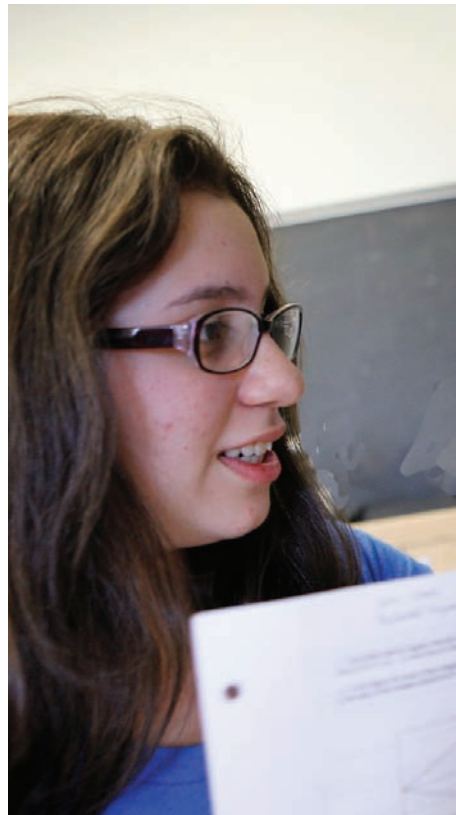


# ENSURING THE FUTURE 2011 ANNUAL REPORT

## Mathworks

TEXAS MATHWORKS AT TEXAS STATE UNIVERSITY





## FROM THE DIRECTOR

Dear Friends,

We had many new exciting new developments and opportunities for Mathworks this year, 2010-2011. Our advisory board launched the "Mathworks Legacy Campaign," an effort to raise permanent support for our core programs. This endowment will enable us to provide mathematical opportunities to future generations of young students and teachers, continually raising the level of math achievement.

Our summer math programs here at Texas State University have been proving themselves for over 20 years, and others have been learning from us. Sites across Texas have adopted our Junior Summer Math Camp model, giving 4th-8th grade students formative experiences to build a solid foundation for their school-year math classes. Extending our center's impact to the classroom, the Mathworks curriculum was implemented in several schools across Texas, resulting in promising gains in algebra readiness for young students.

We also had nine students recognized in the prestigious Siemens Competition, bringing our total to more than 100 students who have achieved semifinalist standing or above in the past 10 years. Plus, our Mathworks team won the Po Leung Kuk Cup in the Primary Math World Contest in Hong Kong - the seventh time we've claimed that honor.

Ultimately, our mission drives our efforts to engage and inspire students of all backgrounds to do mathematics, whether through summer, after-school, or in-school programs. Most importantly, the contributions of our friends and partners is what makes our work possible. We thank you for your support and invite your continued interest and involvement with Mathworks.

Sincerely,

Max Warshauer  
Director, Mathworks  
Regents Professor of Mathematics



## HIGHLIGHTS OF THE PAST SCHOOL YEAR & SUMMER

- More than 400 students participated in summer math programs in San Marcos and other sites in Texas, engaging in high-level mathematics and original research projects.
- Over 2,500 students in the 6th, 7th, and 8th grades used the Mathworks school-year curriculum, laying a solid foundation for algebra readiness and success in algebra.
- 30 middle school math teachers implemented the Mathworks school-year curriculum, engaging their students in hands-on activities and discovery learning.

As we enter the new school year, we are excited about the prospects to continually raise the level of mathematics education through our integrated programs.

*“Let us think of *education* as the means of developing our greatest abilities, because in each of us there is a private hope and dream which, fulfilled, can be translated into benefit for everyone and greater strength for our nation”*  
- John F. Kennedy

*Nurturing the next generation of innovators...*

# HONORS SUMMER MATH CAMP

The 22nd annual Honors Summer Math Camp (HSMC) was held on the Texas State University – San Marcos campus from June 19 to July 30. The program included 28 first-year students, 22 second-year students, 10 third-year students, and 15 undergraduate counselors. Students hailed from ten different states and two foreign countries.

