Mathematical Modeling

Math 1101

Bruce Thomas

Day 1 Agenda

- What is Mathematical Modeling?
- How to Succeed in this Course
- The Course Syllabus
- TI Graphing Calculator & Functions

What is Mathematical Modeling?

What is Mathematical Modeling?

Mathematical modeling is the use of mathematical language to describe the behaviour of a system.

- Wikipedia

- Voter behavior at the polls
- Tomorrow's weather forecast
- Pinpointing where a hurricane will come ashore
- Buying habits of grocery shoppers
- Viewing preferences of movie goers
- Fuel efficiency of automobiles as a function of driving behavior

What is Mathematical Modeling?

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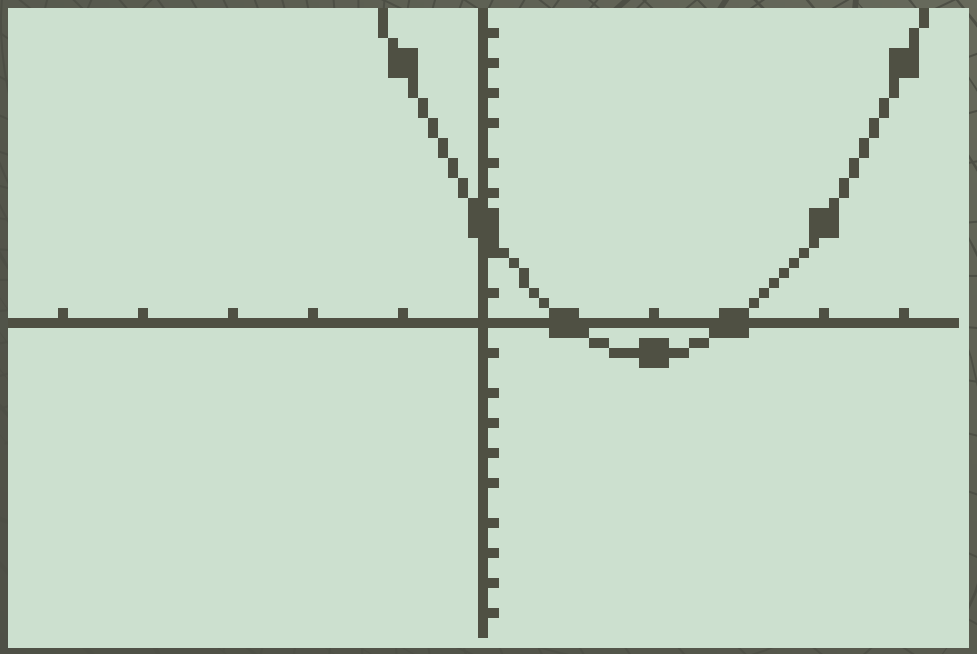
- Pairing people at eHarmony.com
- Predicting earthquakes
- Tracking the spread of the Swine Flu virus
- Determining growth of corn plants as a function of soil conditions, fertilizer type and quantity, and weather conditions
- Authorship of the works of Shakespeare

What is Mathematical Modeling?

