MATYCONN NEWS

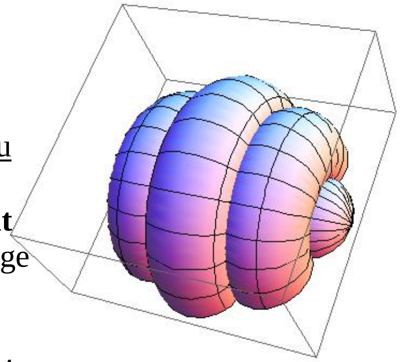
Spring 2011

Inside this Issue

Mathematical Association of Two – Year Colleges of Connecticut

2010 – 2011

OFFICERS AND EXECUTIVE COMMITTEE



Andre Freeman, President
Capital Community College
AFreeman@ccc.commnet.edu

Teresa Foley, Vice President
Asnuntuck Community College
TFoley@acc.commnet.edu

Ruth Urbina-Lilback, Secretary
Naugatuck Valley Community College
RUrbina-lilback@nvcc.commnet.edu

Deborah Litwinko, Treasurer
Naugatuck Valley Community College
DLitwinko@nvcc.commnet.edu

Jana Sime, Membership Chair
Manchester Community College
JSime@mcc.commnet.edu

Steve Krevisky, Math Contest Coordinator
Middlesex Community College
SKrevisky@mxcc.commnet.edu

Sandra Pettinico, Math Contest Coordinator
Naugatuck Valley Community College
SPettinico@nvcc.commnet.edu

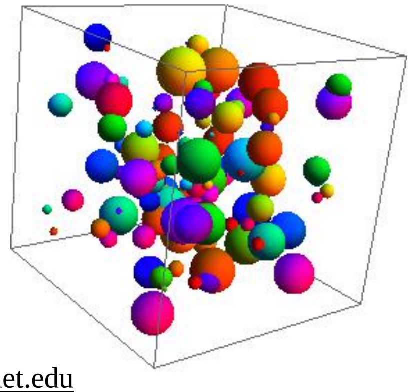
Larisa Alikhanova, Scholarship Chair
Three Rivers Community College
LAlikhanova@trcc.commnet.edu

Mark Leach, Immediate Past President
Housatonic Community College
MLeach@hcc.commnet.edu

Elaine Dinto, Webmaster
Naugatuck Valley Community College
EDinto@nvcc.commnet.edu

2010– 2011

CAMPUS CONTACTS



Asnuntuck
Pat Hirschy
PHirschy@acc.commnet.edu

Capital
Andre Freeman
AFreeman@ccc.commnet.edu

Gateway
Rachael Schettenhelm
RSchettenhelm@gwcc.commnet.edu

Housatonic
Mark Leach
MLeach@hcc.commnet.edu

Manchester
Jana Sime
JSime@mcc.commnet.edu

Middlesex
Pamela Frost
PFrost@mxcc.commnet.edu

Naugatuck Valley
Harry Burt
HBurt@nvcc.commnet.edu

Northwestern
Sal Maimone
SMaimone@nwcc.commnet.edu

Norwalk
Joe Karnowski
JKarnowski@ncc.commnet.edu

Quinebaug Valley
John Lepore
JLepore@qvcc.commnet.edu

Three Rivers
Larisa Alikhanova
LAlikhanova@trcc.commnet.edu

Tunxis
Susan Ricciuti
SRicciuti@txcc.commnet.edu

21^{st} ANNUAL MATH CONTEST

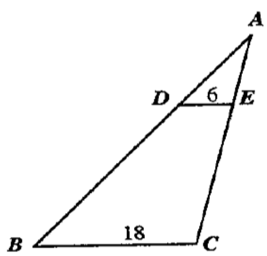
The 21^{st} Annual Math Contest took place between Wednesday, April 13, 2011 and Saturday, April 16, 2011 at several Connecticut Community Colleges. The results are:

