

The Elements of Algebra

A Visual Course

Algebra I

2nd Edition

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Supported in part through a grant from the U.S. Department of Education
under the Fund for the Improvement of Post-Secondary Education
FIPSE grant number P116B020767
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Cover photo: Royal Museum in Edinburgh, Scotland

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Cambridge, Massachusetts

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A Letter to Students

Why is math so hard for me to learn?

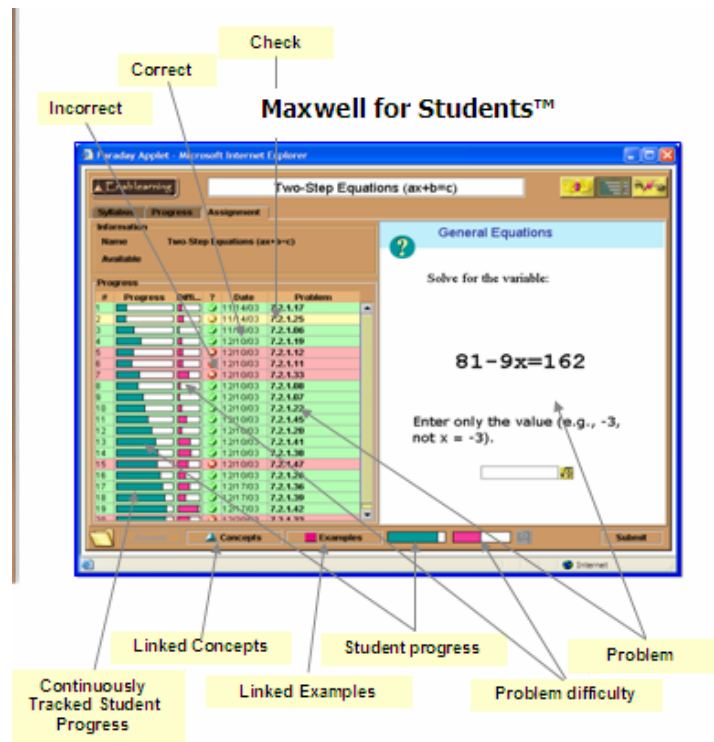
Reason #1 – You have to do your homework!

You can't learn to hit a ball, drive a car, or knit a sweater by just watching someone do it. You have to do it yourself, you have to practice. We call this application. And you can't learn math by watching someone do it, you have to apply it yourself, you have to do your homework assignments.

The Elements of Algebra with its powerful online technology that we call **Maxwell™**, completely changes the homework process. We solved the Goldilocks Dilemma — the assignments are either too hard so you are frustrated, too easy so you are bored, and rarely just right so that you really learn from them. Our Maxwell for Students technology matches each problem that you do to your learning progress. It shows you how you are progressing and gives you problems at just the right level to maximize that progress. So you do all of your homework online, on the Web wherever you can log on.

Another problem with traditional homework is that it is either not graded or when it is graded it takes so long to get feedback to you that it does not help you. Maxwell grades every problem immediately and gives both you and your instructor the results instantly. It connects you to visual, highly interactive content if you need help and with our built-in Marconi instant messaging system you can get help from other students or from the faculty.

And finally, when you do your homework, you want to have control. Sometimes you only need to do a dozen problems to learn the concept, and sometimes you need more. Maxwell is based on mastery, you are given problems until you progress to mastery and then you can either quit or go on. You always learn and the more you concentrate and the more care that you take, the fewer problems you will have to do to get to mastery and thus to finish the assignment. No more than 30 problems every night, we have you do only what is necessary for you to learn the concepts.



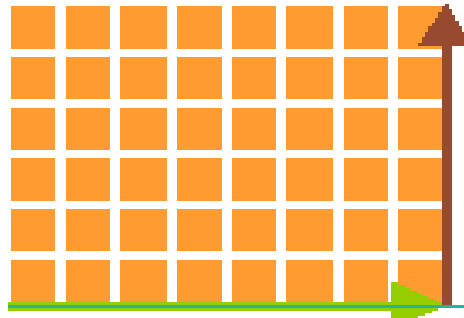
A Letter to Students

What makes mathematics so difficult to learn?

