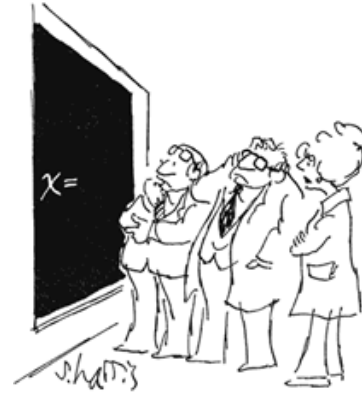




# Math Notes

Have you ever felt as if “mathemagic” happened in your math class when reviewing your notes? How did your professor move from one step to the next step? If so perhaps it is time to revise your note taking skills. Math notes are intended to enable you to not only understand the process of completing problems from your math class, but also to enable you to understand the ideas behind each concept covered in class. In short, they are to help you understand that what you learned is not “mathemagic”, but a useful collection of mathematical concepts that help describe something you might encounter in your daily life.



## What to Include

In order to take quality math notes for your math class you need to know what you should be including in these notes. Examples of problems are not enough<sup>1</sup>. The “mathemagic” is hidden in the descriptions of what happens. In each lecture a professor explains what is happening, but they may not write it down. Interpret what they say and include it in your notes.

The following is a list of things to include in your notes if possible:

- Examples
- Definitions of Words
- Formal Rules
- Questions
- Processes
- Concepts or Patterns
- Your own description of what is happening

## How to Format Notes

Math notes should be formatted similar to how you would format notes you take for other classes. Your organization style is important to define and continue. An important element in math notes, one which is often overlooked, is to explain what is happening with more than just numbers. Thus, two columns should be created<sup>2</sup>.

March 19, 2015  
 Math 0995

### Solving Polynomial Equations by Factoring

Review:  $3(2x+4) = 2x-1$

$$\begin{array}{r} 6x + 12 = 2x - 1 \\ -2x \quad -12 \quad -2x \quad -12 \\ \hline 4x = -13 \\ \frac{4x}{4} = \frac{-13}{4} \\ x = -\frac{13}{4} \end{array}$$

Zero Factor Property

 $xyz = 0$ 

Ex. Solve the equation.  $2x(x-1)(x+4) = 0$

$$\begin{array}{ccc} 2x = 0 & \text{or} & x-1 = 0 & \text{or} & x+4 = 0 \\ \underline{2} & & \underline{1} & & \underline{-4} \\ x = 0 & & x = 1 & & x = -4 \end{array}$$

$$x = \{0, 1, -4\}$$

- Distribute the 3 to get rid of parentheses.
- Get x by itself.
  
- What must be true if  $xyz=0$ ?  
At least x, y, or z must be equal to zero.
- Just like above, one of the terms must equal 0 for this to be true. To solve I need to set each term equal to zero and solve for x.
- Note: It's ok to have 3 answers  
- Why can x = three different #'s?



### Left Side (Regular Notes)

On the left side of these notes take notes just as you normally would. Include examples, definitions of words, concepts, and anything your professor writes on the board. There should be an organization. If you are learning about the Quadratic Formula there should be a heading with the quadratic formula and a description of what it is. Then there should be examples under that of how the quadratic formula is used and descriptions that your professor may give.

### Right Side (What's Going On?)

On the right side you write about what is happening. Include questions, catchy phrases that help you remember, and your own interpretation of what is happening. This column allows you to record your thinking process. You explain how and why you move from step to step on examples. You explain why a definition is the way it is and what previous concepts it may build from. Record your thinking so that you can refer back to it later.

### What to do with Your Notes

So you took notes. Now what? Within a few hours after class review your notes. Make sure you understand what is written. Ask questions and add them to the right side. Then search for the answers. Each time you sit down to do your homework make sure your notes are easily accessible. They may turn out to be more useful than the book at times. They are a collection of your thoughts and ideas on the subject while you were learning. You can add to your notes as you do your homework. Answer questions you may have asked that you now understand better. Use your notes as you do your homework. Identify concepts from your notes that you are working on while you do your homework. Connect ideas you have learned together for greater understanding.

1. Hanlon, B. (2012). Teaching Struggling Students in Math : Too Many Grades of D or F?. Blue Ridge Summit, PA, USA: R&L Education. Retrieved from <http://www.ebrary.com>
2. Leong Yew, H., Tay Eng, G., Quek Khiok, S., Yap Sook, F., Tong Cheng, L., Toh Wei Yeng, K., & ...Ong Yao, T. (2014). Note-taking in a mathematics classroom. *Australian Mathematics Teacher*, 70(4), 21-25.