

Applying Trigonometric Measurements in Geometric Settings

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Our report discusses recent descriptive and analytical applications we have pioneered in the use of the mathematical software known as Geogebra. Such applications are only a few of the myriad examples possible with this interesting and practical software. We have made dramatic progress recently in applying this software to better elucidate fundamental mathematical principles essential to a good high school mathematical education. In addition, these striking visual manipulations can excite large numbers of students to appreciate and even come to like mathematics. The applications we discuss in the report let students experience the dynamic changes that occur to geometrical objects when reference points, perspectives, and angles change due to complicated linear transformations. These complicated motions can easily be adapted to particular problems and can help students at all levels of mathematical maturity better visualize objects embedded in coordinate systems. We believe that in the future visualization of even more complicated issues surrounding such topics as relativity and differential geometry will be made possible by further advances in this software. Thus, teachers who are familiar with this cutting edge software from the start will be perfectly positioned to help their students gain an important advantage in this increasingly competitive world.