First Place: Michael Lang (Gateway) – 34 points

Second Place: Liam Fratturo (Norwalk) – 32 points

Third Place: Ian Krasnow (Naugatuck) & Alexandra Hill (Northwestern) – 29 points

Questions	***Answers***
EACH OF THE FOLLOWING PROBLEMS, 1 THROUGH 6, IS WORTH ONE (1) POINT.	
1. FIND ALL OF THE 2 DIGIT PRIME NUMBERS, SUCH THAT NEITHER OF THE DIGITS ARE PRIME.	1. 11, 19, 41, 61, 89
2. THE SUM OF 2 INTEGERS IS 28, AND THEIR PRODUCT IS 192. WHAT ARE THE 2 INTEGERS?	2. 16, 12
3. THE NUMBERS: 3, A, 10, B FORM AN ARITHMETIC SEQUENCE. COMPUTE THE VALUE OF A + B.	3. A + B = 20.
4. GIVEN THE FOLLOWING SYSTEM OF EQUATIONS: Y = - X + 6, AND Y = (X / 3) + C, WITH THE SOLUTION LYING IN QUADRANT 1, THEN FIND ALL POSSIBLE VALUES OF C.	4. $-2 < C < 6$
5. IF X + Y = 0, AND X IS NOT = 0, THEN WHAT IS THE VALUE OF: $[X^{2011}] / [Y^{2011}]$?	5. – 1.
6. ROBBY CANO GOT 4 LESS THAN TWICE AS MANY HITS AS KEVIN YOUKILIS. ALTOGETHER, THEY GOT 11 HITS. HOW MANY HITS DID CANO GET?	6. CANO GOT 6 HITS.
EACH OF THE FOLLOWING PROBLEMS, 7 THROUGH 14, IS WORTH TWO (2) POINTS.	
7. FIND THE DIMENSIONS OF A RIGHT TRIANGLE, WITH INTEGRAL VALUES OF THE SIDES, SUCH THAT THE AREA AND THE PERIMETER HAVE THE SAME NUMERICAL VALUE.	7. 6-8-10 OR 5-12-13

8. A PYTHAGOREAN QUADRUPLE IS A SET OF POSITIVE INTEGERS A, B, C AND D, SUCH THAT $A^2 + B^2 + C^2 = D^2$. IF 2, 9 AND 11 ARE THREE OF THESE 4 INTEGERS THAT FORM A QUADRUPLE, THEN FIND THE 4^{TH} INTEGER.	8. THE 4^{TH} INTEGER IS 6
9. A BANQUET HALL HAS A CAPACITY OF 400 PEOPLE, INCLUDING BOTH DINERS AND SERVERS. IF 1 SERVER IS NEEDED FOR EVERY 12 DINERS, THEN WHAT IS THE MAXIMUM NUMBER OF DINERS WHO CAN BE SERVED?	9. 369
10. WHAT IS THE LENGTH OF THE DIAGONAL OF AN ISOSCELES TRAPEZOID, WITH SIDE LENGTHS OF 7, 8, 8, AND 15?	10. 13
11. HOW MANY DIFFERENT REAL NUMBERS SATISY THE EQUATION: $[X^2 + 4X - 2]^2 = [5X^2 - 1]^2$?	11. 3 REAL SOLUTIONS
12. SOLVE FOR X: $4^{(1-4X)} = 8^{(3X-1)}$	12. X = 5 / 17
13. IN TRIANGLE ABC, DE IS PARALLEL TO BC, DE = 6, BC = 18, AND AD = 12. IF THE PERIMETER OF TRIANGLE ABC = 81, THEN WHAT IS THE LENGTH OF EC? 	13. EC = 18.
14. FIND THE AVERAGE OF ALL MULTIPLES OF 7, BETWEEN 7 AND 777, INCLUSIVE.	14. AVG. = 392
EACH OF THE FOLLOWING PROBLEMS, 15 THROUGH 20, IS WORTH THREE (3) POINTS.	