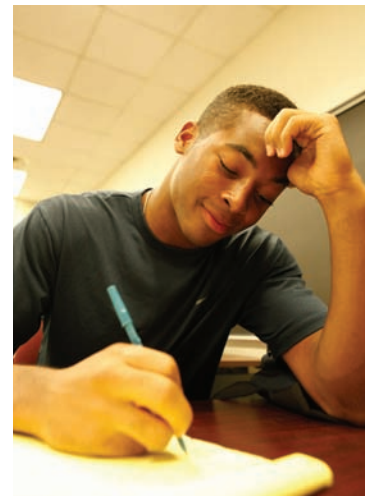
These 60 students spent six weeks engaged in doing high-level mathematics for more than 30 hours a week. HSMC students also had the opportunity to meet leaders from industry and academia, enjoy weekend field trips, and conduct original research projects.

## PROGRAM SUMMARY

- 187 Applicants
- 60 Participants
- 26 Camp Scholarships Awarded

## HSMC ACHIEVEMENTS

- 80% of HSMC alumni major in math, science, or engineering in college
- Universities with the most HSMC alumni include MIT, Harvard, Stanford, Rice, and the University of Texas-Austin
- 102 HSMC students have been recognized as semifinalists or above in the prestigious Siemens Competition over the past 10 years, including 48 regional finalists and 11 national finalists.
- The American Math Society Epsilon Fund has recognized the HSMC 10 times as one of the top math programs for youth in the nation.

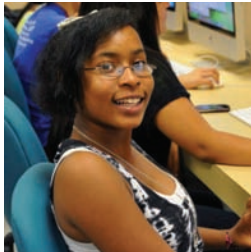


## YOUNG STUDENTS DOING RESEARCH

Returning students in the HSMC have the opportunity to work on research projects mentored by university faculty. This direct mentoring by dedicated professors sets up crucial experiences that impact young students' long-term interests in the math and sciences. As recently reported in a National Academies report, "Students who had research experiences in high school...were more likely to complete a Science, Technology, Engineering, or Math major than their peers who did not report these experiences." - Successful K-12 STEM Education, National Research Council of the National Academies

In addition to engaging students in doing math, the HSMC develops confident problem-solvers and collaborative decision makers. These are the youth who will drive the nation's competitiveness in the years to come. The best evidence of personal growth comes from the words of the students themselves.

"The HSMC is truly one of a kind and my experience here has changed me a lot. I grew to look at math in a different way. Instead of memorizing formulas, I learned why something works. I also learned to think more deeply into problems and explore all possible methods" - *10th grader*



"The HSMC has taught me to fall in love with challenges by presenting so many new and exciting opportunities to me. I've been inspired to search for more challenges and continue to move forward." - *9th grader*

"This experience has instilled in me an awe for exploring problems. Trying new ideas, not being afraid to make mistakes, or simply finding the confidence to tackle seemingly impossibly hard questions." - *8th grader*



"The HSMC will help me get to where I want to be. It is hard living in a small town - people usually stay around after high school and don't advance. I want to be different. I can't believe the accomplishments I've achieved this summer. I'm filled with lots of knowledge, pride in my work, and the heart-felt memories." - *9th grader*

"I've completely changed the way I look at math. Teachers at school taught me formulas and equations, but I'd never questioned why. However at the HSMC, that's the reason we're here: to find out why the 'obvious' things we know actually work. It has made me think about everything a teacher throws at me and figure out why it works." - *9th grader*

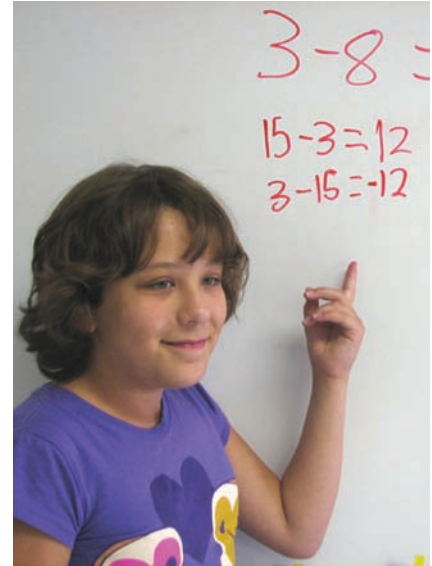


# JUNIOR SUMMER MATH CAMP COMMUTER PROGRAM

The 16th annual Junior Summer Math Camp (JSMC) was held in San Marcos from June 6 to June 17, 2011. The commuter program included 187 students from the 4th through 8th grades.

