

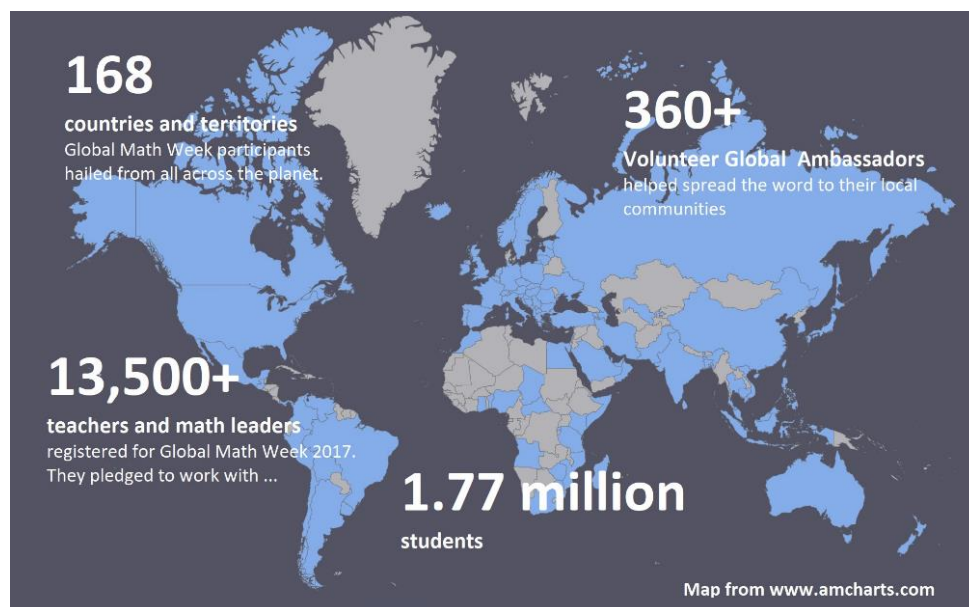
## James Stuart Tanton

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[www.jamestanton.com](http://www.jamestanton.com)  
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<b>Education:</b>	Ph. D.	Mathematics	Princeton	1994
	M.A.	Mathematics	Princeton	1990
	B. Sc (Hons.)	Mathematics	University of Adelaide	1988
	B. Sc.	Mathematical Physics	University of Adelaide	1987
<b>Current Position:</b>	<b>Mathematical Association of America</b>			2014 – Present
	<i>Mathematician-at-Large</i> Ambassadorial work, outreach. Founded the <i>Curriculum Inspirations Project</i>			
	<b>Education Consultant</b>			2012 - Present
Workshops, Professional Development, Curriculum Writing, Invited Lectures. National and Overseas.				
<b>Current Service:</b>	<b>Arizona State University</b>			2014 – Present
	<i>Adjunct Professor</i>			
<b>Current Service:</b>	<b>Chair Advisory Council</b>			
	<b>National Museum of Mathematics</b>			2017-present
	<b>Global Math Project</b>			2015 -present
<i>Founder</i>				
<a href="http://www.theglobalmathproject.org">www.theglobalmathproject.org</a>				
Joyful uplifting mathematics for the world.				



Results of inaugural Global Math Week, Oct 10-17, 2017.

**Board of Trustees**

St Mark's School

2012-present

**Advisory Boards**

Illustrative Mathematics

The National Association of Math Circles

The Math Circle Teachers' Network (AIM)

The Proof School

MathLy

Math Pickle

Math for Teaching Program, Harvard Extension School

**Editorial Boards**

AMS Math Circles Library

**Recent Service:****Editorial Boards:**

Anneli Lax New Mathematical Library (MAA)

**SIGMAA MCST**

Cofounder, Chair, Executive Officer

State-Licensure Exam Preparation Guide

Brigham Young University, 2014.

