Harold Braun Reiter
Professor of Mathematics
University of North Carolina Charlotte
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HIGHER EDUCATION:

Louisiana State University, BS., Mathematics, 1964.

Clemson University, MS., Mathematics, 1965.

University of North Carolina at Chapel Hill, 1965-1966.

Clemson University, Ph.D., Mathematics, 1969, under the direction of Andrew Sobczyk.

PLACE OF BIRTH: Jackson, Tennessee

DATE OF BIRTH: October 14, 1942

MARITAL STATUS: Married to Betty Baker Reiter, July 17, 1966.

CHILD: Ashley Reiter Ahlin, born June 11, 1973; married July 28, 2001.

PROFESSIONAL EXPERIENCE:

Assistant Professor, University of Hawaii, 1969-72.

Assistant Professor, University of North Carolina Charlotte, 1972-77.

Associate Professor, University of North Carolina Charlotte, 1977-2007.

Professor, University of North Carolina Charlotte, 2008-present.

Visiting Associate Professor, Clemson University, 1978-79.

Reader, Educational Testing Service, June of $1978-80, 1982, 1984-86^*, 1988, 1990, 1992, 1993, 1996-97, 1999, 2002, 2004, 2006$ in mathematics (or computer science*).

Visiting Assistant (Associate) Professor of Computer Science, University of Maryland, 1982-83 (1984-86).

Associate Chairman, Department of Computer Science, University of Maryland, 1985-86.

Visiting Assistant (Associate) Professor, University of Hawaii, Summers 1977, (1987, 1989).

Faculty, Research Science Institute (RSI), summer program for gifted high school students, at MIT, July-August, 1992.

Faculty, Summer Ventures in Science and Mathematics, University of North Carolina Charlotte, July, 1993, 1994, 1995, 1996, 1997, 1999. Assistant Director in 1995-98.

Resident Director, University of North Carolina Charlotte-Kingston Exchange Program, and Visiting Professor, Kingston University, Kingston-Upon-Thames, United Kingdom, 1993-94.

During each of the summers 2006-2018, I've worked at two or more summer camps for elementary, middle school, and high school children and at workshops for teachers. The organizations sponsoring these activities are American Institute of Mathematics, Math Zoom(2006-2011), Awesome Math(2008-2010), Math Path (2012, 2017), Texas MathWorks(2011-2013), Epsilon Camp (2010-2016), and Punahou School (Honolulu). During the summer of 2010, I served as local director, and director of teacher training for the Charlotte venue of Math Zoom. In 2018 I founded Exotic Arithmetic, LLC which offers enrichment to local middle and high school students. I also offer one-on-one tutorial sessions for students of Indonesia and other countries.

Leadership Team, Mathematics Teacher Circles, American Institute of Mathematics, 2008-2012.

In summer 2010 I taught middle school students Bangalore, India for Mathematics, Science, Art, and Technology (AMSAT). In April, 2014, I worked with students and teachers in Bogor and Bali, Indonesia. In November, 2014, and then again in April 2016, I worked with students and teachers in Navajo Nation. In October, 2015 and in July 2016, I enjoyed a working

trip to Chengdu, China where I gave four lectures, and Shanghai, China where I gave one lecture.

OTHER CONTRIBUTIONS:

Mathematical Association of America representative on the Committee for American Mathematics Competitions, 1984-1990.

Mathematical Association of America chair of the Council on Outreach, (later Council on Communities) from its inception to 2012.

Chair of the North Carolina High School Mathematics Contest Committee, 1987-1991.

Teacher awards review committees, including the 1987 Presidential Awards Committee for North Carolina and the NationsBank Award Committee, 1989-1993, National Presidential Awards, 2004-5, 2007-9 and 2011-12.

Referee for several mathematics journals, including the *Transactions of the American Mathematical Society, The Mathematics Teacher* and *Mathematics Magazine, College Math Journal* and *International Journal of Mathematics and Mathematical Sciences*.

Author of more than 38 reviews for the *Mathematical Reviews*.

Founder and continuing supporter of the Charlotte Mathematics Club, which each year attracts more than 60 students, grades 7-10, who want to work challenging problems in a good social environment, 1987-present.

Founder of and director (1991–97) of the Mecklenburg Mathematics Club(MMC) for students in grades 4-6, 1990-present (there were more than 110 members in 1991-92). Also, I coordinate the two chapters of MMC, MMC Central and MMC South.

In partnership with Betty Reiter, I directed both the American High School Mathematics Exam (now called AMC10 and AMC12) and the American Junior High School Mathematics Exam (now called AMC8) for North Carolina. Randy Harter, math supervisor for Buncombe County (NC) has taken on the position of directing the AMC 8 for North Carolina effective September, 2002. I continued to serve as director for the AMC 10 and AMC 12 until 2012 when MAA did away with state directors.

Founder and first advisor of the chapter of Pi Mu Epsilon, which grew out of the departmental Math Club in the early 1970's. I solicited the mural Men in Mathematics from IBM and had it framed and mounted in the UNC Charlotte Mathematics Department. Starting again in 2008, I am faculty advisor to our UNC Charlotte chapter.

Founder of the UNCC High School Mathematics Contest, 1980. It is now called the UNC Charlotte Super Competition.

