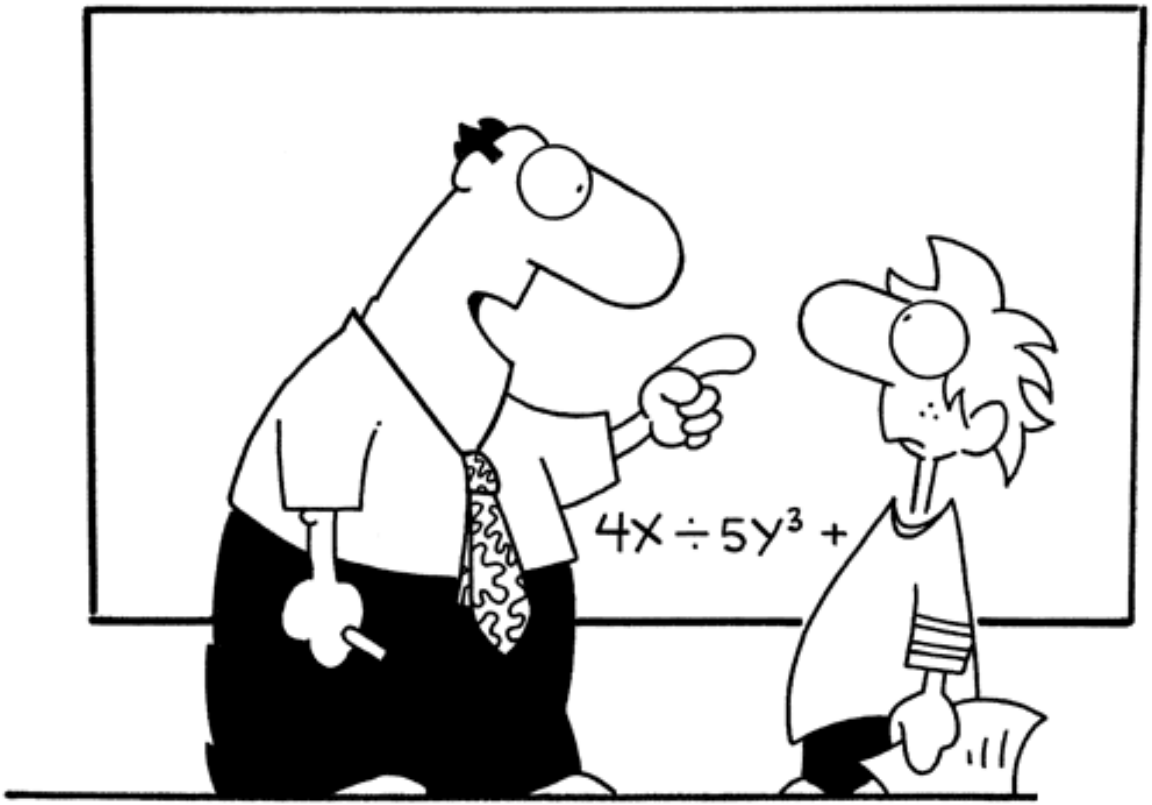
That's right! You do just what almost everyone else does. You ignore the chapter in front of the exercises and go straight to the exercises. I've often wondered…

Why are math textbooks so thick? Why don't they just publish a bunch of problems and let the teacher take care of the rest?

You tell me. What are two good reasons for just skipping all the junk?

Now tell me. What are two good reasons for keeping the junk?

Not a Good Reason



"Algebra will be important to you later in life. When you're my age, you can use it to torture people your age!"

My Reasons

You've probably come up with some pretty good reasons on both sides. I'm going to talk to you a little bit about why the junk is there.

The companies that print the books and the people who buy them do so in hopes that you will READ them!

I may sound a bit cynical. I happen to think it's a good idea to keep all of that junk there. I'm a bit cynical because when I look back at my own education, I realize that not one teacher ever taught me how to read math!

The only reason I know how to read math is because I taught myself to read it, and that's just because I had to so I could pass a class!

Soo….

Here goes…

I’m going to begin right here and now with a section in all of my classes that helps students learn to read math.

Step One

Find a notebook. Get a spiral notebook or a three-ring binder or use a word file or anything, but always have it available for when you go through these power points. Also have it available for when you are reading/doing math to take notes. DO NOT GO ON UNTIL YOU HAVE YOUR NOTEBOOK.

Step Two

Really, get a notebook. How can you expect to succeed at something when you won't even follow through with the first step? One of the most important parts of reading math is being meticulous in everything you do.

Step 3

Find a hefty dose of patience.

Reading math is not something that can be approached by somebody in a hurry. If you're in a hurry, you may as well read 'Twilight' or something else just as fluffy. I use the word fluffy for a reason that you'll see later.

Give yourself time to read without hurry.

Step 4

Find a favorite novel and settle down somewhere with your notebook.

Open the novel anywhere and begin to read. It doesn't matter where. Open the book and read.

Read just one sentence. In fact, write the sentence down in your notebook and write the meaning for each word as well.

Mine looks something like this.

The sentence: Richard said he was ready for anything.

Richard—The name of Ada's brother and in the care of Mr. Jarndyce.

Said– Past tense of to say, meaning to make a statement, open your mouth and emit sounds that make some kind of sense.

he– referring to Richard as he speaks of himself.