**Past Experience:****Mathematical Association of America:***Mathematician in Residence*

2012-2014

**Common Core Inc./Great Minds**

2013 – Present

*Advisor and Consultant*

K-12 mathematics curriculum for NY State. Advisor and consultant for grades 8-12.

Consultant on extension to a national program.

Revised editions

**Math for America (DC)**

Teacher professional development

2012-2014

**St. Mark's School**

2004 – 2012

Full-time high school teacher

**Founding Director St. Mark's Institute of Mathematics**

2004 – 2012

Mathematics outreach: extracurricular middle-school and high-school student research classes; professional development and graduate courses for 7-12 mathematics teachers; public presentations, lectures and incidental workshops; mathematics publications and books; consulting.

**Northeastern University School of Education***Adjunct Professor*

2004 - 2012

Created and ran each year the five graduate/teacher professional development core courses for Masters of Education, Mathematics. (Offered in conjunction with the St. Mark's Institute of Mathematics.)

**American University:***Adjunct Professor*

Spring 2012

Graduate Course for In-service Teachers

	<b>Milton Academy</b> Fulltime high school teacher	2003 – 2004
	<b>The Boston Math Circle</b> <i>Co-director</i> Innovative Mathematics K-12	2000 – 2003
	<b>Merrimack College</b> <i>Associate Professor</i>	1999 – 2000
	<b>St. Mary's College of Maryland</b> <i>Assistant Professor</i>	1995 – 1999
	<b>New College of U.S.F.</b> <i>Visiting Assistant Professor</i>	1994 – 1995
	<b>Harvard Extension School</b> Graduate courses / professional development courses.	2002 – 2003
	<b>Boston Public Schools</b> Teacher Professional Development courses	2002
<b>Awards:</b>	MathMovesU Math Hero Award sponsored by Raytheon Company <i>For Mathematics middle and high school teaching</i>	2010
	The Kidder Faculty Prize <i>St. Mark's School: High school teaching award</i>	2006
	Beckenback Book Prize: The Mathematical Association of America <i>For "Solve This: Mathematical Activities for Students and Clubs"</i>	2004
	Trevor Evans Award: The Mathematical Association of America	2002
	Trevor Evans Award: The Mathematical Association of America <i>Distinguished writing award.</i>	2001
	Homer L. Dodge Award <i>For college teaching excellence, St. Mary's College of Maryland.</i>	1999
	Princeton University Engineering Council Teaching Award <i>Teaching excellence.</i>	1994
	George Murray Scholar <i>Australian award for academic achievement and progress.</i>	1988 – 1991
	Undergraduate Prizes: Pure Mathematics. Amir Hasan Abdi Prize (1987); J. R. Wilton Prize (1986); E. S. Barnes Prize (1986); J. H. Michael Prize (1985).	

**Books:****In press**

*Probability: A Clever Study Guide.* MAA.

*Functions and their Graphs: A Clever Study Guide.* MAA.

*Tantalizing Tidbits.* AMS

**Released**

*The Power of Mathematical Visualization:* DVD course and textbook. The Teaching Company, 2016.

*The Zen Master's Collection: Relations and Equations.* Edfinity. 2016

*The Zen Master's Collection: 8 Tips to Conquer Any Problem.* Edfinity. 2016.

*The Zen Master's Collection: Counting and Probability.* Edfinity. 2016.

*The Zen Master's Collection: Numbers and the Number System.* Edfinity. 2016.

*The Zen Master's Collection: Logical Reasoning.* Edfinity. 2016.

*Avoid Hard Work: And other encouraging mathematical problem-solving tips for the young, the very young, and the young at heart.* Co-authored with Maria Droujkova, Yelena McManaman, Natural Math, 2015.

*Without Words:* Tarquin. 2015.

*Without Words II:* Tarquin. 2015.

*Trigonometry: A Clever Study Guide.* MAA. 2015.

*Geometry: An Interactive Journey to Mastery.* DVD course and textbook. The Teaching Company. 2014.

