

Moving Math Online: Technology Solutions

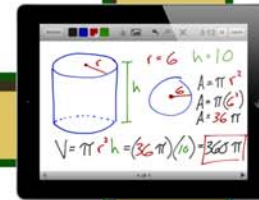
Yes, I really teach math online!

$\sin^2(\theta) + \cos^2(\theta) = 1$

Given right triangle

Note - c is always the longest leg

$a^2 + b^2 = c^2$



Why Teach Math Online?

- Customizable, visual, repetitive
- Learner-centered instruction
- More powerful delivery
 - one-on-one interaction
- Resolve scheduling conflicts
- Save space
- Reach out to different populations

Math Symbols: Write – Don't Type

- Symbols take more time than anything to type
- Learning curve on mathematical software (LaTeX, MathType, etc)
- We still use these tools for some assessment, often created in Respondus
- Virtual Whiteboard can be written on with many devices by instructor and small groups

A Few Best Practices

- Scaffold with different varieties of online content delivery (images, video, etc.)
- Model effective ways of solving homework and note-taking for online students
- Prepare learning activities that can be completed to reinforce concepts
- Consider alternative assessments – even in Math. Students can submit videos, audio files, and reflective writing about their work

A Math Teacher's Reflection

- Students think anything online will be easy – but the content and rigor of a Math course do not change when moved online
- When students get stuck on a problem, they need a multi-media response that includes visuals and voice – not just something to read
- Most students respond better to short tutorial videos
- Teaching online is time consuming, but can provide engaged learning for students

Tools for Teaching Math Online

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A few of our favorites



Wacom Intuos Tablet (formerly Bamboo Pen Tablet)

A pressure sensitive, multi-touch tablet, it can be used wirelessly via Bluetooth with an adapter. This tablet is an inexpensive way to write on a screen, allowing an instructor to skip the painful typing of symbols.

Allowing the user to see directly what they write, the tablet PC has matured from early versions. With multi-touch abilities, a pen that feels more natural in the hand, and the power to process directly, the tablet PC allows the versatility desired by many instructors who need to draw complex diagrams or write math symbols.



For device users, including both iPad and Android, Explain Everything is a robust app that allows the user to annotate all types of images, slides and photos. The user can record their voice while marking up the image, allowing them to create a short video that explains the thought process they used to solve their problem

While there are other apps available, the staff at Missouri S&T supports Explain Everything because it is possible to export the video for further editing in other software.

For faculty who are less comfortable with technology, a document camera allows them to write with paper and pen, projecting through the computer. This is comfortable even for faculty who would prefer to use chalk 😊



Google Hangouts is an inexpensive way to hold online office hours and small group discussions. Scoot & Doodle allows users to incorporate a virtual white screen, bring the power of the classroom fully to the online class.