How Can I Incorporate the Appropriate Use of Technology in My Classes? (Session W27)

James W. Hall
Parkland College (Retired)
jhall@wbhsi.net

Brian A. Mercer
Parkland College
bmercer@parkland.edu

Technology

- *Technology should be integral to the teaching and learning of mathematics.*
  --- From the Guiding Principles of Beyond Crossroads
- *Mathematics faculty will model the use of appropriate technology in the teaching of mathematics so that students can benefit from the opportunities technology presents as a medium of instruction.* --- From Standards for Pedagogy, Teaching with Technology
- Technology continues to change.
  Advancements in technology have changed not only *how* faculty teach, but also *what* is taught and *when* it is taught. Using technology can deepen students' learning of mathematics and prepare them for the workplace.

I. Brief History of Technology Used at Parkland College

Books, mimeograph machines, colored chalk, white boards, overhead transparencies, slide rules, graphing calculators and view screens, computers, data projectors, word processors, presentation software, calculator emulators, spreadsheets, various graphing tools, tablet PC's.

Since 1990, graphing calculators have been widely used. We still believe that these calculators are great tools, but other tools are coming. Excel is more widely accessible now that more students have their own computers and more schools have open labs. We are probably not far off from a time when many students will have a hand-held computer/phone/radio/data storage unit/web-browsing device.

II. Projects

1. Creating a Technology Perspective Handout
2. Creating a Quiz with Graphs
3. Converting a Lecture Guide to a PowerPoint Presentation
4. Using Camtasia to Record a Tablet PC Screen and a Calculator Emulator

III. Web-Based Tools

IV. Resources too good not to mention:

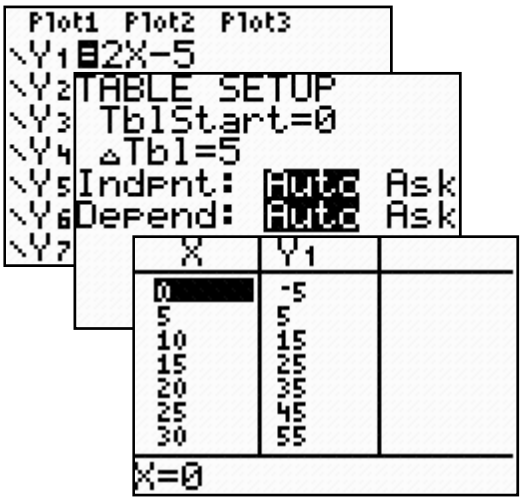
SRIP	**www.progency.com/other.html#screenrip32**
Wolfram Alpha	**www.wolframalpha.com/**
World Clock	**www.poodwaddle.com/clocks2.htm**

V. Time for Questions and Sharing of Ideas

Project 1: Creating a Technology Perspective

Creating a Table of Values

Using a Calculator:

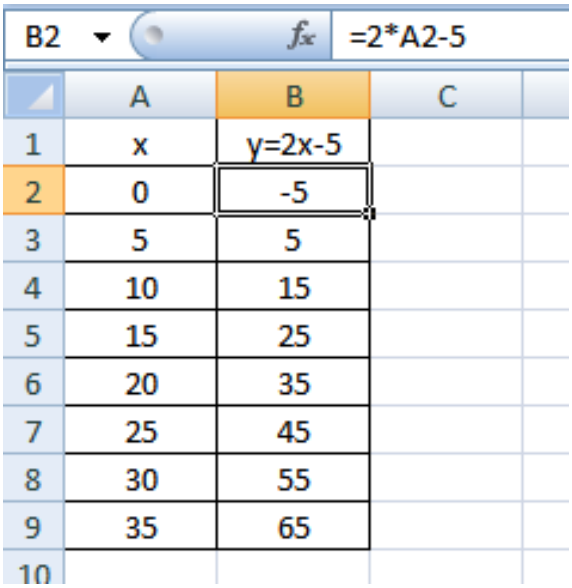


1. Enter the equation on the **Y=** screen.

2. Access the **TABLE SETUP** and adjust the table settings as needed.

3. Create the table.

Using a Spreadsheet:



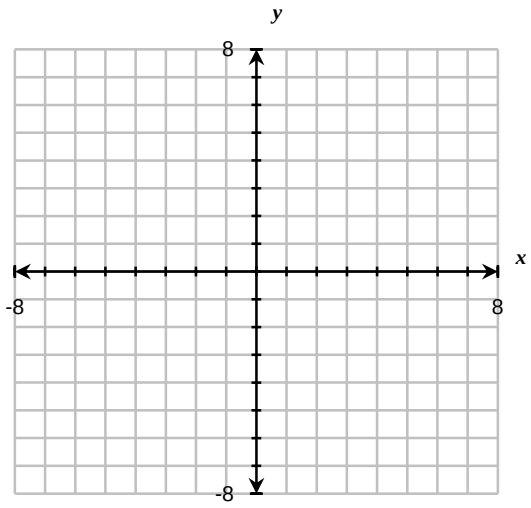
1. Enter the headings in ROW 1.
2. Enter the desired *x*-values in COLUMN A.
3. Enter the formula "=2*A2 – 5" in cell **B2**.
4. Copy this formula down to the remaining cells in COLUMN B

Tools Used:

a. WORD **www.microsoft.com**
b. SRIP **www.progency.com/other.html#screenrip32**
c. EXCEL **www.microsoft.com**
d. TI SmartView **education.ti.com**