*Mathematics Galore: The First Five Years of the St. Mark's Institute of Mathematics*  
MAA, 2012

*The Encyclopedia of Mathematics*  
Facts on File. 2005.

*Solve This: Mathematical Activities for Students and Clubs.*  
MAA, 2001.

**Self-published**

**THINKING MATHEMATICS!:**

Volume 1: Arithmetic = Gateway to All

Volume 2: Advanced Counting and Advanced Algebra Systems

Volume 3: Lines, Circles, Trigonometry and Conics

Volume 4: Functions and their Graphs

Volume 5: e, i, pi and all that!

Volume 6: Calculus

Volume 7: More Calculus

Volume 8: Probability and Statistics

*GEOMETRY*: Volume 1 and Volume 2

*MATHEMATICAL THINKING: Numbers and their Algebra*  
(An advanced course for middle-school students and their teachers.)

*Weird Ways to Work with Pi*

**Self-published Online Courses** ([www.gdaymath.com](http://www.gdaymath.com))

*Exploding Dots*

*Quadratics*

*Permutations and Combinations*

*The Astounding Power of Area*

*Fractions are Hard!*

### **Sample International Pedagogy Workshops and Invited Talks:**

“The Area Model,” “Mathematical Visualization”  
Abu Dhabi, 2017

“Exploding Dots”  
Tanzania, Serbia, Malaysia, India, U.S., 2017

“Dyadic Fractions, Folding, and Dragons” (and a suite of 11 additional lectures)  
CPN, Belgrade, Serbia  
May 2016

American School in Japan  
“The story of Area,” “Exploding Dots”  
March, 2015

American School in Dubai  
Various Workshops  
February, 2015

MATRIX workshop  
“The Global Math Project”  
Leeds, UK, September 2016

“A Dozen Proofs that  $1 = 2$ : A misguided review of all of mathematics”  
MathFest 2015. Special Outreach Lecture  
Dresden, Germany. September 2014.

*EARCOS 1027*  
Curriculum-focused workshops for South East Asian International School educators.  
Kota Kinabalu, Borneo, April 2017.

*EARCOS 2014*  
Curriculum-focused workshops for South East Asian International School educators.  
Bangkok, Thailand, March 2014

*K-12 Unsolved Problems: Workshop*  
Co-organizer with Gordon Hamilton. Banff, BIRS, November 16 and 17, 2013

SUM conference, K-12 mathematics, Two Workshops: Saskatchewan; May 2012

“A Transition to Change”  
CBM Workshop, London. November 2011

Korean International School, 9-12 mathematics, Seoul. December 2010

Velammal School Workshops; Eleven eight-hour workshops for educators covering the entire K-12 mathematics curriculum. Chennai, India. June 2007

### Sample US Presentations:

Numerous presentations and workshops at Math Circle groups, school events, colleges, and incidental conference and special events across the U.S. (Typically two or three per month.)

“The Global Math Project: Exploding Dots” Global Math Project Symposium New York University	October 2017
“The Power of Visualization in Mathematics” Texas Graduate Center New York University- Abu Dhabi, New York Campus	November 2017 October 2017
“Course Correction: Is high school mathematics serving society? Can it? Does it? Should it?” Public debate with Andrew Hacker, <i>The Math Myth</i> . The National Museum of Mathematics	May 2016
“How to Think Brilliantly and Creatively in Mathematics: A guide for faculty.” Phoenix area Community Colleges	May 2016
“The Astounding Mathematics of Bicycle Tracks” NCTM, San Francisco	April 2016
“Fibonacci Surprises” University of Oklahoma University of San Francisco	March 2016 December 2015
“Weird Ways to Multiply” JMM: Council of Outreach presentation	January 2016
“A Little Thought about Dots and Dashes” MOVES conference	August 2015
“Freaky Fixed Points” MoMath	June 2015
“A Dozen Proofs that $1 = 2$ ” Washington and Lee University. Carol College	March 2014 2013
“What made me a Mathematician” US Science and Engineering “Nifty Fifty” presentation	October 2013
“Exploding Dots” Dordt College	October 2015