Was– Past tense of is or to be. Many times followed by a state of being, like…

Ready– A state of preparation.

For– a preposition linking ready to anything.

Anything– a word denoting a broad set of possibilities. In this context, anything that could happen.

Ridiculous?

Do this with one of your sentences. Depending on the sentence, you may be surprised to find that your understanding of the sentence and the story has deepened.

Try this one

He was pinched in, and swelled out, and got up, and stepped down, as much as he could possibly bear.

Are there any words in the sentence that you didn’t know before you read it?

Write this stuff down in your notebook!

The answer to that last question is probably no. I can't see a word in there that the average high school student doesn't know. However, the way the words are placed together makes some of the *phrases* difficult to understand or picture.

What does 'pinched in' mean?

What about 'stepped down'?

Understanding this sentence is going to be more difficult than just glancing at a few words, isn't it?

PETER

1.21

b) Expand

~~$x^3 + ox - 2$~~

$(a+b)^n$ Very funny, Peter.

$= (a + b)^n$

2 ?

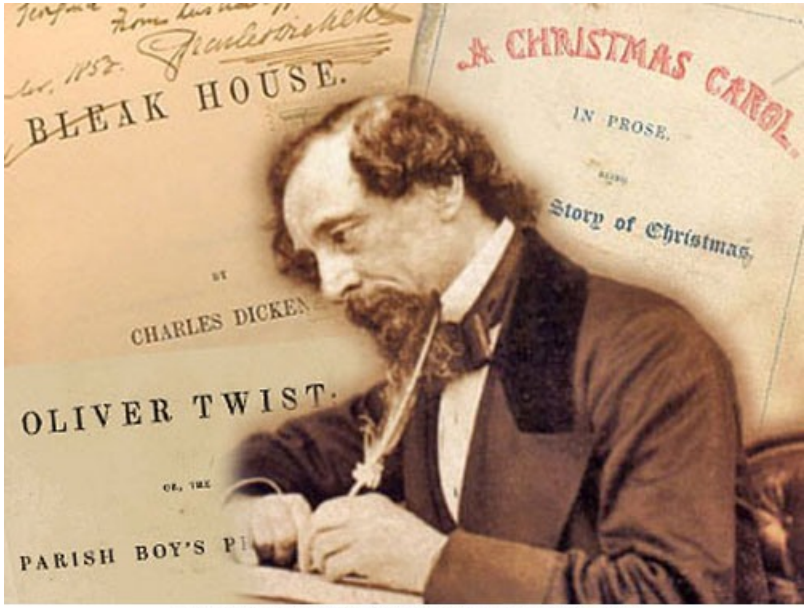
$= (a + b)^n$

$= (a \quad + \quad b)^n$

etc...

How to read a sentence

Take a look at the last sentence. The sentence was taken from a book called "Bleak House", written by Charles Dickens. He wrote it more than 150 years ago! When I read that sentence for the first time, it was in the *context* of the book. Let's talk about context.



"It was the best of rides, it was the worst of rides"

Context

Context, in a broad sense, is everything surrounding a sentence or a word. The context of this sentence includes

1. The story
2. The paragraph (it is in the middle of a description of a person)
3. The time it was written
4. The language in which it was written
5. The information that I bring to the reading
6. Where the story takes place (England)

Context, cont.

These 6 things as well as many others contribute to what the sentence means. A reader may be able to understand the words, but the context in which it was written changes the meaning drastically, and can sometimes make it VERY difficult to read. Especially if it's in a different language!

Density

Did you know that sentences, paragraphs, and books have different densities? If you've ever read a book by Charles Dickens and then read a book that was written for your 8 year old sister, you've experienced this.

Density, Cont.

The Charles Dickens book packs a lot more meaning into a few words or phrases than the book written for your little sister. This is why you can read the books for your sister so fast. (Don't lie, I know you have). You don't have to spend a lot of time deciphering the words and phrases and trying to figure out what the author is trying to say, so you just zip through it.

The Twilight Effect

Among the popular books and series of the day is a series called “Twilight”. Millions of people have read the books. They get them and devour them in a matter of a few hours. Before “Twilight” was “Harry Potter”. Have you ever watched a person read straight through those 600+ pages? They don’t take any notes or break down the meaning of sentences. They just read straight through. They’re ‘fluffy’. Have you ever tried to read a math book that way?

YES

The answer is yes. Everybody who has ever tried to read a math book has done the same thing to some extent or another. We've been trained to just read the words once and think we understand what's going on simply because we understand each word. This is what I call

the Twilight Effect. We try to read very dense material the same way we read 'fluffy' material.

Finally, to math!!!

Remember the last sentence we looked at? You can read that sentence any number of times, but if you have no context or vocabulary with which to compare it, you will still be lost. Until you decide to give a passage the context it needs, you will never understand it to the depth the author intends. Mathematics is one of the most difficult languages to read, and this is why.

The Why and How

1. Math is not English. It is a different language!
2. Math is the most dense of all languages.
3. Math needs to be taken in the proper context. We can't read it like a novel. We need to define and interpret every single word or phrase in its context.
4. Math takes TIME to read.

Next time

In the next installment, we will be looking at examples of reading and how to tear apart a math sentence! Yay! Destruction!