15. IN A PARTICULAR SOLUTION WEIGHING 200 GRAMS, 99 % OF ITS WEIGHT IS WATER. AFTER A WHILE, SOME WATER EVAPORATES FROM THE SOLUTION, BUT NO OTHER LIQUID LOSES VOLUME. THE REMAINING SOLUTION IS NOW 98% WATER. HOW MANY GRAMS OF WATER EVAPORATED?

15. 100 GRAMS

16. A RECTANGLE WITH SIDE LENGTHS OF A AND B HAS A DIAGONAL LENGTH OF 12 UNITS. IF THE PERIMETER OF THE RECTANGLE IS THE SAME AS THE PERIMETER OF A SQUARE WITH AREA OF 76 SQUARE UNITS, THEN FIND A*B.

16. AB = 80

17. IN THE FOLLOWING DIAGRAM, THE DIGITS 2,4,5,6,8 AND 9 CAN BE DISTRIBUTED AMONG THE LETTERED SQUARES IN THE ARRAY SO THAT THE SUM OF THE ENTRIES IN EACH OF THE ROWS AND COLUMNS IS THE SAME NUMBER K. WHAT IS K?

7	a	b	1
c			d
3	e	f	10

17. K = 19

18. TWO NON-ZERO NUMBERS, A AND B, SATISFY AB = A – B. WHAT IS THE POSSIBLE VALUE OF:
$$[A / B] + [B / A] - AB \ ?$$

18. 2

19. IF X, Y AND Z ARE POSITIVE NUMBERS SATISFYING: X + [1/Y] = 4, Y + [1/Z] = 1, AND Z + [1/X] = 7/3, FIND THE VALUE OF X*Y*Z.

19. XYZ = 1

20. THE CHILDREN IN A FAMILY COMPRISE BOTH BOYS AND GIRLS. EACH BOY HAS AS MANY BROTHERS AS SISTERS, BUT EACH GIRL HAS HALF AS MANY SISTERS AS BROTHERS. HOW MANY CHILDREN ARE IN THE FAMILY?

20. 7

Profile of New Mathematics Faculty

Capital Community College

Bujar Konjusha is a new mathematics instructor at Capital Community College. Bujar served as a full-time lecturer and adjunct at Capital for several years. He earned a Bachelor's Degree in Electrical Engineering from University of Prishtina, Kosovo, and earned a Masters of Arts in Mathematics from CCSU. Bujar currently teaches Prealgebra, Elementary Algebra, and Statistics at Capital. Bujar participates in the Assessment Team and the Statway Initiative. Bujar was twice nominated in the "Who's Who Among America's Teachers" in the years 2006 and 2007. In his free time, Bujar enjoys soccer and chess.

Ricardo Martinez Jr. is an instructor of Developmental Mathematics at Capital Community College. Ricardo instructed mathematics at the secondary education level in his first four years of teaching, and later served as an Instructor of Mathematics at Three Rivers Community College for 5 semesters. He is currently a member of the Statway team and is dedicated to improving developmental mathematics education. Ricardo is currently pursuing a doctoral degree in Mathematics Education at Teachers College, Columbia University in New York. He also instructs mathematics for the IDEAL accelerated program at the University of Bridgeport. Ricardo is a world traveler and has made missionary trips to New Orleans, Dominican Republic, and Kenya. He also enjoys practicing the martial arts of Tang Soo Do.

Middlesex Community College

Jen Clark was hired as a full-time math faculty member at Middlesex Community College in fall 2009. Jen is happy to be at MXCC. She brings a total of fifteen years of math teaching experience at various math levels: five years as an adjunct at MXCC, eight years teaching high school math in Meriden and two years teaching middle school math in Enfield. Besides being a math instructor, Jen is a mom of two, a fitness enthusiast, figure competitor, tropical traveler, music lover and gardener.