Carleton College	May 2015
Special presentation for K-12 educators	
MathFest, Hartford CT	August 2013
NCTM, Reston VA	June 2013
Hood College, St. Mary's College of Maryland	February 2013
Math for America, New York	November 2012
Numerous school presentations	
“Laundry Math”	
Math Encounters lecture, MoMath NY	April 2013
“Weird Ways to Work with Pi”	
MoMath	June 2015
JMM Public Outreach	January 2014
Gathering of the Minds in celebration of Martin Gardner.	October 2013
MAA Carriage House lecture	December 2012
Various school presentations	
“Dyadic fractions, permutations and dragons.”	
MathFest	August 2012
Allegheny Mountain Section Meeting, MAA	
Invited Speaker	
“A Dozen Fibonacci Surprises”	April 2012
Student, Educator, Undergraduate Lectures and Workshops	
NCSU and NC Math Circle	March 2012
San Francisco Math Circle, San Francisco Teachers' Circle	April 2012
Demonstration Math Circle Classes:	
Joint Mathematical Meetings	January 2010, 2012
MathFest	August 2011, 2012
“Fibonacci Surprises”	
MathFest	August 2011
“A Few of my Favourite Mathematical Things”	
Bay Area Mathematical Adventures series. San Jose, CA.	March 2011
“What made me a Mathematician: An Interactive Experience.”	
AIM Math Teachers' Circle. Palo Alto, CA	March 2011
“A Sampler of Successful Math Circle Topics”	
Joint Mathematics Meetings, New Orleans	January 2011
“Exploding Dots: A Point of Intersection between the K-12 Curriculum and Math Circle on the Road” and “Intersection Math”	
MSRI: <i>Circle on the Road</i> Program, Tempe, AZ	March 2010
<i>The Math Teachers' Circle Workshop</i> , Washington D.C.	July 2010
Special Demonstration Session, JMM, New Orleans	January 2011
“On selecting Math Circle topics.”	
Joint Mathematics Meetings, San Francisco	January 2010
“How to operate creatively and brilliantly in mathematics: A parent's guide.”	
SPLASH, M.I.T.	November 2009
“Base One and a Half”	

MathFest, Special Demonstration class for SIGMAA MCST	August 2009
“Weird Multiplication and Weird Ways to Multiply” Brigham-Young University, Provo, UT.	March 2009
San Jose State University Mathematics Circle	March 2009
Pi Mu Epsilon Induction Ceremony: Bridgewater State College	April 2007
MAA Undergraduate Student Activities Session; MathFest Knoxville, TN.	August 2006
ATMIM Winter Conference	January 2006
MAA sectional meeting. Undergraduate Conference. Charlottesville, VA..	April 2005
“Research Mathematics from the Perspective of a Third-Grader” Brigham-Young University, Provo, UT	October 2008
“About Multiplication” The Boston Math Circle	May 2008
“Playing with Math: Figurate numbers and the square root of two” NCTM Annual Conference, Salt Lake City Workshop for promotion of <i>MATHEMATICS ILLUMINATED</i> .	April 2008
“Three Calculus Questions that do not require Calculus” Association of Advanced Placement Mathematics Teachers	October 2007
“Sums of Powers: A Historical Overview” Indian Institute of Technology, Chennai, India.	June 2007
“Going Dotty” ATMIM: Keynote Address. Marlborough, MA,	April 2007
“More Than a Dozen Proofs that $1 = 2$ : A misguided review of all of mathematics” MAA Sectional Meeting: Keynote Address, Tallahassee, FL	February 2007
MAA sectional meeting, Charlottesville, VA	April 2005
The Association of Advances Placement Teachers of Mathematics, Boston	April 2004.
“Seeking Points of Intersection: High-School Curricula vs. Math Circle Goals” Joint Mathematical Meetings, New Orleans,	January 2007
Panel Discussion: Special Session on Math Circles Joint Mathematical Meetings, New Orleans	January 2007
Math Mingling: Math Club Panel Session MathFest: Knoxville TN	August 2006
“On Sums of Powers” Association of Advances Placement Teachers of Mathematics, Boston	October 2005
“Accessible, but surprisingly sophisticated, research projects,” MAA sectional meeting, Charlottesville, VA.	April 2005
MSRI Conference on Math Circle and Olympiads. Panel discussions.	December 2004.
Johns Hopkins CTY Career Symposium: Panel discussion. Boston University, Boston	March 2003
“Mathematics Pedagogy” <i>Professional development morning workshop for Boston Public High School teachers.</i>	January 2003