Reason #2 – Math is Visual

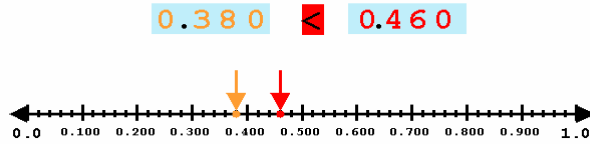
We built —“*The Elements of Algebra*”—as an answer to this question. We know that math makes many students feel stupid. We know that it makes people anxious and brings some to tears. We know that a majority of people believe they just cannot learn math. We have a theory about why math is so hard for so many, and we have put that theory into practice to create a course that we think will make it much easier for most people to learn this subject. When we are taught math using “Text and Talk” we have to translate the words we hear into pictures in our minds — and that is very difficult for “serial” learners (most of us) to do. We are not naturally visual thinkers.

But mathematics is a visual language. Almost all of the concepts in math are visual concepts. Those people who “get math” see its concepts as images in their minds. They can visualize each concept and picture math problems. Most of these visualizations are dynamic, they change and the people who understand math can mentally animate these images. They can for example picture a variable as a dot moving on a number line or around a graph. We believe the secret to learning and understanding math is to be able to picture it. For example, visualize multiplication as a rectangle. If it is 8 units wide by 5 units high then it is filled with 40 squares. Can you take this visualization and manipulate it in your mind? Make it a 7x7 rectangle – now you see why we call this a square number. Make it 1x12, then 2x6, and then 3x4. Can you see that these are the factors of 12? If you can’t do this yet in your head, don’t despair, our course on the Web that is build on our **Faraday**™ technology lets you do just this to learn how to visualize math and solve the math problems you encounter.

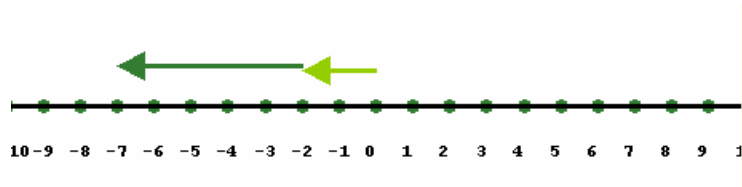


You will find that we focus on five key visualizations as the primary images of math. We call these "Dynamic Conceptual Representations."

1. We picture numbers and relations between them like $=$, $>$, $<$ on a number line.



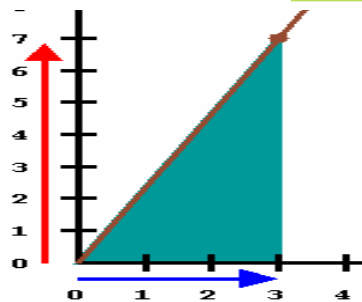
2. We use vectors (arrows) to represent addition and subtraction.



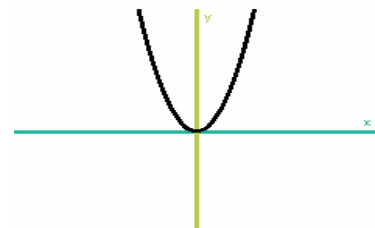
3. When you picture multiplication or a product as a rectangle, it makes it much easier to understand what happens when you multiply and how things like F.O.I.L work.



4. Ratio and proportion are hard ideas for many students, but not if you picture them with triangles.



5. Graphs have been powerful visualizations of functions and we make graphs dynamic so that you can see them change.



We look forward to your success and to hearing from you.

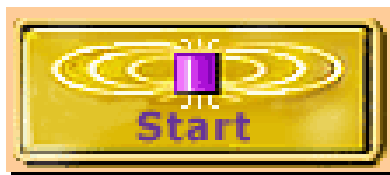
Enablelearning

Starting the Course for the First Time



On the Web go to:
www.enablelearning.com

Full instructions for using our Toolkits are on our Web site. If you need help, send us a message at:
support@enablelearning.com



Press the **START** button to begin. Depending on your connection speed, it may take a few minutes to load our applet.

A screen may appear asking you if you want to install **Java Plugin 1.4**. Click "Yes" to begin the installation. Accept all of the default recommendations.