Sarah Leone came to Middlesex Community College as an adjunct in 2005. She recently became a full-time faculty member as of last fall. She enjoys teaching everything from Pre-Algebra to Statistics and has taught online, self-paced option, and traditional math courses at

MXCC. Her previous experience includes teaching high school math at The Ethel Walker School in Simsbury and at Nathan Hale-Ray in Moodus. She states “Teaching at MXCC has been the most enjoyable and most rewarding of all my past experiences, and I look forward to a long career at the community college.”

Mary Rayappan obtained her Ph.D. in Applied Mathematics from the Indian Institute of Science, Bangalore, India in 1992. Soon after, she taught in Indian Universities for a few years, before shifting to the information technology industry. She moved to the United States in 2000 and continued to work for IBM as Project/Program Manager for eight years. Driven by her strong desire to be back in the field of education, she joined the Department of Mathematics, Eastern Connecticut State University in 2008. After serving in ECSU for 2 years and as an adjunct at Middlesex as well, she is now a full-time faculty member at Middlesex Community College.

Sarah Leone, Mary Rayappan, and Jen Clark

Gateway Community College

Michelle Breaker is the new developmental mathematics instructor in the CAS department at Gateway Community College, although she had been an adjunct at Gateway for the past 15 years. She began her career in mathematics as a student at the University of Wisconsin-Stevens Point in 1985 and then transferred to Purdue University, where she completed her B.S. and earned an M.S. in mathematics in 1990. She worked in the Earth and Atmospheric Sciences Department at Purdue and concurrently taught developmental math at Indiana Vocational Technical College. After moving to San Diego in 1992, she was employed by AETC (Arete Engineering Technologies Corporation) as a research associate working on the development of remote sensing systems for the US Department of Defense. During that time she also taught SAT and GRE prep courses at the University of San Diego. In 1995, her husband Ron accepted a position at Yale University, where he is now the Department Chair of Molecular, Cellular and Developmental Biology, and Michelle found a home at Gateway. She currently lives in Guilford with her husband, 17-year-old son, and 19-year-old daughter, who is finishing her 2nd year in the Honors Program at UCONN.

Susan Spencer was hired as a new mathematics instructor at Gateway Community College in May 2010. She received her B.S. in Mathematics from Southern Connecticut State University in 1999, and earned her M.S. in Math Education, also from SCSU, in 2005. She has been an adjunct at SCSU for 11 years, and prior to her new position, was an adjunct at Gateway for two years. Susan and her husband John live in North Haven, where they keep busy by chauffeuring their four children, ages 16, 14, 11 and 10, from one athlete event to another.

Naugatuck Valley Community College

Kegan Samuel began as an instructor at NVCC in August 2010. His past teaching experiences includes being an adjunct at Keiser University, Orlando, and working as a graduate student at the University of Central Florida and Rensselaer Polytechnic Institute. Kegan also taught the equivalent of high school Mathematics and Physics in his home country of St. Lucia. His academic interests include computer vision and machine learning. Outside of school, he enjoys fishing for trout or bass when time permits. Kegan is also a certified soccer referee and gets his exercise on some weekends running around with a whistle.

Tunxis Community College

Nick Stugard is a new full time instructor at Tunxis. Nick received his Bachelor of Science and Master of Arts degrees in mathematics from Rowan University in Glassboro, NJ. He taught for several semesters as an adjunct in New Jersey at local community colleges and four year schools. He now lives in Connecticut and has taught full-time at Tunxis since the fall 2010 semester. In teaching developmental mathematics, he is interested in improving success rates and exploring ways to get students invested in their own mathematics education. He is excited to be working full time and looks forward to sharing and listening to ideas on how to best serve his students.