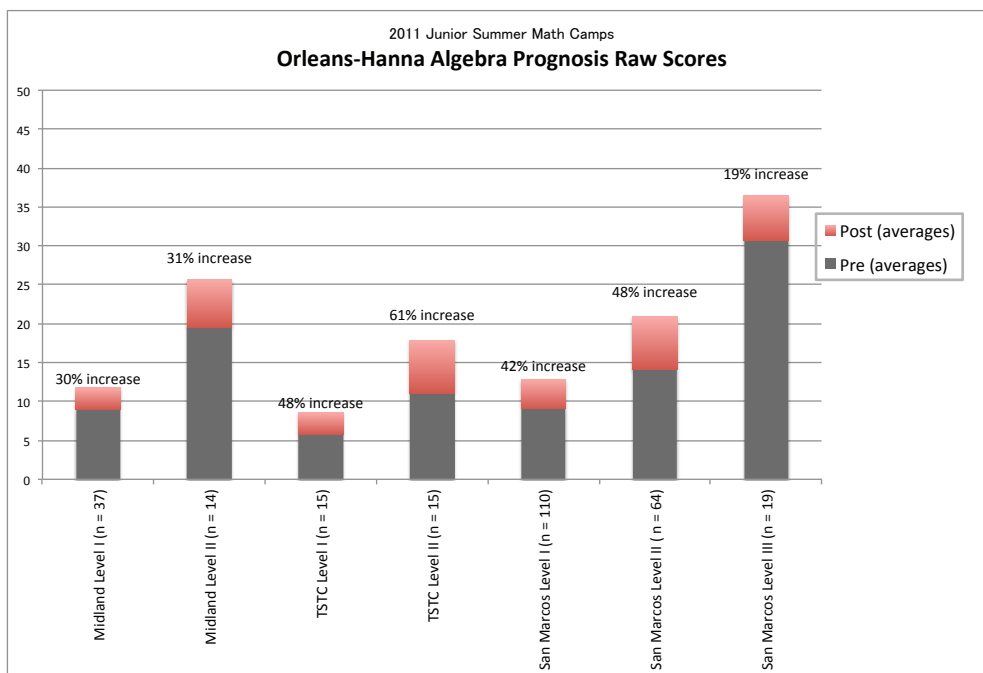
Thanks to the support of foundations and corporations, more than 57% of students received a camp scholarship, receiving the opportunity to attend the JSMC commuter program at minimal or no cost.

The Mathworks model for math camps was also replicated at other sites across Texas this summer, including New Braunfels, Midland, and Texas State Technical College - Harlingen. In total, these additional sites impacted more than 150 young students.



## MEASURABLE IMPACT

The Orleans-Hanna Algebra Prognosis Test is given as a pre- and post- assessment each summer. In 2011, the Prognosis was given at the camps held in San Marcos, Midland, and TSTC - Harlingen. Each group achieved statistically significant gains, indicating the value of the Mathworks summer math program model.



In order to nurture long-term interests in the math and sciences, we must provide opportunities for excellence to students while they are young. The Mathworks JSMC promotes engagement, intellectual curiosity, and creative problem solving - this is underscored by the feedback from students and parents:

“We appreciate the opportunity that was given to our daughter. She really enjoyed learning what was being taught at camp because she was challenged and interested in the material. There is no way to say thank you enough for this awesome opportunity!” - *parent of 4th grade student in the JSMC*

“The amount of independence and self-confidence that my children gain from playing with math is immeasurable!”  
- *parent of 8th grade student in the JSMC*

“I like this program because I like learning things from higher levels. It is very different from school because the teachers at camp have more time to help you, and I don’t feel embarrassed to ask for help.”  
- *5th grade student in the JSMC*



“I learned a lot about number lines, negative and positive integers, and algebra. It was a good experience because I didn’t know these things before.” - *5th grade student in the JSMC*

“I learned more here than my whole school year. I liked that my camp teachers let us interact. I love math!”  
- *7th grade student in the JSMC*





# JUNIOR SUMMER MATH CAMP RESIDENTIAL PROGRAM

The 16th annual Residential Junior Summer Math Camp (JSMC) was held on the Texas State University campus from June 6 to June 17, 2011. The program included 35 students and 8 undergraduate counselors.