Member of the two-person outside evaluation team for the Department of Mathematics at the University of Tennessee Chattanooga, April 1989.

Member of the MATHCOUNTS Question Writing Committee, 1990-93, 1994-95, 1999-2004. I chaired the committee during 2003-2004.

First chairman of the David Hilbert Award Committee, a committee of the World Federation of National Mathematics Competitions, 1992-2000.

Admissions Committee, The North Carolina School of Science and Mathematics, 1990-91.

Section Lecturer, Mathematical Association of America, 1990-1993.

Chairman, American High School Mathematics Exam Committee, 1993-99.

Member, American Invitational Mathematics Exam Committee, and the United States Mathematical Olympiad committee, 1993-99.

Moderator, Mathematics Challenge for Young Australians, Challenge Stage, 1993-97, 2002-2003.

Member, British Mathematical Olympiad Committee, 1993-94.

Deputy Leader, United States Team, International Olympiad in Informatics, Mendoza, Argentina, October 1993.

Member and subcommittee chair, Joint MAA-NCTM Task Force on Competitions, 1994-1995. Chair, MAA Council on Outreach Activities, 2004-2012.

Vice President, International Tournament of the Towns, 1992-2000.

Grant Proposal Review Panel, National Science Foundation, Teacher Enhancement Directorate, fall, 1994.

Educational Testing Service, SAT II Test Development Committee, 1995-1998 (chairman, 1997-98).

Faculty Coordinator (at UNCC) for SIAM of the Minority Recruitment Seminar at the annual SIAM meeting, Charlotte, NC, October, 1995.

Member, Cayley Committee, Canadian Mathematics Competitions, 1995-96. (The Cayley Contest is a national mathematics competition for Canadian tenth graders.)

Chair, Geometry Group, Virginia State Assessment Project, Harcourt Brace & College Board, 1996-7.

Howard Lyons Lecturer, Canadian Mathematics Competition Seminar, June 16-19, 1997; Waterloo, Ontario, Canada.

Member, Board of Advisors, COMAP's High School Math Modeling Competition, 1998-2002.

Member, Distinguished Teaching Award Selection Committee, Southeastern Section of the Mathematical Association of America, 1997-1999. Chairperson, 1999-2000.

Member, American Junior High School Math Exam Committee, 1985-89, 1993-99.

Chairman, Mathematical Association's Committee on Local and Regional Competitions, 1997-2004.

Member, Board of Advisors, Metrolina Regional Scholars Academy, 1999-2001.

National Chair (with my wife Betty) of MATHCOUNTS Parents Association, 1998-1999.

UNC Charlotte Faculty Athletic Committee, September 2000-present.

UNC Charlotte Residential Appeal Board, 2000-2002.

President, Mu Alpha Theta, 2001-2003.

Presidential Awards Selection Committee member, National Science Foundation sponsored, July 2003, July 2005, September 2007, August 2008, July 2011, 2012 and 2013.

College Board's College-Level Examination Program (CLEP) *Pre Calcu-*

lus Mathematics Committee, July 2003-present.

North American Representative on the board of the World Federation of National Mathematics Competitions, July 2004-present.

Chairman, Mathematical Association of America's *Edith May Sliffe Award Committee*, 2004-2009. Also, I was a member of this committee from 1998 to 2004.

Faculty Advisor to the UNC Charlotte Chess Club, 2004-2007.

Faculty Advisor to the UNC Chapter of Pi Mu Epsilon, 2007-2011.

Coeditor (with Ashley Ahlin), problems section, Pi Mu Epsilon Journal, 2004-2013.

In October 2006, I founded the Charlotte Teacher's Circle and directed it until 2012.

In May 2008, I organized a trip for five three-student teams of high school students to take part in the first Singapore International Math Challenge (SIMC).

In March 2010, I organized the first *Julia Robinson Mathematics Festival* at UNC Charlotte. It was the first to be held east of the Mississippi. I directed the second, third and fourth such Festival in March 2011 until March 2013. UNC Charlotte will host its 11th annual JRMF in 2020.

In March 2008, I joined the national leadership team of six to host the American Institute of Mathematics' 'How to Run a Teachers' Circle' summer workshops. Since that time, we have hosted two such workshops every summer.

Board member, Art of Problem Solving Foundation, 2007-present.

MTC Network Leadership Team, American Institute of Mathemtics' Mathematical Teacher Circles group.

AWARDS and HONORS:

NationsBank (now Bank of America) *Award for Excellence in Teaching* at UNC Charlotte, 1988-89.

CASE Professor of the Year nomination by UNC Charlotte. This was the

first time (1988) UNC Charlotte had nominated a faculty member.

North Carolina Council of Teachers of Mathematics *Innovator Award*, October, 1997.

Distinguished College or University Teaching Award, Southeastern Section of the Mathematical Association, March, 1997.

Certificate of Appreciation, presented April, 1998 by Professional Engineers of North Carolina's South Piedmont Chapter.

UNC Charlotte Alumni Association *Outstanding Faculty Service Award*, November, 1999.

Paul Erdös Award, for contributions at the national level, given by the World Federation of National Mathematics Competitions, Melbourne, Australia, August, 2002. Up to 2019, there have been 43 winners worldwide including seven Americans.

