

Pinewood Derby Algebra

Have you ever wondered why algebra is considered an important subject in high school and in college? When we think of algebra, we think of math and science because it is frequently used there. Most of us don't relate algebra and the Old Testament (OT). Yet, one evening while working on a pinewood derby race car for my son, I saw a connection between algebra and the OT.

If you are in a pinewood derby competition, you typically get a rectangular block of wood (pine), four axles, and four wheels. Your aim is to develop these raw materials into something sleek, stylish, and hopefully something fast. The pursuit of both style and speed consumes a lot of time. Most pinewood derby competitions have limitations on the weight of the car. Meeting the weight limit is also a bit of a challenge, especially if you have no weight scale. This is where I found myself that evening. The pinewood derby competition was the next day, so I did not have time to waste. I decided to make my own weight scale out of a dumbbell bar, a pivot point or fulcrum, and a dumbbell weight. I balanced the pinewood derby car hanging from a small wire on one side of the dumbbell bar with the dumbbell weight on the other side of the bar. I knew the value of the dumbbell weight because it was listed in plain writing on its side. I did not know how much my pinewood derby car weighed, but I could figure it out by knowing the distance each weight hung from the pivot point. The car's weight times its distance from the pivot point equals the dumbbell's weight times its distance from the pivot point. My improvised scale worked marvelously because it was fairly accurate. You should try this at home.

How does this exercise relate to the OT? The Bible mentions scales and balances in the OT. Here are a few biblical references: Lev 19:35-36, Deut 25:13-16, Prov 11:1, Prov 16:11 etc. The passage in Deut 25:13-16 is the bookend of a cluster of verses from Deuteronomy 23:15 through Deuteronomy 25:16 that are related to the 8th commandment, "do not steal". [See Page 27 of this link for Deuteronomy's structure](#).

The scales in the OT operate similar to the one I improvised in my garage. You use a known weight to find an unknown one. If you think about it, algebra equations are much like a scale or balance. You use a known constant to find an unknown variable in an expression, instead balancing a known weight with an unknown one on a beam or bar.

In a larger sense, the Lord expects us to weigh and balance unknowns using His word as a standard or a known quantity. In the court room, the scale is a symbol of our legal system. Oftentimes, you see a picture of a scale held by a woman wearing a blindfold in courtrooms and in legal books. The intent of this imagery is to say that the scale of justice is blind, impartial...not a respecter of persons. The skillful weighing of laws is called jurisprudence. The principles of jurisprudence are something we hope to teach in areas like speech and debate in our homeschooling environment. The whole basis of the Lincoln-Douglas debates centers upon this practice. I recently read about the history of the Lincoln-Douglas debates where Lincoln was strongly influenced by proofs of Euclidean geometry to make his legal arguments. I recommend that you view this 8 minute video at Khan academy for more information:

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<https://www.khanacademy.org/math/basic-geo/basic-geo-lines/basic-geo-lines-rays-angles/v/euclid-as-the-father-of-geometry>

After viewing Lincoln's approach, can you tell which standard or known quantity he used for his legal scale? Should the standard be the same or different today? Was Lincoln's argument one of accuracy or of precision or both? Is math a subset of justice, or is justice a subset of math? You should ask your speech and debate student the same questions.

Abstraction is the reason algebra is so important in college and high school. Abstraction is the ability to go from an event to an idea. Abstraction is going from something specific (a weight) to something in general (math, science, equity). The eighth command teaches us skills in doing so. The New Testament adds a time dimension us to our scale measurements (Luke 16:9, John 6:27).

In closing, my son's car met the weight requirements at the pinewood derby competition. By the grace of God, his car placed second in the style competition, and second in the race competition.