The Residential JSMC provides promising 6th-8th grade students an intensive two-week experience in advanced problem-solving.

These young students were engaged in daily morning classes, afternoon problem sessions, and evening study groups.



As recommended by the National Science Foundation's National Science Board, in order to develop students' abilities in the math and sciences, we must provide opportunities for excellence by increasing access to and quality of "college-level, dual enrollment, and other accelerated coursework, as well as *high-quality enrichment programs.*" The residential JSMC is one such program, giving young students opportunities to explore mathematics in-depth.

"I'm really grateful I had this opportunity to go here with a full scholarship. Now I know that taking the time to explain something is really worth it. Here you have so many opportunities to talk about the problem and to take the time to explain your solution."

*- 7th grade student in the residential JSMC*

"This camp is more focused on the proofs and processes of solving problems, rather than just the answers."

*- 8th grade student in the residential JSMC*

"School teachers usually don't explain to you why something works. They just give you a formula and expect you to memorize it. The JSMC is different from school. At the Junior Camp, I am surrounded by kids who are striving forward to do more math and learn."

*- 7th grade student in the residential JSMC*

# JUNIOR SUMMER MATH CAMP PMWC TEAM

## PRIMARY MATH WORLD CONTEST TEAM

Each summer Mathworks sends a team of four students to compete in the international Primary Math World Contest (PMWC) in Hong Kong. In 2011, more than 40 teams from around the world competed in the PMWC. The Mathworks team achieved high honors: receiving the Po Leung Kuk Cup, and was a mere two points away from tying the overall champions.

In nine years of attendance in the PMWC, the Mathworks team has won the Po Leung Kuk Cup (awarded to the top non-Asian team) seven times, and also tied for first overall in 2008. This strong record is a testament to the preparation that the team receives during the residential JSMC program, and the caliber of mathematics skills that Mathworks strives to nurture in every student.



2011 Mathworks PMWC Team  
(L to R): Alex Yang, Sunny Tian, Lazar Ilic, and Lilian Zhan

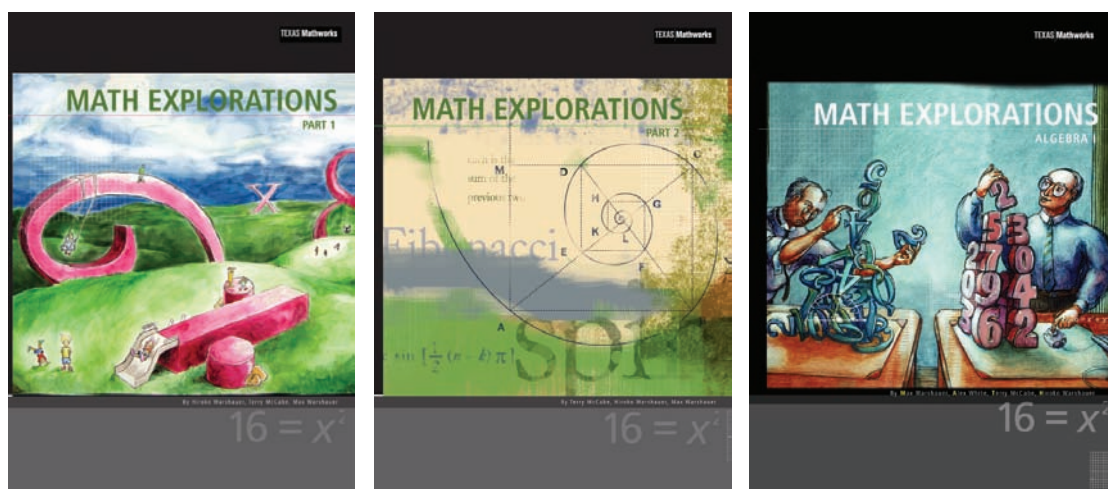
The team of four students was chosen from more than 500 students across Texas who took a Mathworks qualifying test. The team members then attended the residential JSMC program in June as part of their training before competing in Hong Kong in July.