In 2009, the **Charlotte Math Club** was presented the *Innovator Award* by the North Carolina Council of Teachers of Mathematics.

W. W Rankin Award, North Carolina Council of Teachers of Mathematics, October, 2009.

On October 11, 2012 I was presented the *North Carolina Board of Governors' Award for Public Service* at the Board of Governors' meeting in Chapel Hill. The video tape Thomas Todd of UNC TV produced for the event was aired on WUNC TV later in the year. The university held a reception on January 16.

Books Published:

The Contest Problem Book VII, American Mathematics Competitions, 1995-2000 Contests, 2006 *The Mathematical Association of America.* ISBN 0-88385-821-5.

American Mathematics Contests, A Guide to Success with Jon Kane and Y Z. Zou, 2018, Kendall Hunt. ISBN 978-1-5249-5427-7.

PUBLICATIONS in Refereed Journals:

1. Spaces with Compact Subtopologies, *Rocky Mountain Journal of Mathematics*, **2** (1972), 239-247, MR 45 #2664.

2. Separating Function Algebras, with G. L. Csordas, *Nagoya Mathematical Journal*, **47** (1972), 101-109, MR 47 #9293.

3. Some Results on Separating Function Algebras, with G. L. Csordas, *Bulletin of the American Mathematical Society*, **78** (1972), 578-581, MR 45 #9139.

4. Results and Problems Concerning Compactifications, Compact Subtopologies, and Mapping, with J. Quinn and S. Nadler, *Fundamenta Mathematica*, **89** (1975), 33-44, MR 52 #4235.

5. Convex Sets, Cantor Sets, and a Midpoint Property, *Canadian Mathematical Bulletin*, **19** (1976), 467-471, MR 56 #1203.

6. On the Compactness of the Space of Faces of a Compact Convex Set, with N. M. Stavrakas, *Pacific Journal of Mathematics*, **73** (1977), 192-196, MR 57 #4003.

7. Defining Relations by Formulas, *MATYC Journal*, **14** (1980).

8. A Magic Pentagram, *Mathematics Teacher*, **75** (March 1983), 174-177.

9. A Note on Knight Interchange Problems, *Journal of Recreational Mathematics*, **16** (1983-84), 7-11, MR 85d #05221.

10. A Regular Expression for Binary Multiples of Three, *Journal of Mathematics and Computer Education* (Fall 1985), 159-162.

11. Problem Solving with Magic Rectangles, *Mathematics Teacher*, **79** (April 1986), 242-245.

12. Magic Rectangles Revisited, with Larry Hodges, *Mathematics and Computer Education* (Spring 1986), 107-111.

13. Magic Pentagram Solutions over GF(2), *Journal of Recreational Mathematics*, **20** (1988), 99-104.

14. A Complete Solution to the Magic Hexagram Problem, with David Ritchie, *The College Mathematics Journal*, **20** (1989), 307-316.

15. Graceful Graphs and Sparsely Marked Rulers, with L. R. King, *The College Mathematics Journal*, **22** (1991), 232-234.

16. An Excursion in Discrete Mathematics, *Mathematics and Computer Education*, **26** (Spring 1992), 35-39.

17. Measuring Difficulty and Diagnositicity in a Weighted Multiple Choice Exam, with Nancy Schoeps, Terry Hartman, and Betty Reiter, *Mathematics Competitions*, **6** (Fall 1993), 64-85.

18. The Fifth International Olympiad in Informatics: The Argentine Diary, with Donald Piele, *Mathematics Competitions*, **7** (Fall 1994), 80-96.

19. The "Join the Club" Interpretation of Some Graph Algorithms, with Isaac Sonin, *The College Math Journal*, **27** (1996), 54-58.

20. The Space of Closed Subsets of a Convergent Sequence, with Ashley Reiter, *Mathematics Magazine*, **69** (June, 1996), 217-221 .

21. The Chinese Restaurant Approach to Integer Representation Problems, *Mathematics and Informatics*, **7** (1997), 20-26.

22. American Mathematics Competitions Report of the Task Force, *Mathematics Competitions*, **10** (Fall, 1997), 32-43.

23. Counting Snakes, Differentiating the Tangent Function, and Investigating the Bernoulli-Euler Triangle, *Mathematical Mayhem*, (Spring, 1999), 39-46.

24. The "Join the Club" Interpretation of Some Graph Algorithms, in Russian, with Isaac Sonin, *Mathematical Education*, **3** (1999), 208-212.

25. A Nimlike Game on the Integers, with Arthur Holshouser, *Mathematics and Informatics Quarterly* 4/2001, vol.11, pp. 174-5.

26. An Extension of Beatty's Theorem, with Arthur Holshouser, *Southwest Journal of Pure and Applied Mathematics*, Issue 2, December, 2001 pp.24-29.

27. The American High School Mathematics Examination: A 50 Year Retrospective, *Mathematics Competitions*, with Stephen B. Maurer and Leo J. Schneider, vol.14, Number 2, 2001, pp. 45-66.