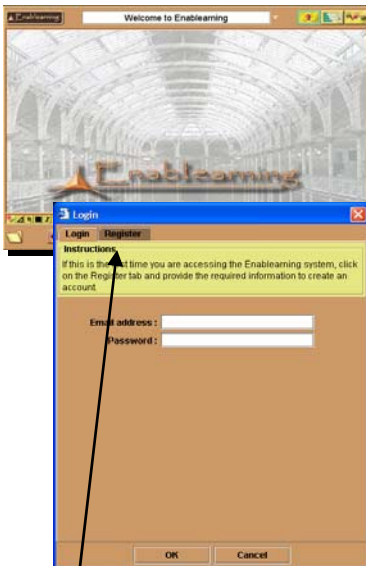
A screen will appear asking you if you want to trust our applet. Click on the "Always" button to store our certificate on your computer.

DOWNLOAD NOTES:

Java is a one-time only download. You will not need to install Java again during subsequent visits to our site.

After you load **our applet**, it remains stored on your computer unless you delete your browser cache or we re-release a new version.

Starting the Course for the First Time



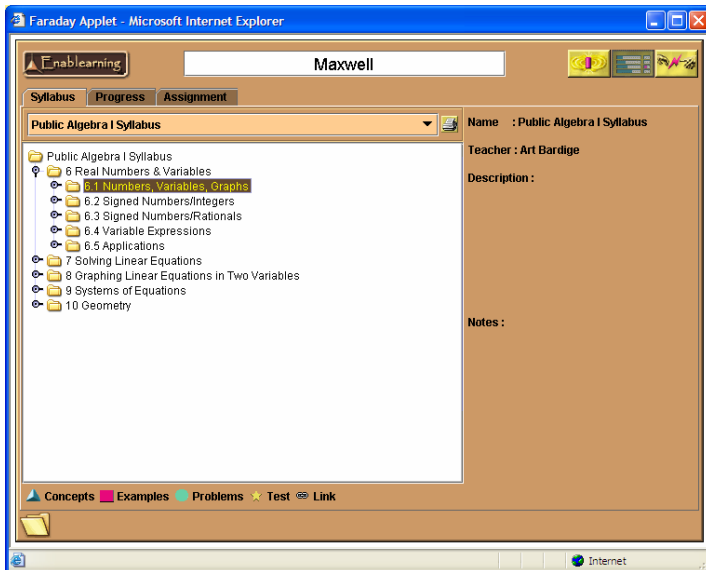
Click on the Register tab on the login screen.

Fill out the required fields to register. Your email address will be your login name. If you have a section code from your instructor be sure to type that in the **Code** box and press OK. This Code registers you for the right class and syllabus.

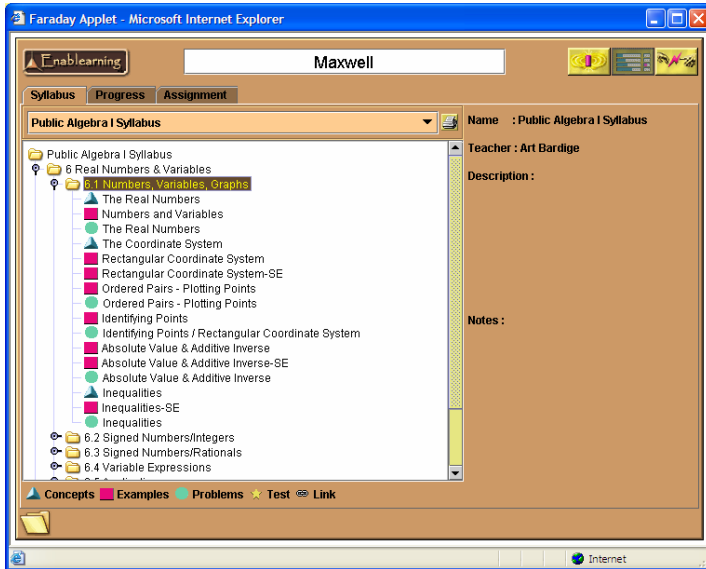
During subsequent visits to the site, you will type in your email address and password in the main login screen.

Be sure to store your login name and password in a safe place so that you can access *The Elements of Algebra* from any computer connected to the Web anytime. Don't share your password with anyone else—it is your way of protecting your work!