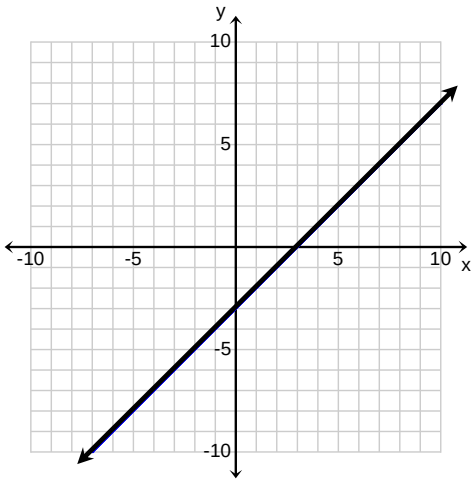
Project 2: Creating a Quiz/Handout

1. Graph the equation $y = \frac{2}{3}x - 1$ and use this equation to complete the following table.

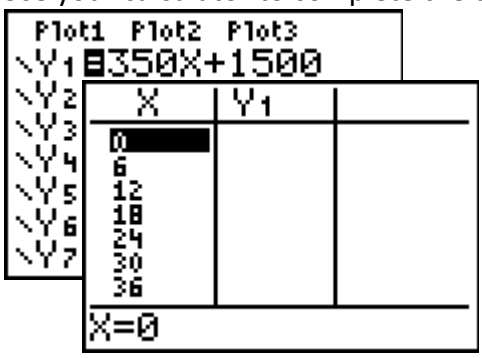


x	y
–6	
–3	
0	
3	
6	

2. Determine the equation of the line shown in the graph.



3. Use your calculator to complete the table shown.

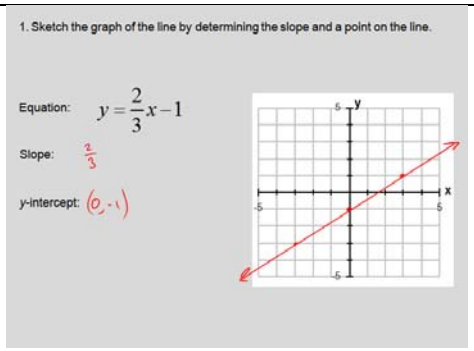
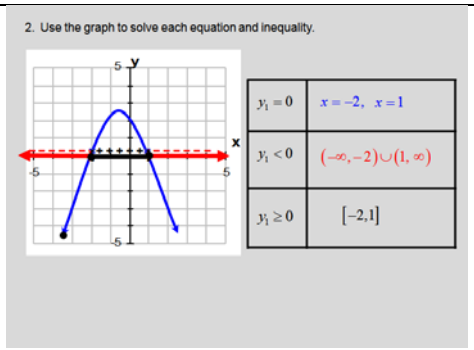
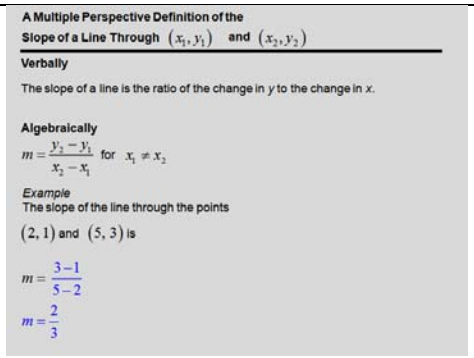
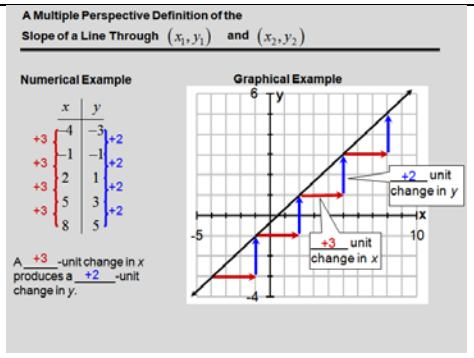


Tools Used:

a.	WORD	**www.microsoft.com**
b.	MathType	**www.dessci.com/en**
c.	EXCEL	**www.microsoft.com**
d.	HandyGraph	**www.handygraph.com**
e.	TI-84 Calculator	**www.education.ti.com**
f.	Graphlink Cable	
g.	TIConnect	

*There are many other graphing tools (some web based) that can create graphs, but these two seem to be fairly easy to use.

Project 3: Converting a Lecture Guide to a PowerPoint Presentation

	• Copy problems from lecture guide to PPT and then use Tablet PC to write solutions in class.
	• Copy problems from lecture guide to PPT and then animate solutions. • Takes advantage of the dynamic nature of PPT animations to help illustrate the concept of the quadratic inequality.
	• Multiple perspective definition combined with PPT animation.
	

Tools Used:

- **a.** PowerPoint **www.microsoft.com**
- **b.** MathType **www.dessci.com/en**
- **c.** EXCEL **www.microsoft.com**
- **d.** Clicker
- **e.** Tablet PC

Project 4: Using Camtasia to Record a Tablet PC Screen and a Calculator Emulator

Solve the system of linear equations $\left\{\begin{matrix} y = 2x - 3 \\ y = -5x + 6 \end{matrix}\right\}$ algebraically and then check the solution graphically.

Tools Used:

- **a.** Camtasia **www.techsmith.com**
- **b.** Tablet PC
- **c.** TI SmartView **education.ti.com**

Web-Based Tools:

Below is a list of the web-based tools we have used at Parkland. These and many others are available at the exhibits.

- **a.** MathZone
- **b.** ALEKS
- **c.** Webassign

Resources too good not to mention:

- **a.** SRIP **www.progency.com/other.html#screenrip32**
- **b.** Wolfram Alpha **www.wolframalpha.com**
- **c.** World Clock **www.poodwaddle.com/clocks2.htm**
- **d.** Simple JAVA Equation Grapher
  www.monroecc.edu/wusers/pseeburger/JavaCode/DerivativeDemo2.htm

Time for Questions and Sharing of Ideas:

Please list any web resources or forms of technology not mentioned today that you highly recommend.