28. Dynamic One-Pile Blocking Nim (local version) and Dynamic One-Pile Blocking Nim (as it appeared in EJC) with Arthur Holshouser and Achim Flammenkamp, *Electronic Journal of Combinatorics*, Volume 10(1), 2003, Note N4.

29. Three Pile Nim with Move Blocking, with Arthur Holshouser, *Mathematical Mayhem*, `http://citeseer.ist.psu.edu/470020.html`

30. One Pile Nim with Arbitrary Move Function, with Arthur Holshouser, *Electronic Journal of Combinatorics*, Volume 10(1), 2003, Note N7.

31. Dynamic One-Pile Nim, with Arthur Holshouser and James Rudzinski, *Fibonacci Quarterly*, vol 41.3, June-July, 2003, pp 253-262.

32. (Pilesize) Dynamic One-Pile Nim and Beatty's Theorem, with Arthur Holshouser and James Rudzinski, *Integers*, Electronic Journal of Combinatorial Number Theory, vol 4(2004).

33. Two Pile Move-Size Dynamic Nim, with Arthur Holshouser, *Discrete Mathematics & Theoretical Computer Science*, February, 2005, vol. 7, pp. 1-10.

34. Nimlike Games with Generalized Bases, with Arthur Holshouser, *Rocky Mountain Journal of Mathematics*. Vol 35, pp 539-545, Number 2, 2005.

35. Misère Games, with Arthur Holshouser, *Mathematical Mayhem*, May, 2005, pp 211-214.

36. The Commutative Equihoop and the Card Game SET, with Arthur Holshouser, Ben Klein and Wayne Snyder, *Mathematics and Informatics Quarterly*, 3-4, 2006, vol.16, pp. 78-93.

37. Michigan Autumn Take Home Challenge, *Mathematics Competitions*, with Arthur Holshouser, vol.19, Number 2, 2006, pp. 42-60.

38. Groups that Distribute over Mathematical Structures, with Arthur Holshouser, *International Journal of Algebra*, Vol. 3, 2009, no. 1-4, 157-171.

39. Groups that Distribute over n-Stars, with Arthur Holshouser, *International Journal of Algebra*, Vol. 3, 2009, no. 1-4, 173-179.

40. Win Sequences for Round-robin Tournaments , with Arthur Holshouser, *The Pi Mu Epsilon Journal*, vol. 13. No. 1, pp 37-44, 2009.

41. On a problem of Arthur Engel, *Mathematics Competitions*, with Arthur Holshouser, vol.22, Number 1, 2009, pp. 38-59.

42. Win-loss Sequences for Multiple Round Tournaments, with Arthur Holshouser and John W. Moon, November, 2011 in *Missouri Journal of Mathematical Sciences*.

43. Exploring Problem-Solving in a Mathematics Teachers' Circle, with Anthony Fernandes and Jacob Koehler, *Mathematics Teacher*; September, 2010, pp 109-115.

44. Generalized Groups that Distribute over Stars, with Arthur Holshouser, *Missouri Journal of Mathematical Sciences*, vol. 24, Number 2, fall 2012, pp.124-155.

45. Invariant Relations for the Derivatives of Two Arbitrary Polynomials, with Arthur Holshouser, *Missouri Journal of Mathematical Sciences*, vol. 24, Number 2, fall 2012, pp. 195-201.

46. Using Complex Weighted Centroids to Create Homothetic Polygons, with Arthur Holshouser, *Forum Geometricorum*, November 2012, vol. 12 (2012) 247-254. ISSN 1534-1178.

47. Dont Fence Me In! Counting and Geometrical Thinking with the Lattice Octagon, *Mathematics Teacher*, with Arthur Holshouser and Patrick Vennebush; April, 2012, vol. 105, (8), pp 594-599.

48. Invariant Relations for the Derivatives of Two Arbitrary Polynomials, with Arthur Holshouser, Fall, 2012 in *Missouri Journal of Mathematical Sciences.*, Volume 24, number 2, pp. 195-201.

49. Using KenKen to Build Reasoning Skills, with John Thornton and Patrick Vennebush, *Mathematics Teacher*, December 2013.

50. The Cubic Function is an Adding Machine, with Arthur Holshouser and Chuck Diminnie, *The Pi Mu Epsilon Journal*, spring 2014, pp.619-624.

51. Apollonius Problems, with Arthur Holshouser and Stanislav Molchanov, *The Pi Mu Epsilon Journal*, spring 2016, pp.261-267.

52. The Game of SET, with Ben Klein and Arthur Holshouser, *The Pi Mu Epsilon Journal*, fall, 2015, pp.175-190.

53. Applying Poncelet's Theorem, with Arthur Holshouser and Stas Molchanov, Forum Geometricorum, Volume 16 (2016) 141-149.
Also, see http://forumgeom.fau.edu/FG2016volume16/FG201619index.html.

54. A Special Case of Poncelet's Problem, with Arthur Holshouser and Stas Molchanov, Forum Geometricorum, Volume 16 (2016) 151-170. Also, see http://forumgeom.fau.edu/FG2016volume16/FG201620index.html

55. A Fraction Problem, with Arthur Holshouser, *Mathematics Competitions*, vol. 30, #1, 2017, pp.25-44

56. Generating Stern–Brocot Type Rational Numbers with Mediants, with Arthur Holshouser, *Missouri Journal of Mathematical Sciences*, vol 30. pp 93-104.