“New Undergraduate Research Projects” Brigham Young University	September 2002
“The Math Circle” Brigham Young University, Provo UT	September 2002
“Problem Solving techniques, with emphasis on open-response MCAS questions.” BPS Wilson Workshop.	November 2001
“Creating Excitement in the Classroom and out through Problem Solving” BPS Summer Institute: Northeastern University, MA	August 2001.
“Motivational Pedagogy” Brigham Young University, Provo UT St. Mary’s College of Maryland,	August 2000 January 1999.
“Layered tilings” MAA sectional meeting, Haverill MA	November 1999
“The Banach-Tarski paradox” St. Mary’s College of Maryland	April 1998.
“Homology stability and algebraic K-theory.” University of South Australia	January 1993

## Articles:

<b>Academic</b>	“On the homology of general linear groups over field extensions.” <i>Thesis, Princeton University</i> (1994).
	“A homological fibration for $GL$ .” <i>Journal of Algebra</i> , <b>190</b> (1997), 540 – 555.
	“ $\pi$ is the minimum value of $\pi$ .” Co-authored with C. Adler. <i>College Mathematics Journal</i> , <b>31</b> no. 2 (2000), 102 – 106.
	“Fibonacci numbers, generating sets and the hexagonal property.” <i>The Fibonacci Quarterly</i> <b>38</b> (2000), 299 – 309.
	“Introducing binary and ternary expansions via weighings.” <i>College Mathematics Journal</i> , <b>33</b> no. 4 (2002), 17 – 18.
	“Candy sharing.” Co-authored with G. Iba. <i>The American Mathematical MONTHLY</i> . <b>110</b> , no. 1 (2003), 25 – 35.
	“The Hairy Ball Theorem via Sperner’s Lemma.” Co-authored with Tyler Jarvis. <i>American Mathematical MONTHLY</i> . <b>111</b> , no. 7 (2004), 599 – 603.
<b>Pedagogical</b>	“Hello! My name is ...” <i>Oncore AATM Journal</i> , Fall 2017, 50-60.
	“Teaching Tip: An Introduction to $e^x$ without series.” <i>College Mathematics Journal</i> , <b>39</b> , no. 1, (2008), 23.
	“Pit Your Wits Against Young Minds!” <i>Mathematical Intelligencer</i> , <b>29</b> , no. 3, (2007), 55-59.
	“Math Circles and Olympiads. MSRI asks: Is the US Coming of Age?” <i>NOTICES</i> <b>53</b> no. 2 (2006), 200-205.

“Les Cercles de math et les Olympiades.” *Mathématique et Pédagogie* **159** (2006), 27-39.  
Translated by Charlotte Bouckaert.

Proof Without Words

“Proof without words” *College Mathematics Journal* **40** no. 2 (2009), 86.

“Proof Without Words.” *College Mathematics Journal* **39** no. 2 (2008), 106.

“Proof Without Words” Co-authored with participants of the Northeastern University Geometry course, *College Mathematics Journal* 2006.

“Mathematics Without Words.” *College Mathematics Journal*. **34**, no. 1 (2003), 14.

“Proof Without Words.” *Math Magazine* **74** no. 4 (2001), 313.