Your Syllabus and Assignments

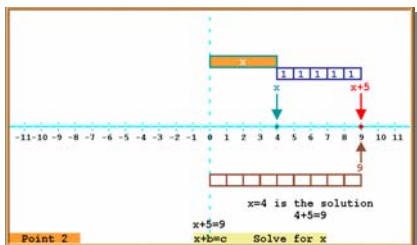


The Elements of Algebra is customizable, so each course syllabus will likely be different. Yours may not look like the picture on the left. But every one of them consists of a series of folders that contain all of the content in your course.

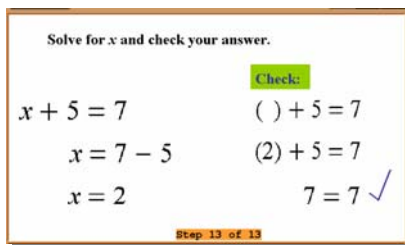


Click on the little knob beside a folder to open it up. You will see a list of assignments with concepts, examples, practice problems, and problems. You may see links to other content in your syllabus.

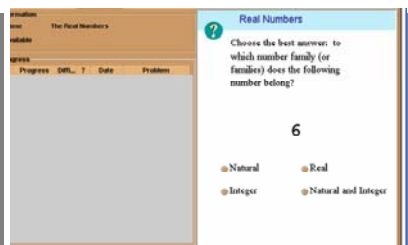
To start an assignment, double click on it.



Concepts



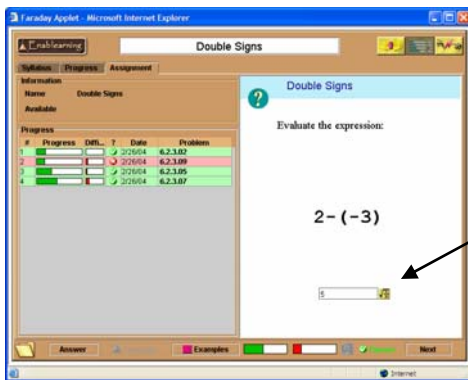
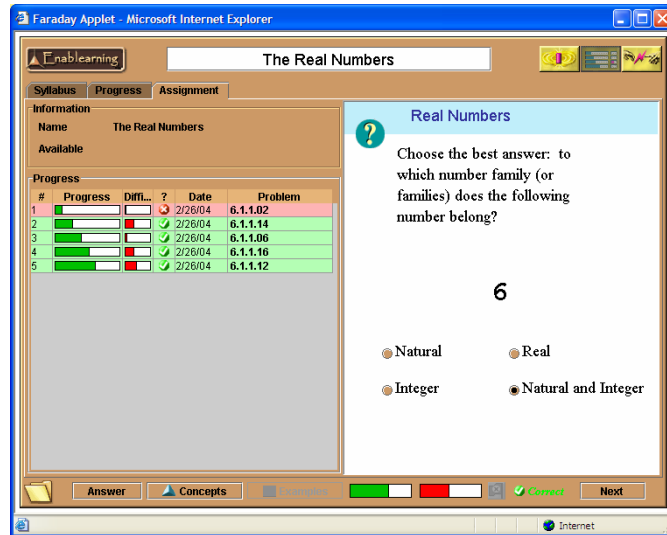
Examples



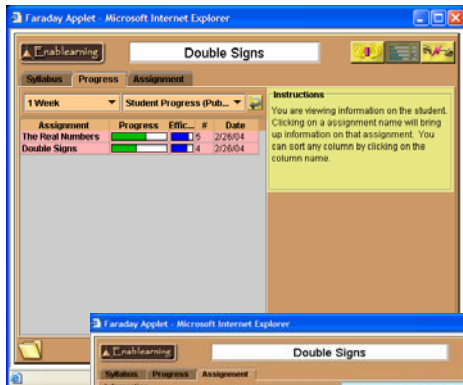
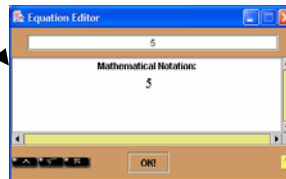
Problems

Doing Your Homework!