57. Using Linear Companion Recursions to Solve Recursive Equations, with Arthur Holshouser, submitted.

58. Using Cyclotomic Polynomials to Calculate the Sums and Products of Non-standard Trigonometric Series, with Arthur Holshouser, submitted.

Other papers published at
`https://webpages.uncc.edu/hbreiter/researchindex.htm`

1. Single Pile (Move Size) Dynamic Blocking Nim, with Arthur Holshouser.

2. Nim with Twists, with Arthur Holshouser.

3. Blocking Combinatorial Games, with Arthur Holshouser,
`http://math.uncc.edu/hbreiter/BlockComb2.pdf`

4. Dynamic Single-Pile Nim Using Multiple Bases, with Arthur Holshouser.

5. Abstract Combinatorial Games, with Arthur Holshouser.

6. Is this Modified Nim Game a Game of Chance? with Arthur Holshouser.

7. A Theory of Linear Fractional Transformations of Rational Functions, with Arthur Holshouser.

8. Magic Hexagon Puzzles, with Arthur Holshouser.

9. Applications of the Cevian Group in a Triangle, with Arthur Holshouser.

10. Classifying Similar Triangles Inscribed in a Given Triangle, with Arthur Holshouser.

11. Generalizations of Two Theorems on Isogonal Conjugates, with Arthur Holshouser.

12. The GCD of m Linear Forms in n Variables, with Ben Klein and Arthur Holshouser.

13. The Area Model; Alphametics; Decanting; Fusing Dots; Magic Figures; StIves; Reverse Polish; KenKen.

PUBLICATIONS in Conference Proceedings:

Finite State Machines: An Introductory Enrichment Experience for Gifted Children, with Judie Muntner, *Proceedings of the World Conference on Computers in Education*, Springer-Verlag, August 1985, 393-398.

Calculators in Mathematics Competitions, A Progress Report, with Betty Reiter, Proceedings of the World Federation of National Mathematics Competitions, *Mathematics Competitions*, **4** (July 1991), 56-62.

The Mathematical Contest in Modeling, *Proceedings of the Eleventh International Conference on Technology and Education*, London, March 1994, 170-172.

NON-REFEREED PUBLICATIONS:

Cardinal Realcompactness, *Portugaliae Mathematica*, **34** (1975), 105-109, MR 53 #4010.

Review of *Principles of Computer Programming: A Mathematical Approach* by Harlan Mills, et.al. Allyn and Bacon, **1** (January 1987).

North Carolina Junior High Students Compared to National Norms, 1987 AJHSME, with Betty Reiter, *Centroid*, (Fall 1988), 31-33.

The North Carolina State Mathematics Contest, *Mathematics Competitions*, Journal of the World Federation of Mathematics Competitions, **3** (April 1990), 30-33.

Arithmetic Expressions for Integers, with Kevin Weir, *Centroid*, (Fall 1991).

Trends in Calculator Use in Mathematics Competitions, with Betty Reiter, *Mathematics and Computer Education*, **25** (Spring 1991), 174-178.

The American Mathematics Competitions, A Look at North Carolina's Participation over Six Years, with Betty Reiter, *Centroid*, (Spring 1992), 29-32.

Games and Representations, see
`http://www.math.uncc.edu/~hbreiter/SVSM/Svsm99.pdf`.

The Joys of Mathematical Problem Solving and Competitions, *Imagine* **2**, (September/October 1994), 3-5.

Report on North Carolina's Student Performance 0n the 1996 American Junior High Mathematics Exam, *Centroid*, (Spring 1997), 22-25.

Report on North Carolina's Student Performance 0n the 1997 American Junior High Mathematics Exam, *Centroid*, (Spring 1998), 26-30.

(with Betty Reiter) Report on North Carolina's Student Performance 0n the 1998 American Junior High Mathematics Exam, *Centroid*, (Fall 1999), 22-26.

(with Doug Faires) The American Mathematics Competitions 10 (AMC10), *Centroid*, (Fall 1999), 17.

(with Betty Reiter) The 1999 American High School Mathematics Exam,

North Carolina Results, *Centroid*, (Fall 1999), 14-16.

The American Mathematics Competitions 10 (AMC10) Sample Test, *Centroid*, (Fall 1999), 18-19.

(with Doug Faires) The American Mathematics Competitions 10 Sample Test, *New York State Mathematics Teachers' Journal*, Spring 2000, (Volume 49), 2, 108-113.

(with Doug Faires) The American Mathematics Competitions 10, *The Mathmate*, Spring 2000, (Volume 22), 5, 27-28.

My Favorite Problems, Part 1, Mu Alpha Theta *Mathematical Log*, April, 2001.

Counting Divisors, Mu Alpha Theta *Mathematical Log*, Summer, 2002 `http://www.mualphatheta.org/Mathematical_Log/Issues/Summer_02/MAO_Mathematical_Log_Math_Path_Summer_02.htm`.

My Favorite Problems, *Mathematics and Informatics Quarterly*, 1/2002, vol. 12, p 15.

My Favorite Problems 2, *Mathematics and Informatics Quarterly*, 3/2002, vol. 12, pp 93-96.