**Co-Authored with K-12 students:**

“Tilings, Order Partitions and Weird Languages” co-authored with St. Mark’s Institute of Mathematics students. *FOCUS*, **32**, no. 3 (2012), 16-17.

“Pick’s Theorem – and Beyond!” co-authored with St. Mark’s Institute of Mathematics students, *FOCUS*, **30**, no. 1 (2010), 14-35.

“Young Students Explore Proofs Without Words,” co-authored with St. Mark’s Institute of Mathematics students, *FOCUS*, **29**, no. 5 (2009), 10-11.

“Lattice Polygons for Mathematicians and for Engineers.” *College Mathematics Journal*, **40**, no. 5, (2009), 336, 360,369, 375. (Part 1 co-authored with high-school student N. Roumas.)

“An Intuitive Approach to the Borsuk-Ulam Theorem,” co-authored with St. Mark’s Institute of Mathematics students, *FOCUS*, **28**, no. 8 (2008), 14-15.

“Young students approach integer triangles.” Co-authored with students of *The Math Circle*. *FOCUS*, **22**, no. 5 (2002), 4 – 6.

**Expository:**

“An illuminating introduction to the Möbius function.” *FOCUS*, **27**, no. 3 (2007), 16-17.

MATH HORIZONS

“A dozen questions about a donut.” *Math Horizons*, November 1998, 26 – 31.

“A dozen reasons why  $1 = 2$ .” *Math Horizons*, February 1999, 21 – 25.

“A half-dozen activities to try with friends.” *Math Horizons*, September 1999, 26 – 31.

“A dozen questions about squares and cubes.” *Math Horizons*, February 2000, 26 – 31.

“A dozen areal maneuvers.” *Math Horizons*, September 2000, 26 – 30, 34.

Also appears in *The Edge of the Universe*, MAA, 2006.

“A dozen questions about the powers of 2.” *Math Horizons*, September 2001, 5 – 10.

Also appears in “Biscuits of Number Theory,” Benjamin, A. and Brown, E. editors.

“A dozen questions about a triangle.” *Math Horizons*. April 2002, 23 - 28.

Also appears in *The Edge of the Universe*, MAA, 2006.

“A dozen questions leading to the isoperimetric problem.” *Math Horizons*. February 2003, 23 - 26.

“A dozen thoughts about sums of powers.” *Math Horizons*. September 2003, 15 – 18.

“A dozen questions about pile splitting.” *Math Horizons*. September, 2004, 28-31.

“A dozen questions about the Fibonacci numbers.” *Math Horizons*. February 2005, 5-8.

Also appears in “Biscuits of Number Theory,” Benjamin, A. and Brown, E. editors.

“A dozen questions about the triangular numbers” *Math Horizons*. November 2005, 5-8.

“A dozen questions about a dozen” *Math Horizons*. *Math Horizons*. April 2007, 12-15.

“A dozen questions about Pascal’s Triangle.” *Math Horizons*. November, 2008, 5-7, 27-30.

“A dozen hat problems.” Co-authored with Ezra Brown. *Math Horizons*. April 2009, 22-25.

“A dozen harmonious problems” *Math Horizons*, April 2010, 25-30.

“A dozen elementary problems” *Math Horizons*, November 2011, 21-24.

“A dozen proofs that  $0 = 1$ ”. *Math Horizons*, February 2012, 12-16.

#### **Other:**

##### Reviews

“Mathematical Puzzles: A Connoisseur’s Collection by Peter Winkler”  
*Read This! The MAA online book review column*. August 2004

“Crossing the River with Dogs: Problem Solving for College Students”  
*Read This! The MAA online book review column*. October 2004

Letter to the Editor, “Math Circles,” *NOTICES*. March 2009.

“The Great Math Wrangle and Other News of SIGMAA MCST,” co-authored the T. Shubin and S. Vandervelde. *FOCUS*, **30** No 1, (Feb/March 2010), 18