The Rice University Mathematics Leadership Institute

TASM Fall Meeting September 18, 2006

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MLI Core Partners

Aldine Independent School District

Houston Independent School District

Rice University

- Rice University School Mathematics Project (RUSMP)
- Computational and Applied Mathematics Department (CAAM)
- Mathematics Department (MATH)
- Statistics Department (STAT)

Why Target Senior High Schools?

- unacceptable passing rates of high school students on TAKS
- high drop-out rates of senior high school students
- paucity of highly-qualified high school mathematics teachers
- high school restructuring requiring teachers to teach all mathematics courses at the high school level

MLI Goals

- Develop a cadre of 80 lead teachers in mathematics (two per high school in each of the school districts).
- Establish a leadership program at 40 individual campuses that will provide mathematics content and pedagogical support for the ***entire*** mathematics department at that campus.

MLI Goals

- Develop ***entire*** campus mathematics departments across participating districts as cadres of highly qualified mathematics teachers who have the content and pedagogical knowledge to engage ***all*** students in rich and challenging learning activities.

MLI Goals

- Ensure that ***all*** high school students have access to, are prepared for, and encouraged to participate in challenging and advanced mathematics courses at their schools.
- Impact the instructional practices of Rice University CAAM/MATH/STAT faculty, post-docs, and graduate students.

MLI Lead Mathematics Teachers Experiences

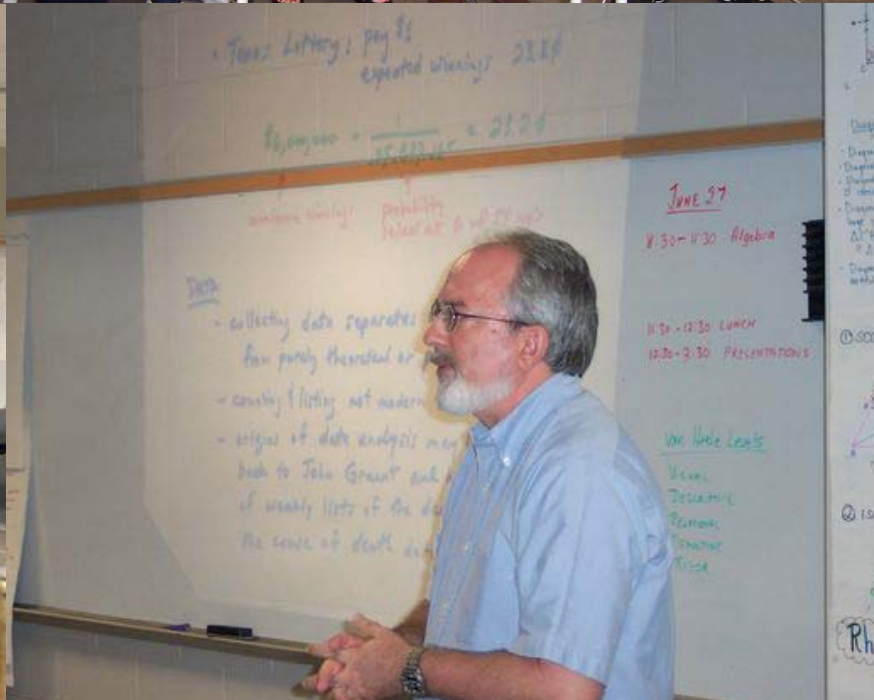
- four-week Summer Leadership Institute in each of two summers
- monthly meetings as a group to share experiences with other lead teachers


THERMOS


- SIGN IN EVERY DAY
- REMIND JACKIE AT 2:30
RHOMBUS


Tropical Mathematics
A new mathematics
Starts with a new arithmetic
Includes polynomials, curves, higher algebra
Useful in combinatorics, algebraic geometry
Useful in genetics
It is fun to do math in a different setting


RICE
RICE VOLLEYBALL
RICE
RICE
RICE


June 27

Troy borrowed money from his father so that he could buy a used car. The table shows the remaining balance, *b*, of Troy's loan after each payment.

Number of Payments, *p*	Loan Balance, *b*
1	$3910
2	$3685
3	$3460
4	$3235
5	$3010
6	$2785

Level 1 – Money, Money, Money

Use the table to answer the following questions.

1. Graph the relation.
   (a) Is the relation positive or negative?
   (b) How much money did Troy originally borrow?
   (c) How long (in months) will it take him to pay back the loan?
2. How much money does he pay back with each payment?
3. If Troy works for $6 an hour, how long will he have to work each month to fulfill his monthly obligation to his father?

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Level 2 – $$$$$

4. Find the equation of the relation described in the table.

5. What is the rate of change in the table?
   (a) What is the meaning of this rate of change in real life?
   (b) Explain how you can find the rate of change from the table and from a graph.
   (c) How would the graph change if the rate of change would increase?

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More $ for your money ...

6. Starting with the 7th payment Troy wants to pay an additional $25 each payment.
   (a) What is the percent increase?
   (b) How would the graph for this relation look like?
   (c) How long will it take him now to pay the full loan back?
7. Starting with the 7th payment Troy wants to increase his payments by 20%.
   (a) How much is the new payment?
   (b) How long will it take after this increase to pay the full loan back?
   (c) How much faster will he be paying the loan back?

MLI Lead Mathematics Teachers Experiences

- preparation for Texas Mathematics Master Teacher certification
- participation in the “Lessons Learned Conference” for other institutions interested in replicating the program

MLI Lead Mathematics Teachers Responsibilities

- serving as the campus mathematics advocate
- daily shared planning/professional development time
- observing, providing suggestions for improved instruction, co-teaching, demonstration teaching

Support from NSF over 5 years for Lead Mathematics Teachers

- stipends
- materials and books
- travel to conferences
- Texas Master Mathematics Certification

MLI Lead Mathematics Teachers Responsibilities to Other Professionals on Their Campuses

- working with others to increase student interest in taking advanced math courses
- providing administrators with support in understanding what good mathematics should look like