*Raising the bar of math achievement in classrooms...*

# CURRICULUM PROJECT

## INCREASING ALGEBRA READINESS

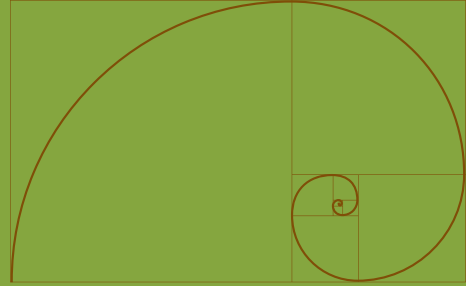
The Math Explorations curriculum was implemented in various Texas middle schools for the third straight school year, impacting more than 2,500 students. For 2010-2011, districts included Austin, San Marcos, Midland, and New Braunfels. The curriculum is a series of textbooks for the 6th, 7th, and 8th grades, which includes the completion of Algebra I by the end of 8th grade.



The curriculum is a full school-year resource, including a student textbook, a teacher edition's book, and a consumable student workbook. By introducing students to the language of algebra while they are young, the Mathworks curriculum provides a solid foundation for later success in Algebra and higher-level mathematics courses.

## EQUIPPING TEACHERS WITH THE RIGHT TOOLS

An important part of the Mathworks Curriculum Project is providing professional development to in-service teachers. Middle school math teachers observe the Junior Summer Math Camps in action, and attend graduate-level classes covering curriculum content and pedagogy. After training, teachers can then conduct their own math camps later in the summer. This combination of theory and practice gives teachers a solid foundation to implement the Mathworks curriculum during the school year.