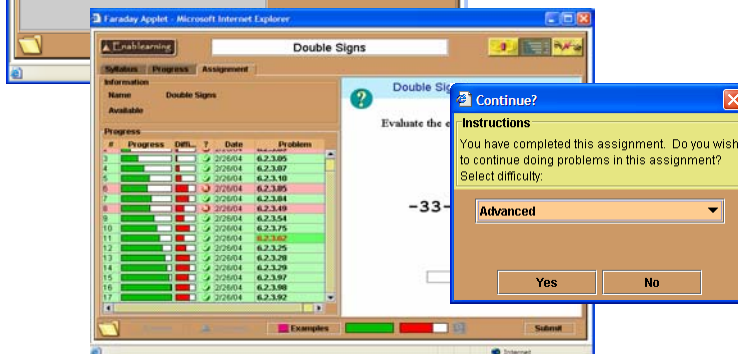
Pick a problem assignment and start doing your homework. You can see your progress on the left side of the screen. On the bottom of the screen you can see the question's difficulty level (red) and your progress (green).



Some of the problems require you to write in your answer. Do your work on scrap paper or in a notebook and type in the answer. If you want to see the answer in standard math symbols, click on this button and fill the math editor.

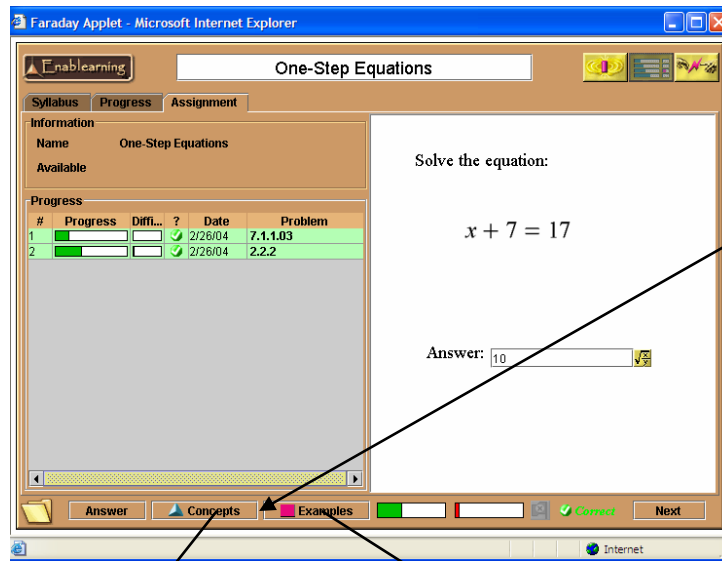


The **Progress** tab shows you how much progress you have made on each assignment you have worked on. The blue **Efficiency** bar shows you how efficient you are getting to mastery.

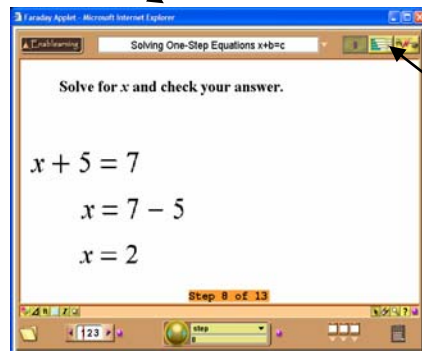
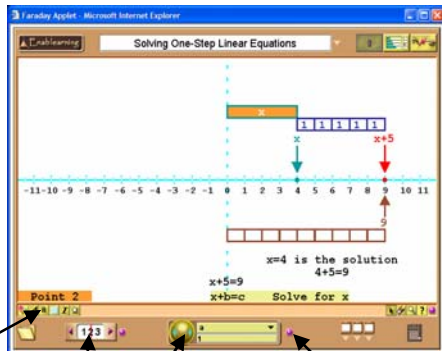


You will be finished with an assignment when you reach **Mastery**. A box will pop up and ask you if you want to continue. You can look at your progress anytime. You can do more problems if you want or go on to the next assignment.

Concepts and Examples



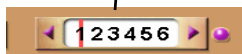
When you are doing a problem, you can get help by clicking on the **Concept** button or the **Example** button. This will bring you directly to a linked lesson.



Draw or write on the screen with the built-in tools.



Use the "Joystick" to control the Dynamic Visualization and pick the quantity you want to change.

