



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

<b>Name(s)</b> <b>Sebastian L. Mellen</b>	<b>Project Number</b> <b>J1410</b>
<b>Project Title</b> <b>MathSuite: A Free and Innovative Android App that Makes Dreaded Calculation Fun! Published and Available on Google Play</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> I set out to build a user-friendly suite of math calculators that can be used offline, &amp; downloaded at no cost from the Google Play Store. I wanted this app to help students &amp; teachers check their math &amp; physics work, by instantly solving commonly used mathematical equations.</p> <p><b>Methods/Materials</b> I have taught myself to code apps in the past; I intended to build on that experience to figure out how to approach this more ambitious project, with an eye to measuring &amp; minimizing the use of the user's Android device RAM. I started with MIT's AppInventor, experimenting with ways to build the code, and which functions to include. I created 28 different app builds of the app, some successful, some not, with each build including something new - a new line of code or a new function button. By the 17th build I had the basic code finished. Then I went on to edit the user interface and layout until I was satisfied with the functionality &amp; features of the app with the 28th build. Then I edited the underlying code in Eclipse &amp; Apk Tool, edited the Android Manifest XML, "signed" the app so as to be able to register it with Google, &amp; published it to the Google Play Store. At each stage I measured the efficiency of RAM use. As I created the app, I studied what calculators I thought would be useful for Junior &amp; High School students &amp; teachers, adding calculators &amp; functions accordingly</p> <p><b>Results</b> The app was completed &amp; published meeting all of my original design criteria, working on Android versions from 1.5 to the present version. In the end I developed the following components of what I call MathSuite: Calculators: Scientific (20-function), Pythagorean, Right Angles, Quadratic Equations, Midpoint Formulas, Distance Formulas, Degrees-to- Radians &amp; Radians-to-Degrees, + a Unit Circle Diagram, &amp; integrated Web browser directed to my school's Web site for student access. A number of people have now downloaded it, most from scanning the QR Code posted on my science project display board. I continue to tweak the design as a result of the feedback from those users.</p> <p><b>Conclusions/Discussion</b> Before the completion of MathSuite, no such app existed for Android devices. This app does not require an Internet connection once it is downloaded. It is visually pleasing, intuitive, fast &amp; accurate. It is a complete scientific &amp; 8-function equation calculator. I plan to continue adding equation functions, as requested by users.</p>	
<b>Summary Statement</b> I build MathSuite, a complete Scientific & multi-equation calculator not previously available to Android users, as a functional tool for teachers & students, to be used offline.	
<b>Help Received</b> My parents helped print & organize materials for board & binder. Otherwise, I was left to my own devices, as neither my parents nor my teacher are computer geeks. I am grateful for the free information on the WWW, & to the Google Groups Appinventor page & to Eclipse & MIT AppInventor for being	