

Using Computers Effectively

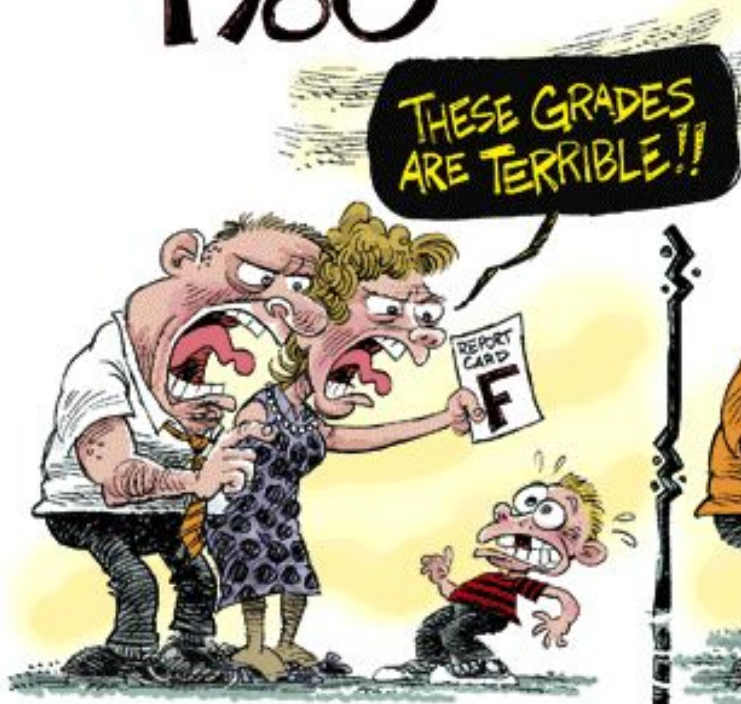
in



a

High School Mathematics Class

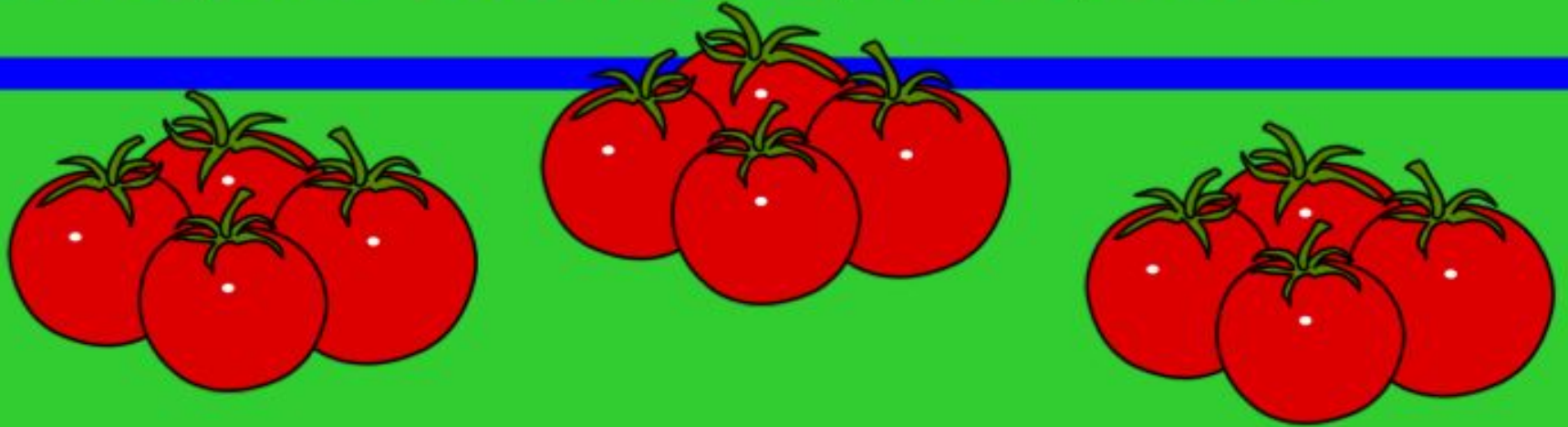
1960



2010



Warm-up for Saturday April 20, 2013



You harvest 100 lbs of tomatoes from your garden. Tomatoes are 1% solid and 99% water. You dry the tomatoes in the sun for 1 week until they are 98% water. How much do they weigh?

Enter your answer at <http://tinyurl.com/ao5xqs6>

Solution:

1% solids of 100 lbs. of tomatoes is 1 lb.

No matter how long you dry the tomatoes there will always be 1 lb. of solids.

Now the 1 lb. of solids represents 2%

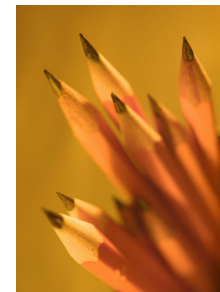
$$1 \text{ lb} = 0.02 x$$

Solving for x we get 50 lbs. Surprised?

As students enter their answers, a google spreadsheet is updating.

Formatting it ahead of time to color correct answers green and incorrect ones red, I can target the students who need help.

A google form warm-up takes less than 5 minutes to set up!