$$y = x^2 - 4x + 3$$

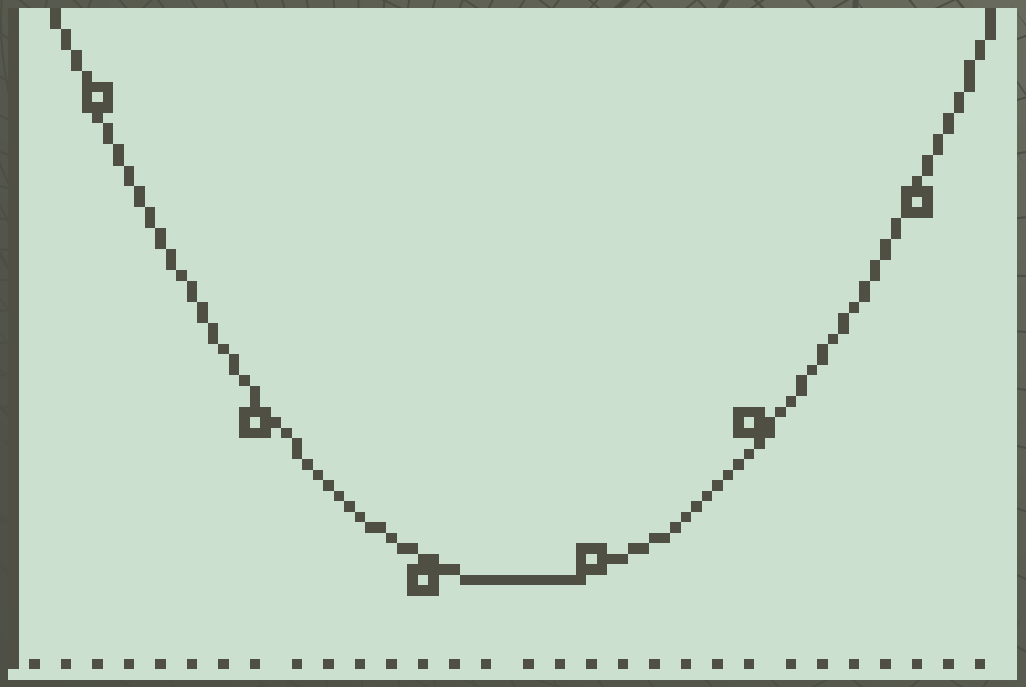


x	y
-1	8
0	3
1	0
2	-1
3	0
4	3
5	8

What is Mathematical Modeling?

This table shows the rate *R* of vehicular involvement in traffic accidents (per 100 million vehicle-miles) as a function of vehicular speed *s*, in miles per hour, for commercial vehicles driving at night on urban streets.

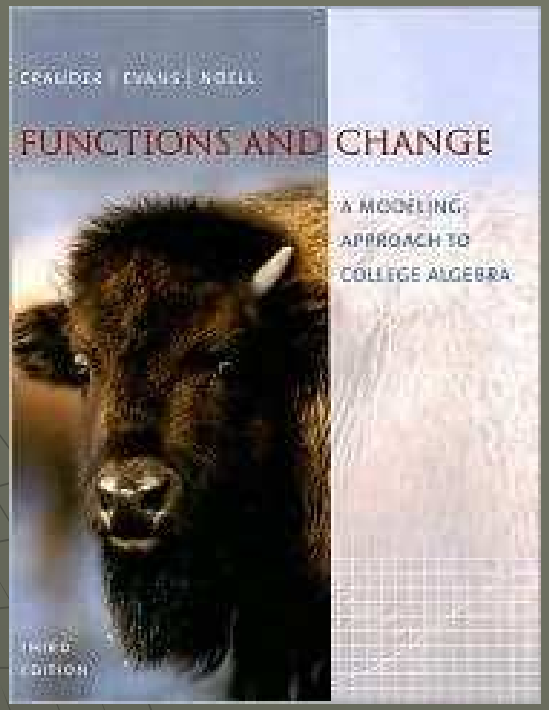
$$R = 7.79s^2 - 514.36s + 8733.57$$



s	*R*
20	1600
25	700
30	250
35	300
40	700
45	1300

How to Succeed in this Course

- Come to every class
- Buy the right book!
- Do all the homework in a timely fashion
- Participate
- Have a plan for success and follow it



Bundled with WebAssign subscription

How to Succeed in this Course

- Use the Math Lab
  - Free math tutoring
  - TI-83 Calculator workshops
  - 4th Floor of the Library, Room 433
  - Hours of Operation
    - Monday – Thursday: 9:30a.m. - 6:30p.m.
    - Friday: 10:00a.m. - 2:00p.m.
    - Sunday: 1:00p.m. - 5:00p.m.

How to Succeed in this Course

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We will be offering our basic calculator (TI-83/84) workshops the first two weeks of the semester:

Tuesday,	August 18th: 12:30 p.m.
Wednesday,	August 19th: 12:30 p.m. & 6:30 p.m.
Monday,	August 24th: 12:30 p.m. & 6:30 p.m.
Tuesday,	August 25th: 11:00 a.m.
Friday,	August 28th: 12:30 p.m.