My Favorite Problems 3, *Mathematics and Informatics Quarterly*, 1/2003, vol. 13, pp 24-25.

My Favorite Problems 4, *Mathematics and Informatics Quarterly*, 2/2004, vol. 14, p. 58 and pp 77-80.

My Favorite Problems 5, *Mathematics and Informatics Quarterly*, 1/2005, vol. 15, pp ??.

My Favorite Problems 6, *Mathematics and Informatics Quarterly*, 2/2005, vol. 15, p. 20 and 37.

My Favorite Problems 7, *Mathematics and Informatics Quarterly*, 3/2005, vol. 15, p. 67 and pp 77-78.

My Favorite Problems 8, *Mathematics and Informatics Quarterly*, 3/4, 2005, vol. 15, pp 132-133.

Quarto without the Twist, with Arthur Holshouser, to appear in *Mathematics & Informatics Quarterly*.

Eight Versions of n-Pile Nim, with Arthur Holshouser, *Mathematics and Informatics Quarterly*, 3/4, 2005, vol. 15, pp 108-111.

Closed Form, Recursion, and Mindreading; Defining Sequences by Various Means, to appear in the *Mathematics & Informatics Quarterly.*

Marilyns Ten-digit Number Problem, with Arthur Holshouser, *Mathematics and Informatics Quarterly* 1/2 2006, vol.16, pp. 7-8.

Coffee and Mathematics, Once Again, December 2005, Focus, MAA Newsletter.

The Five Stages of Place Value , with Roger Howe,
`http://www.teachersofindia.org/en/article/five-stages-place-value`, Teachers of India, September, 2012.

PROBLEMS PUBLISHED:

Random Walks on Pascal's Triangle and Cantor Sets, Proposals for Research, *Undergraduate Journal of Mathematics*, September 1973.

Solution to problem 1128, *Mathematics Magazine*, November 1982.

A Marbelous Challenge, *Games*, February 1985, 4.

Problems $14-20$, October 1992, Calendar Section, *Mathematics Teacher.*

Problem 16, November 1992, Calendar Section, *Mathematics Teacher.*

Birds Of A Feather, Brainteaser 1687, Sunday (London) Times, January 8, 1995.

Multiple Quotients, Brainteaser 1696, Sunday (London) Times, March 19, 1995.

Prime Leaps, Brainteaser 1721, Sunday (London) Times, Oct. 15, 1995.

Back to Front, Brainteaser 1785, Sunday (London) Times, December 22, 1996.

The Special Seven, Brainteaser 1823, Sunday (London) Times, August 24, 1997.

Parenthetical Integers, Wagon's Problems of the Week.
`http://mathforum.com/wagon/spring97/p830.html`

An Odd End, Brainteaser 1869, Sunday (London) Times, July 12, 1998.

Math Challenge: Problems from the 1998 AHSME, *Imagine* **5**, (March/April 1998), p. 29.

The Sunday Times BRAINTEASERS, Edited by Victor Bryant, puzzles number 16, 22, and 65; HarperCollins, London, 2002.

High Slopes, Brainteaser 2089, Sunday (London) Times, September 29, 2002.

Face Painting, Brainteaser 2094, Sunday (London) Times, November 3, 2002.

Unsquare Party, Brainteaser 2098, Sunday (London) Times, December 1, 2002.

Digital Shuffle, 2192, Sunday (London) Times, Sept, 2004.

A Number of Times, Sunday (London) Times, 2208, January 9, 2005.

Bug Box, 2271, Sunday (London) Times, April 2, 2006.

Tired Mascot, 2285, Sunday (London) Times, July 9, 2006.

Spotted, 2297, Sunday (London) Times, October, 2006 .

RESEARCH FUNDS AWARDED:

UNCC Summer Grants, 1974, 1977, 1980, 1982, and 1984. I served on the Grants Committee in 1978, 1988 and 1989 (as chair).

Grant from State of North Carolina, Dept. of Instruction to teach AP Calculus, Summer, 1981, (with B. Weinstock).

Grant from State of North Carolina, Dept. of Instruction to conduct a one week workshop for AP Calculus teachers, Summer 1986.

UNCC Summer Curriculum and Instructional Development Grant, Summer, 1996, (with Isaac Sonin).

PAPERS PRESENTED AT MEETINGS (SINCE 1972):

A Case Against Utility Theory, presented at the NSF Chautauqua Short Course in Operations Research, Atlanta, GA, March 1973.

A Hyperspace of Convex Sets, presented at the AMS Winter Meeting in San Francisco, January 1974.

Cantor Sets and Convex Sets, presented at the local topology conference, Raleigh, NC, September 1975.

A Power Index for the Supreme Court, presented at the NSF Chautauqua Short Course in Mathematical Modeling and Some Voting Situations, Baton Rouge, LA, March 1976.

Teaching Structure to Academically Gifted Fifth Graders, with Judie Muntner, presented at the World Conference of Computers in Education, Norfolk, VA., August 1985.

A Case for Calculators in Mathematics Competitions, with Betty Reiter, presented at the First International Conference of the World Mathematics Competitions, Waterloo, Ontario, August 1990.