My Background

- Pre-Teaching**
- Teach for Tucson - action research**
- CHS/STG**
- G-TEAMS**
- One-to-One Laptop Program**

Technology in My Classroom

- Students laptops (MAC, PC, Netbook, iPad)**
- Desktop MAC**
- Document Camera**
- Smartboard with projector**
- Airliner wireless slate**
- Remote Light Switch**
- TI-83 & 84 Calculators**
- Flip camera**
- 3D Printer (in physics lab)**

Software

- Geometer's Sketchpad**
- TI-84 Emulator**
- ALEKS**
- Webassign**
- MathXL**
- Online/Digital Textbooks**

Technology

- New paradigm for teaching and learning**
- Ubiquitous (especially for students)**
- Potential to keep student's attention**
- Computers have changed the way we learn and access and process information**

Benefits of Technology in the Classroom

- Real world**
- Models authentic problem solving and use of resources**
- Excellent vehicles for teaching and learning about logic, problem solving, and critical thinking.**
- Potential to keep students more interested and focused.**

Pitfalls

- Can be intimidating...**
- Can be distracting...**
- Another thing to take away time away from core curriculum**
- Things bound to go wrong (I fully expect to have problems today...)**
- When they do go wrong, try to solve the problem with student input**

Do not let your lack of knowledge or understanding or fears prevent you from embracing technology.

You will learn with and from your students. This demonstrates authentic learning by everyone.

When questions arise, solicit answers or have a class discussion to figure it out. Let students research how to solve the issue at hand.

Website

Google Docs

- Forms - used for warm-up. Can target students who need help.**
- Use for quizzes and tests**
- Automatic Grading**
- Documents and presentations**
- Stored in the cloud - available from any computer**
- Online collaboration**
- Surveys**
- Teacher Evaluation**

It's Free!

Challenges

Input

- equation editors
- pads (bamboo)
- math input panel (windows 7) demo
- showing work?

Flip Teaching

Content at home and practice (homework) in class.

Reading and video lessons at home

- **Create your own videos (demo reviews)**
 - **Video capture (Smartboard, others)**
 - **Flip Camera**
- **Online lessons**
 - **Kahn Academy**
 - **Youtube**
- **Students create video lessons**



Programming

PROS:

- Teaches logic, problem solving, and critical thinking

CONS:

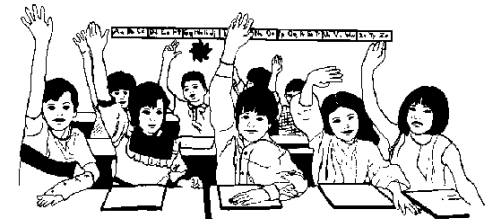
- Takes precious time
- Teacher may not be a programmer

- The programming vehicle is not as important as the concepts**
- Calculators, computers**
- Paul Foerster's Algebra 1 Classic Edition story**

Python Programming Language



- Handout
- Fun programs/games (RPS, guess a number, heads or tails, etc.)
- With or without graphics
- Code sculptor (Coursera)
- Project Euler
- Student selector program



Project Examples

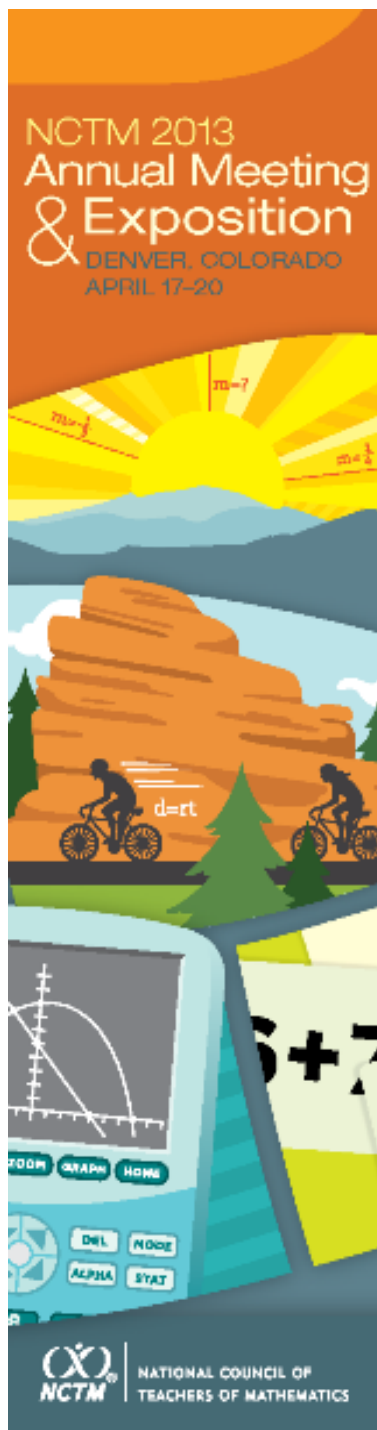
- Research the growth of the internet (research, data collection, analysis)**
- Surface area/volume (GSP & Google Sketchup)**
- Projectile Motion**
- Probability Simulation of Pi**

Websites/Resources

- Join.Me**
- Poll Everywhere**
- Dial My Calls**
- Wolfram Alpha**

Qiyam's Video Games/Graphics Examples

Questions/Comments
Discussion...



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**Thank you so much
for coming to this
presentation, for your
participation, and for
all you do for kids!**