



CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

Name(s) Sebastian L. Mellen	Project Number J1410
Project Title MathSuite: A Free and Innovative Android App that Makes Dreaded Calculation Fun! Published and Available on Google Play	
Objectives/Goals I set out to build a user-friendly suite of math calculators that can be used offline, & downloaded at no cost from the Google Play Store. I wanted this app to help students & teachers check their math & physics work, by instantly solving commonly used mathematical equations.	
Abstract Methods/Materials 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 & 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 & features of the app with the 28th build. Then I edited the underlying code in Eclipse & Apk Tool, edited the Android Manifest XML, "signed" the app so as to be able to register it with Google, & 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 & High School students & teachers, adding calculators & functions accordingly	
Results The app was completed & 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 & Radians-to-Degrees, + a Unit Circle Diagram, & 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.	
Conclusions/Discussion 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 & accurate. It is a complete scientific & 8-function equation calculator. I plan to continue adding equation functions, as requested by users.	
Summary Statement 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.	
Help Received 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	