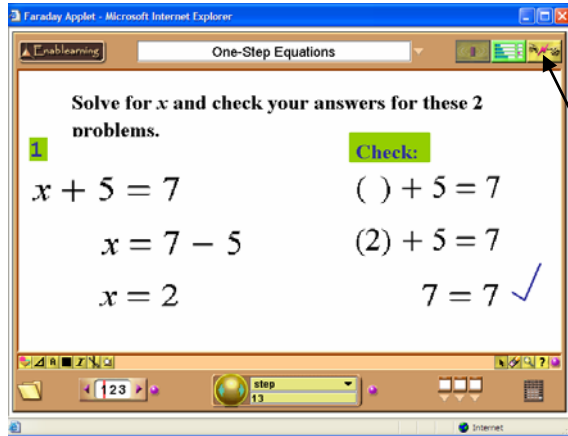


Use the Point Selector to go from Point to Point or to pick a Point.

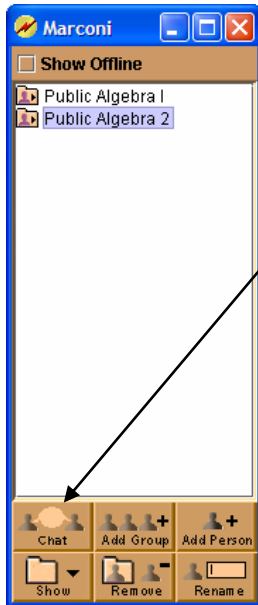
Examples are built **Step-by-Step**. You can go forward and back using the Joystick.

To go back to problems click on the Maxwell button.

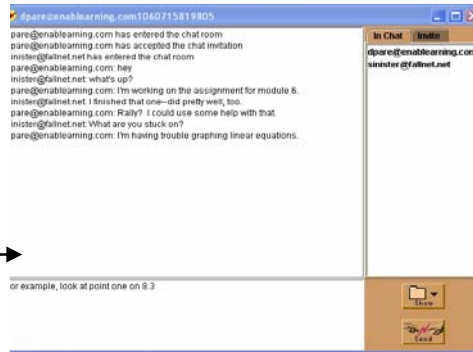
Using Marconi™ — for Instant Messaging



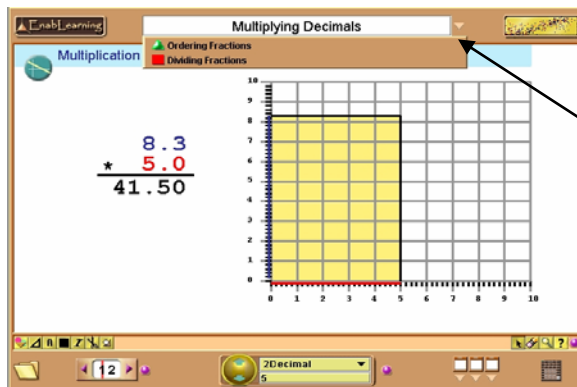
The Elements of Algebra has a unique built-in messaging system that not only allows you to instant message another person in your group, but also allows you to share what is on your screen. Click the **Marconi** button to start.



Select the group you want and press the **Chat** button to open the Chat Room.



Type in your message and then hit **Send**. You'll see the responses in the main part of the screen. To share your screens press the **Show** button.



If you are viewing a screen that someone sent to you and want to go back to the screen you were viewing before, click on the **arrow** next to the title bar and click on the previous file.

Support What to do if you need help.

First

Do you have a modern PC with Windows 98 or above or a Mac with system 10 or above? Your PC or Mac should have at least 128MB of RAM.

Second

Do you have an Internet connection? We work with 56Kb modems, but broadband (cable or DSL) is preferable. The Java download is over 10MB and takes a long time on a 28.8 56Kb modem. Our applet is about 2MB and is downloaded only once. Lessons are generally small so they work with a modem.

Third

Go to www.enablearning.com and select **Support**. You will see lots of help, including more comprehensive manuals, FAQs (Frequently Asked Questions), and suggestions to problems that have come up.

Fourth

Is it a problem with our software or with your computer? If it is a problem with your computer, get help from a friend or from the college IT staff.

Fifth

Email us at support@enablearning.com and we will get back to you in less than 24 hours.