How to Succeed in this Course

A survey* of KSU students found they believed they could have been more successful in college if they had:

- Studied more
- Improved their study skills
- Emphasized academics and grades more
- Used advisement and support services more

* "Kennesaw State University's Retention, Progression & Graduation Improvement Plan," November 2005

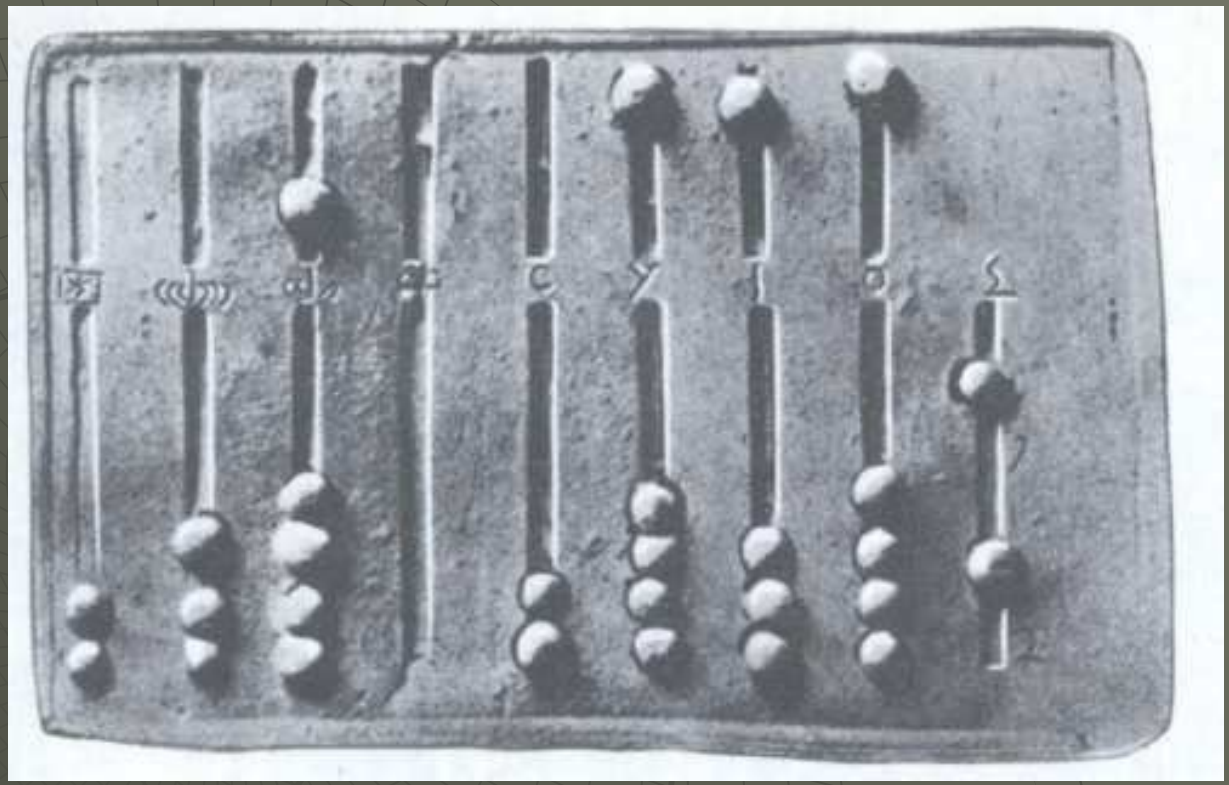
How to Succeed in this Course

The Course Syllabus

- http://science.kennesaw.edu/~bthomas
- You print the syllabus and read it before the next class meeting!
- Buy your book and get setup in WebAssign before the next class meeting!

