



# *In Focus ... An Educational Roadtrip on the Information Highway*

Alan Russell

The Internet, the World Wide Web, and the information superhighway all refer to the network of computers that serve up information to the world. A net browser is a user-friendly program that allows one to view information from this network. Information is posted as hyper-text markup language documents (html pages). The browser reads this information which is part text, part formatting, and part links to other html pages. The browser then displays a screen with text, pictures, and links. Every link that is followed is a connection to either a different computer or a different html page within the same computer. It is with great feelings of accomplishment that we are now surfing the net.

This is how I begin exposing classes to the information superhighway. They begin to see the scope of information by viewing the incoming traffic. While teaching a seminar class to pre-service students after their student-teaching, I began to explore their use of the Internet. I gave a small, unsuccessful introduction to the Internet out of which was created the Internet Scavenger Hunt, where students are given a list of items to find using the web browser. I was amazed that the students kept returning to the Internet for up-to-date information concerning their problems with discipline, paperwork, and other classroom management techniques. Several students reported on information discussed in the **Teacher Talk Homepage** (<http://education.indiana.edu/cas/tt/tthmpg.html>). The websites they found spoke to their concerns and allowed them to understand how other teachers react to difficult classroom situations. Because they found the information, and I had not seen it before, they felt ownership of the material and were empowered by the technology. My students visit pages concerning the **Journal for Research in Mathematics Education** (<http://www.indiana.edu/~jrme/>), **Encyclopedia Britannica** (<http://www.eb.com:180/eb.html>), **Galileo** (Georgia's On-line Library Service) (<http://galileo.galib.uga.edu/Homepage.cgi>), **the history of mathematics** (<http://aleph0.clarku.edu/~djoyce/mathhist/webresources.html>), and **The Geometry Forum** (<http://forum.swarthmore.edu/index.html>). They spend hours finding articles, research

reports, tips from teachers, and other useful information. Without having to leave the classroom, students seem much more willing to follow hunches and return from dead-ends to try another strategy. Students seem liberated through this new technology. The Internet does provide a wealth of information within the reach of those who would search, but the information superhighway is not a one-way street.

I began my personal outbound journey a year ago. I had spent three months viewing information downloading mathematical graphics and pictures without sending out any information. Then, I saw an html page and decided I could create my own. Soon, with some help from professors and friends, I had links to programs that added depth to my pages. For example, I created a self-directed trigonometry unit for the web. Students were to explore this unit to gain greater understanding of the geometry in trigonometry. After displaying instructions for creating the model in Figure 1 using the Geometer's Sketchpad (GSP), I had multiple links to the application program itself. All a student needs to do is click on a link and instantly call up the program with the sketches I had created. Students could link to a blank sketch and follow my instructions for creating their own model, or could link to the full sketch and begin looking for relationships among the trigonometric measures.

Since then, the University of Georgia Mathematics Education department has implemented the construction of html pages in some classes. **James Wilson's Technology in Mathematics Education course** (<http://jwilson.coe.uga.edu>) has proved to be a good testing ground for this implementation. Mathematics education students are creating interactive environments for the display of their work, exploration of specific mathematical problems, and use as self-directed instructional units. Another aspect of this technology is to reproduce the day's lesson for those who are absent or those who are not on our campus. These students can reconstruct the days activities complete with links to work created during the class meeting.

We have seen the incoming traffic from a world of linked computers, and sent outbound traffic in the form of html pages, but do not be fooled into thinking that the information superhighway is a divided road. Interactivity is the line between in and out. So far, I have characterized interactivity as bringing base information like spreadsheet

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data to a student's computer and then using the local spreadsheet program to manipulate the data. True interactivity is more inherent in the CU-SeeMe technology mentioned in Nicholas Oppong's editorial in this issue. Two parties, communicating face-to-face by video, working on material at the same time over the Internet is the frontier of Internet technology.

The information superhighway is always under construction. For networks to achieve the speed of information exchange necessary for truly interactive work to take place in schools, significant change must be considered in networking. The mechanics of such a network are beyond the scope of our focus, but await the construction crew working on the information superhighway.

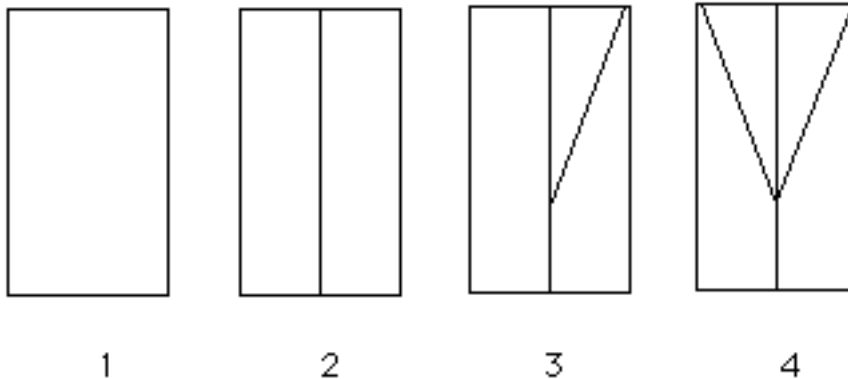
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## Can You Solve These Problems?

### ◆ Folding to Obtain Equal Areas

Take a rectangular sheet of paper. Fold it in half to make a crease down the center of the sheet from top to bottom. Then, select a point on the sheet and make a crease from the upper right corner to the point; now make a crease from the upper left corner to the point. How would the point be selected so that the triangle formed by the top of the sheet and the two slant creases is the same area as each of the lateral trapezoids?



### ◆ A Will to Be Interpreted

"A client of mine," said a lawyer, "was on the point of death when his wife was about to present him with a child. I drew up his will, in which he settled two-thirds of his estate upon his son (if it should happen to be a boy) and one-third on the mother. But if the child should be a girl, then two-thirds would go to the mother and one-third to the daughter."

"As fate would have it, after his death, twins were born -- a boy and a girl. A legal point then arose. How was the estate to be equitably divided among the three -- the mother, the son, and the daughter -- in the closest possible accordance with the spirit of the dead man's will?"

1. Argue the case from the point of view of a lawyer for the son?
2. Argue the case from the point of view of a lawyer for the daughter?
3. Argue the case from the point of view of a lawyer for the mother?
4. Develop an argument from the point of view of a judge who must weight all of the alternatives and decide what is in closest possible accordance with the spirit of the dead man's will.

Problems provided by Dr. Jim Wilson. For more problems like these, check out his **EMT 725: Problem Solving Home Page** (<http://jwilson.coe.uga.edu/emt725/EMT725.html>)