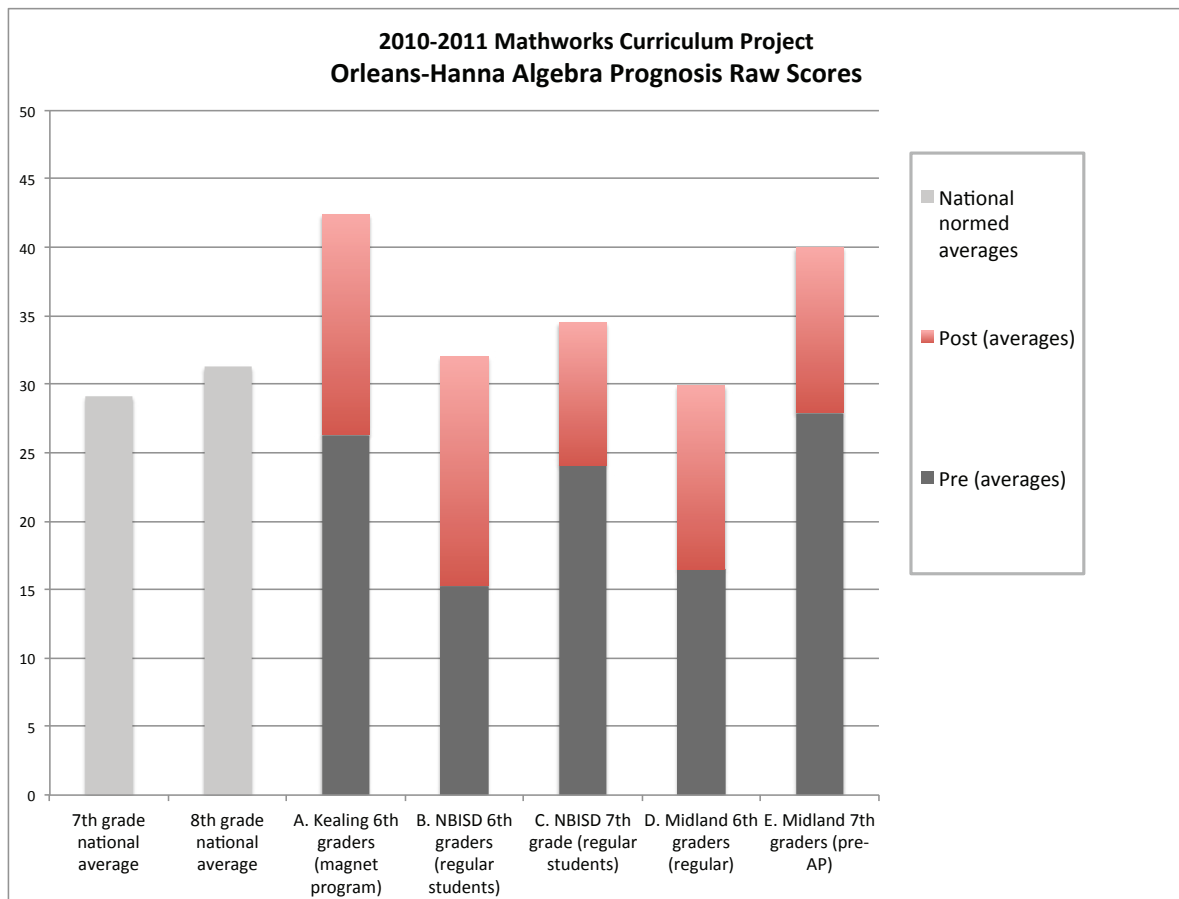


## MEASURABLE IMPACT

For the 2010-2011 school year, the Orleans-Hanna Algebra Prognosis was used as a pre- and post- program measure at the Austin, Midland, and New Braunfels sites, assessing students' algebra readiness skills. The Prognosis is a nationally standardized test, with end-of-year national norms given for 7th and 8th grade. Student use of the Mathworks curriculum correlated strongly with statistically significant gains in algebra readiness skills, as shown in the chart below.

Highlights of results include:

- New Braunfels 6th grade students (n = 475) started below the 7th grade norm. At the end of the school year, this group achieved a 109% average growth on their scores, and were above the 8th grade national norm.
- Midland ISD 7th grade students (n = 252) also started the school year below the 7th-grade national norm. Their post-program mean score far exceeded the 8th grade national norm.



*Building an enduring institution...*

# LEGACY CAMPAIGN

## MATHWORKS IMPACT

Over a 20-year span, Mathworks' programs have provided more than 7,000 young students with exciting learning opportunities in mathematics, trained over 650 in-service teachers, and developed an innovative middle school math curriculum that engages young students in the joy of mathematical exploration and discovery.

These programs have proven to enhance achievement in algebra and higher-level mathematics in all students. Mathworks programs nurture long-term interests in the math, science, and engineering fields, providing students with a solid mathematical foundation.

## KODOSKY FOUNDATION MATCH CHALLENGE

In November of 2010, the Mathworks Legacy Campaign received a lead gift from Jeff & Gail Kodosky of Austin. This consisted of a \$300,000 outright donation, and a \$1.2 million match challenge. Mr. Kodosky, co-founder of National Instruments, is a long-time advisory board member of Mathworks, and has provided invaluable guidance for the center's programs over the years.

Mathworks, its advisory board, and Texas State University are putting forth tremendous effort to meet the Kodosky's visionary challenge match, as we seek to provide permanent support to future generations of students of all economic backgrounds.

## MATHWORKS LEGACY CAMPAIGN

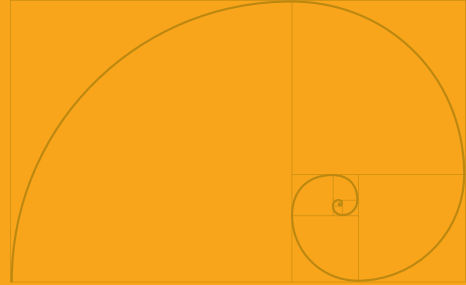
The Mathworks Legacy Campaign will sustain Mathworks as a permanent national treasure.

