1106-VU-1045 **Shumei C Richman*** (richmansmc@gmail.com). *Teaching Beginning Algebra Beyond Visual Forms.* Preliminary report.

In my ten plus years of teaching beginning algebra in colleges, I have been searching for the root causes and remedies for many common mistakes made by my students. One of the most common mistakes is the misuse of the distributive law, a(b+c)=ab+ac, which many students see as a visual form without operations involved. Therefore, for example, they simplify the statement 3(1/3*x) mistakenly to 3x. To help students avoid these visual-form-led mistakes, I have tried different approaches in my teaching, but most of them are too complicated; only a few are simple enough to be effective and well accepted by my students. The most effective one is twin comparison, in which two or more problems with almost exactly the same visual form are organized side-by-side in a problem set, such as Ex 1.(a) Solve 3(1/3+x)=12, (b) Solve 3(1/3 *x)=12; or Ex 2.(a) Simplify x/2*3/4, (b) Solve x/2=3/4. In this talk, we will discuss how visual forms may lead to mistakes, through several examples in beginning algebra, from linear equations to rational expressions. We will also discuss how some approaches help students see the hidden math concepts beyond visual forms, as well as the impacts of these approaches on students' math learning in general, besides avoiding mistakes. (Received September 14, 2014)