

1135-VI-516

**Shumei C Richman\*** ([richmansmc@gmail.com](mailto:richmansmc@gmail.com)). *1H3W for the Teaching of Beginning Algebra*. Preliminary report.

We all know that partial understanding leads to mistakes. This is the case for most of the mistakes my students make in remedial beginning algebra classes. They are used to doing a math problem by following the steps in a given formula or procedure, without knowing either what is going on or why it works. Because of this “knowing how only” approach, they do not have a good sense about when to use which formulas/procedures, resulting in common mistakes such as misusing the distributive law. To help them avoid mistakes, I have developed this alternative 1H3W approach, which requires students to understand what, why and when, in addition to how. To do so, for each problem being solved a concept approach is added, which reveals what and why, alongside a commonly used formula approach. Furthermore, several problem sets, each including similar-looking problems that use different formulas, are given and discussed, in terms of when to use what formulas. This 1H3W approach is much more time consuming but gives students a comprehensive understanding of a problem or formula or topic, and so helps them to not only avoid mistakes but also build up mathematical sense. In this talk, we will discuss how to teach 1H3W, by examples from the distributive law to exponent properties and beyond. (Received September 17, 2017)