Beginning Algebra is one of the great stumbling blocks in education. A few students get it right away. Others get it eventually, after putting in lots of work. Some think they get it, or hope they get it, at least well enough to pass the next test. Many give up trying to get it.

There are several reasons for this. Here is one: how those math symbols work together in an equation is not at all obvious to the beginner. Some might say it is maliciously tricky. But there is structure in those symbols. That structure is even fairly simple, once you see it. Until you see it, nothing is simple. Understanding the structure of equations *and what you can do with it* is the foundation of success in algebra. For many people, that understanding is never very clear. By looking at algebra in a different way, this app helps to pull that understanding into focus.

DragginMath converts written equations into pictures: simple diagrams of their structure called *operator trees*. Diagrams like this are not new, but practical problems have prevented them from being used much in teaching. They are tedious to draw by hand. They consume vast amounts of paper. And then, once drawn, what can you do with them? The iPad is the environment in which these practical problems can be solved, finally letting diagrams of this kind live up to their potential.

As you type an equation, DragginMath assembles the diagram of its structure on your iPad screen. You can watch this happening, step by step. When the equation is complete, you can solve it by interacting with the diagram *directly*, moving parts around, separating or combining them with other parts. Each move you make applies one of the rules of algebra, causing the diagram to automatically redraw in its new form. Only

mathematically correct changes are allowed. If a move doesn’t match any rule of algebra, nothing happens and the parts go back where they came from. Your fingers don't hurt from squeezing your pencil, you don't use up your eraser, and you don't fill a wastebasket with crumpled paper. You still have to understand what algebra means and how to do it. DragginMath makes doing algebra easier, but it doesn't do it for you.

If you already know algebra well, a few things in DragginMath may seem strange to you. But if you already know algebra well, DragginMath was not made for you. It was designed to help those who know little or nothing about algebra. Once the fundamentals of algebra are understood using DragginMath, the wise student will move forward on paper with greater assurance and success.

Because DragginMath is aimed at beginners, you might think it is only a toy that can only solve toy problems. Nothing could be further from the truth. You can do real math with DragginMath. You might even enjoy doing it.