Gender and Race Differences on a Weighted Multiple Choice Mathematics Exam, with Betty Reiter, presented at the International Congress on Mathematics Education, Quebec, August 1992.

The Mathematical Contest in Modeling, presented at the Eleventh International Conference on Technology and Education, London, March 1994.

Recent Developments at the American Mathematics Competitions, presented at the NCTM meeting in Boston, April 1995.

Report of the MAA/NCTM Joint Task Force on Competitions, presented at the NCTM meeting in San Diego, April 1996.

A Proposal for a National Mathematical Team Challenge for Elementary Students (MATCHES), presented at the International Congress on Mathematics Education, Seville, Spain, July, 1996.

The Chinese Restaurant Approach to Integer Representation Problems, presented at Problems Conference 96, University of Waterloo, August, 1996.

Organizer, Special Session on Local and Regional Competitions, (with Steve Maurer), Winter MAA/AMS meeting, San Antonio, TX, January 1998.

Bests and Worsts of the 1998 AHSME, NCTM meeting, Washington, DC; April, 1998.

My Favorite Problems from AMC, MathCounts, and Elsewhere, SCCTM meeting, Hilton Head, SC; November, 1998.

My Favorite Problems from AMC, MathCounts, and Elsewhere, part II, SCCTM meeting, Hilton Head, SC; November, 1999.

Organizer, Special Panel Discussion on Organizing a Successful Math Team, (with Gene Berg), NCTM meeting, Chicago, IL. April, 2000.

My Favorite Divisor Problems, presented at the National Council of Teachers of Mathematics Conference, Las Vegas, April, 2002.

Just the Factors, Ma'am, presented at the World Federation of National Mathematics Competitions; Melbourne, Australia, August 2002.

Organizer, Special Session on *Encouraging Underrepresented Groups of Students in Math Contests*, (with several), Winter MAA/AMS meeting, Baltimore, MD, January 2003.

Speaker, International Problem Solving Seminar at the Wo International Center, Honolulu in July 11 and July 14, 2003. The talks were entitled *Games and Representations* and *Fibonacci Nim*.

Games and Representations, 10^{th} International Congress on Mathematics Education, ICME-10, Copenhagen, Denmark, July 2004.

Michigan Mathematical Challenge, presented at the World Federation of National Mathematics Competitions, Cambridge, England, July 2006.

INVITED LECTURES AND COLLOQUIA (SINCE 1972):

Separating Function Algebras, presented to the mathematics faculty at UNCC on October 1972.

A Hilbert Cube of Convex Sets, presented to the mathematics faculty at North Carolina State University on Friday, July 1974.

Random Walks in Pascal's Triangle, presented to the mathematics department at Guilford College, March 1975.

Some Results in Elementary Game Theory, presented to the department of mathematics at NC State, January 1977.

Multi-person Game Theory, presented to the Clemson mathematics department in a sequence of five lectures, December 1977 through February 1978.

Counting Up-Down Permutations, presented to the mathematics department at East Carolina University, December 1980.

Game Theory: A Guide to Rational Behavior, two parts, presented at James Madison University Visiting Scholars Program, April 1982.

Magic Geograms, presented to the department of mathematics and computer science, James Madison University, April 1985.

The Program Calculus, presented to the department of computer science, Kingston Polytechnic Institute, Kingston-Upon-Thames, England, June 1985.

How to Teach Computer Science and Do It Well, presented to the University College, University of Maryland, computer science faculty, February 1986.

Snapshots in Mathematical Decision Making, banquet lecture at the Virginia, Maryland, D.C. Section of the MAA, in Baltimore, MD, November 1986.

An Excursion in Discrete Mathematics, presented to the Pfeiffer College mathematics faculty and math club, March 1988.

In Search of Mathematical Meaning: Three Successes and a Failure, keynote address at the Spring meeting of the Southeast Section of the MAA, April 1989.

MATHCOUNTS workshop for coaches, sponsored by the NC Department of Public Instruction, Career Development Center, September 1989; November 1990; November 1991; October 1992; October 1995; and November 1996.

MATHCOUNTS workshop for coaches, sponsored by Iolani School, Honolulu, Hawaii, June 26-30, 2000.

Game Theory and Rational Behavior, keynote address to the annual convention of Kappa Mu Epsilon, Winthrop College, April, 1990.

Mathematics Education in the Twentieth Century, a presentation to the Charlotte Civitan Club, in two parts, January and June 1991.

Some Elementary Graph Models: An Introduction to Mathematical Thinking, presented in the Spartanburg Collegiate Mathematics Colloquium Series, October 1994.

Keynote speaker at the NMCTM Student Miniconference, Albuquerque, NM, November, 1996.

Howard Lyons Invited Speaker, Canadian Mathematics Competitions Annual Seminar, June 14-20, 1997, four lectures over a week.

Davidson College Math Coffee, *Counting Snakes*, November, 1997.

Southeastern Section of the MAA, Distinguished Teaching Lecture, Mathematics is Not My Faux Pas: Recollections and Reflections on Thirty Years of Teaching, Charleston, SC, March, 1998.

In March 2004 I lead a discussion at The Cypress (retirement community) on current trends in Mathematics and Mathematics Education. Former UNC Charlotte Chancellors Dean Colvard and E K Fretwell attended.