*The goal: a \$6 million permanent endowment to sustain Mathworks' three pillars - the Junior and Honors Summer Math Camps, Teacher Training, and Curriculum Development.*

This campaign will elevate Mathworks from its present status as one of the most prestigious programs in the nation to a model national center of excellence for mathematics education. The center will continually provide opportunities to and nurture future generations of students while advancing teaching effectiveness of mathematics.



Gail & Jeff Kodosky



## LEGACY CAMPAIGN DONORS (SEPTEMBER 2010 - AUGUST 2011)

We deeply thank each of the foundations and individuals who contributed to the Mathworks endowment during the past 12 months. Thanks to the generosity of these donors, Mathworks is changing the landscape of mathematics education for young students of all backgrounds.

### \$250,000 & ABOVE

Kodosky Foundation  
RGK Foundation

### \$25,000 & ABOVE

Sarah & Ernest Butler  
Siemens Foundation

### \$1,000 & ABOVE

Bruce & Gloria Ingram  
Ilya Sherman\*  
Jenny Chen\*  
Mollusca Fund  
Victor Cepeda\*  
Yang Mou\*

### \$100 & ABOVE

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Tim Hsiau\*  
Wenyaw Chan & Alice Chuang\*  
Xuejun Feng\*  
Yan Ling Qi\*  
Yenhung Chen\*  
Anonymous

*\* Mathworks program alumni or parent*



# GRANTS & DONATIONS

Received September 2010 - August 2011

Operational funding received this fiscal year provided crucial support for math camp scholarships, camp supplies, and implementation of the exciting Mathworks school-year curriculum.

Thanks in large part to the supporters below, more than 140 students received a camp scholarship to attend a Mathworks math camp in 2011. During the school-year, over 2,500 middle school students used the Mathworks curriculum, laying a foundation for algebra and future higher-level courses.

American Math Society Epsilon Fund.....\$12,500 to support the HSMC  
Supported camp scholarships and supplies for the 2011 Honors Summer Math Camp

KBR, Inc.....\$10,000 to support the JSMC  
Supported camp supplies for the 2011 Junior Summer Math Camp

Kinder Morgan Foundation.....\$3,500 to support the JSMC  
Supported camp scholarships and supplies for the 2011 Junior Summer Math Camp

Siemens Foundation "Herb Carter Scholarship"....\$1,000 to support the HSMC  
Supported a camp scholarship for the 2011 Honors Summer Math Camp

Time Warner Cable.....\$5,500 to support the JSMC  
Supported camp scholarships and supplies for the 2011 Junior Summer Math Camp

Tokyo Electron Limited.....\$2,500 to support Curriculum Implementation  
Supported implementation of the Mathworks Curriculum in the Kealing Magnet Program in Austin.

New Braunfels ISD (Dept. of Education).....\$186,000 to support Curriculum Implementation  
Supported implementation of the Mathworks Curriculum for 1,500 6th and 7th grade students in the New Braunfels school district for 2010-2011.

Midland ISD (Dept. of Education).....\$125,000 to support Curriculum Implementation  
Supported implementation of the Mathworks Curriculum for over 1,000 6th and 7th grade students in the Midland school district for 2010-2011.

Texas Education Agency (TEA) with La Villa ISD....\$69,195 to support Curriculum Implementation  
To support implementation of the Mathworks Curriculum at La Villa Middle School for the 2011-2012 school year.

TEA with Santa Maria ISD.....\$52,800 to support Curriculum Implementation  
To support implementation of the Mathworks Curriculum at Santa Maria Middle School for the 2011-2012 school year.

## **FACULTY**

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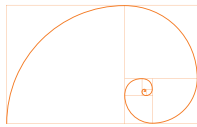
Herb Carter  
Howard Falkenberg  
Jeff Kodosky  
Robert Rutishauser  
Jim Smith

Thanks to each and every individual who supports Mathworks and its programs.  
Together we can “ensure the future” by supporting the young students of today  
in their mathematical pursuits.

Thank you!

MATHWORKS is a center for innovation and research-based model programs  
that significantly improve mathematics education.





# Mathworks

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UNIVERSITY<sup>®</sup>  
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*The rising STAR of Texas*

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