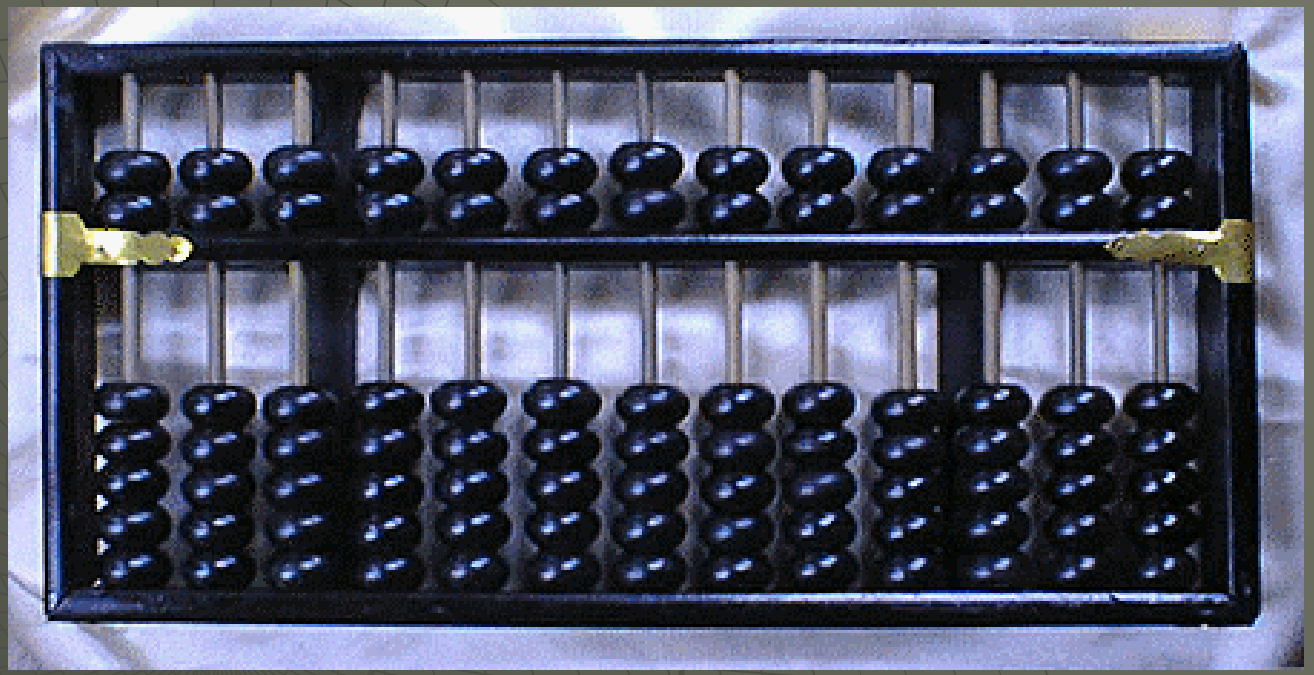
Any Questions?

Graphing Calculator



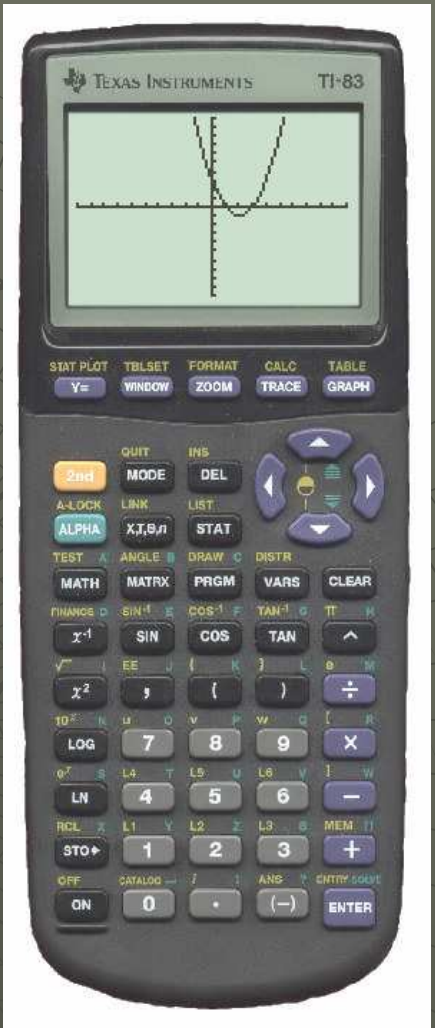
Roman Abacus

Graphing Calculator



Chinese Abacus

Graphing Calculator



TI-83

For Next Time!