Great Circles Math Conference, March 2008, Berkeley CA. *Bug Crawls.*
Speaker/presenter, Dallas, Texas Metroplex Math Circle, November 7, 2009, *Exploding Dots, Antidots, and Black Holes.*
Using KenKen to Build Reasoning Skills, 2011 NCTM Annual Conference, Indianapolis, IN.
In February, 2013 I gave a talk at a meeting of Math Chairs in the state of Georgia entitled *Community Service for Mathematicians.*
In March, 2013 I presented *Fusing Dots, Antidots, Black Holes, and Single Pile Nim* at the UNC Charlotte Mathematics Competition.
In March, 2013 I presented *Fusing Dots, Representations, and Dynamic Single Pile Nim* at the Southeastern Section of the MAA in Rock Hill, SC.
In October, 2015 I presented *Motivating the learning of Calculus* at Sichuan University in Chengdu, China.
In January, 2018 I presented *Some New Ideas in Mathematical Enrichment* at the UHAMKA University, Jakarta, Indonesia.

This list does not include more than a dozen presentations at regional and state NCCTM and MAA meetings, and more than four dozen talks at high schools, civic clubs, church groups, the Governor's schools, and the North Carolina School of Science and Mathematics.

STUDENT INVOLVEMENT:

Senior Project students directed:

Brian Price, Public Key Crytography
Daphne Webb, decanting
Kelly Neely (VanderGraaf), magic geograms
John Cox, 1991, Graceful Graphs
Sharon Hart, tiling with regular polyominoes
Julie Bebber, 1992, Wallpaper Tessellations
David Hassinger, Risk Theory
Lisa Batchler, Algebraic curves
Liz Hill, Partitioning Relations by Properties
Paul Robertson, How to Divide the Loot
Matt Westbrook, Cubical Madness
Jeff Hallman, solving peg solitaire
Lane Foster, counting triangles
Elizabeth Cullingford, The Block Cutting Problems, 2006
Elizabeth Trent, The Penney Ante Problem, Fall, 2006
Simone Shade, People in Number Theory, Fall, 2007
Adrienne Ballin, Modular Arithmetic, Fall, 2008
Amy Lenk, Solving Equations over Z_7, Fall, 2008
Michael Paciocco, The Perfect Card Trick, Fall, 2009
Carol Chen, Super Bowl Lottery Problem, Fall, 2010.
Kelly Crone, Graph Theory Problem, Spring, 2011.
Kevin Swartzlander, Fractals over Octonians, Fall, 2011.
Dave Petranick, Variations of KenKen, Spring, 2012.
Juan Vargas, Walks in the plane, Spring, 2013.
Michelle Martinez, The Fibonacci Sequence, Spring, 2015.

Senior Honors Theses directed:

Kit Henry, Magic Hexagrams
James Rudzinski, Dynamic Nim

Westinghouse/Intel Science Talent Search advised:

Nicole Radziwill
Nate Bronson
Scott Harrington
Anders Kaseorg
Aneesh Kulkarni

USA Mathematical Olympiad winners mentored:

Lenny Ng
Akira Negi
Anders Kaseorg

USA Computing Olympiad winners mentored:

Nate Bronson
Brian Dean
Anders Kaseorg

Other student related activities:

Faculty Advisor, UNCC Chess club (1973-77 with T R Lucas) and again 2004-2005. Faculty Advisor, **Pi Mu Epsilon**, 2008-present.

Judge, local science fairs, including the Mecklenburg Science Fair, 1977-present, nearly every year and the International Science Fair (ISEF), Portland, May, 1994.

Training sessions for the North Carolina ARML team, 1988, 1989, and 1991.

Short course for actuarial science students, summer, 1989.

Gave talks at the local UNCC Math Club, 1974 and 1976.

Gave talks at the local *Pi Mu Epsilon* induction ceremonies, 1989, 1998, 2007, and 2015.

Graduate Teaching Observations/Supervision: Abbas Al-Hakim, Anahid Abifaker, Anna Athanasopoulou, Rasoul Behboudi, John Chantis, Krishnan Gupta, Jason Holt(2), Hossein Islami, Gary Kersey, Khadija Laghrida, Jeremy Lane, Brett Loomis, Matthew Peeler, Peng Thao, Matthew Wyman, and Zuping Zhang. Andrey Kuzhuget(2).

PROFESSIONAL AND HONORARY AFFILIATIONS:

Honor Society of *Phi Kappa Phi*, charter member at UNCC

Society of *Omicron Delta Kappa*, charter member at UNCC

Pi Mu Epsilon, founder and charter member at UNCC

Society of *Sigma Xi* (UNCC Chapter)

American Mathematical Society (membership is not current)

Mathematical Association of America

American Association of University Professors (membership is not current)

National Council of Teachers of Mathematics

Association for Computing Machinery (membership not current)

North Carolina Council of Teachers of Mathematics

London Mathematical Society, Honorary Member, 1993-94

President, *Mu Alpha Theta*, 2001-2003; Past President, 2003-2004

Advisory board member for the Mathematical Association of America's Special Interest Group (SIG) on Math Circles for Students and Teachers, first past president, 2009.

Updated September, 2019.