- Print the syllabus from my website and read it
- Buy the book
- Register for WebAssign & enroll in my course there
- Study Chapter "P"
  - Review Your Graphing Calculator
  - Do the Chapter "P" homework in WebAssign
- Read the first section of Chapter 1 (come to class prepared to ask questions)
- Or Else …….


HERE'S
YOUR
SIGN

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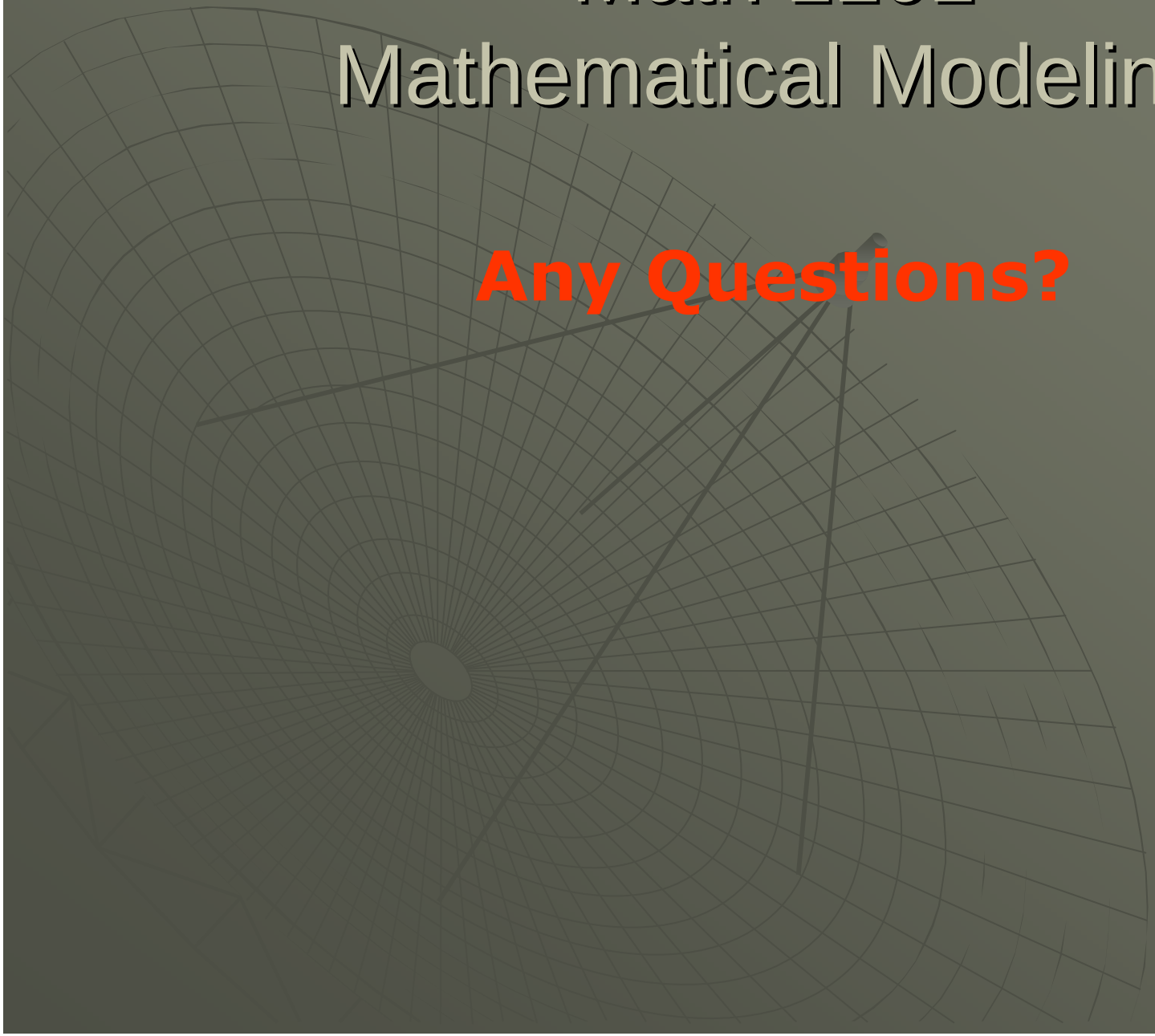
Mathematical Modeling



Any Questions?