Steve Krevisky, Jon Morris, Pam Frost, and Jen Clark @ Middlesex Bowlathon

New Tools for Introductory Statistics: Wolfram Alpha

Submitted by:
Andre Freeman
Associate Professor of Mathematics
Capital Community College
April 2011

Technology is integral in introductory statistics courses; students use it to compute statistical results; teachers use it to teach statistical concepts. Fortunately, mathematics educators can forward students to an increasing number of quality online tools that support and enhance student learning. This paper describes how the Wolfram Alpha™ Computational Knowledge Engine and the Wolfram Demonstrations Project™ can strengthen students' conceptual understanding and provide students a high quality computational tool.

Wolfram Alpha Computational Knowledge Engine is a game changer; a unique online computational resource for mathematics teachers and students. The knowledge engine is available free at the Wolfram Alpha Web site (http://www.wolframalpha.com), and is an effective instrument for students in introductory statistics courses. It provides definitions, formulas, visualizations, and computational support for a wide array of mathematical and statistical topics.

The backbone of the knowledge engine is the *Mathematica* computer algebra system. The knowledge engine accepts several descriptive statistics commands on small data sets entered by the user. Students can calculate the mean, median, and mode of a data set by entering simple commands (see **fig. 1**). In addition to calculating measures of central tendency, Wolfram Alpha calculates measures of variation and measures of position. Students can use the knowledge engine to calculate the variance, standard deviation, and quartiles of a small data set as well.

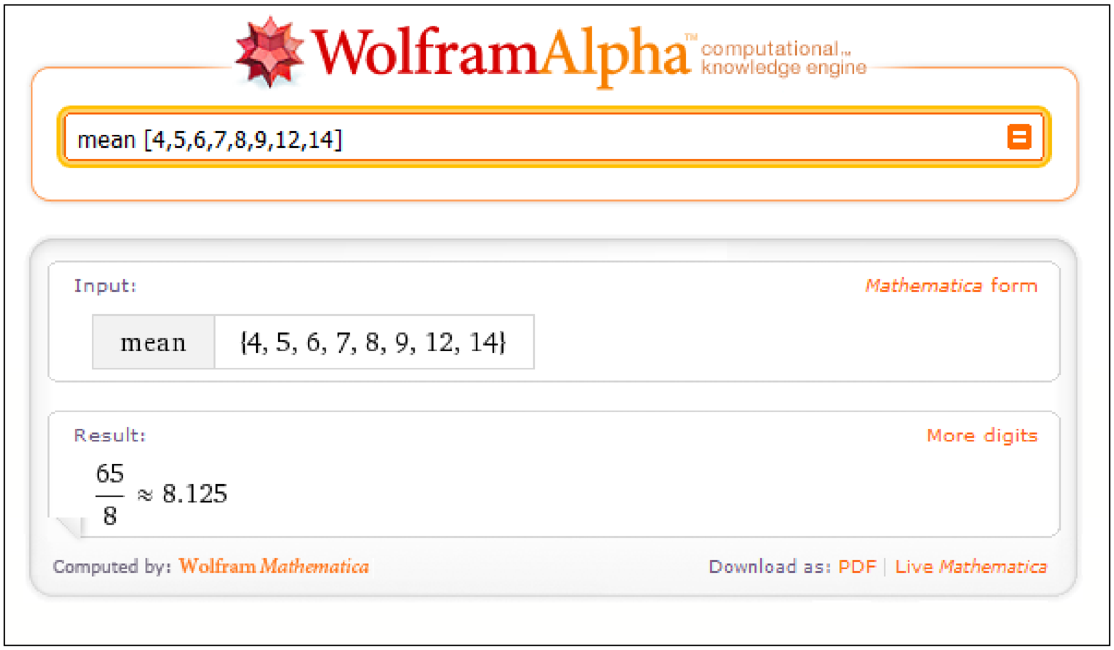


Figure 1 Wolfram Alpha calculating the mean of small data set

Statistical distributions are also supported. Students can explore all of the discrete and continuous probability distributions that are encountered in an introductory statistics course. If a student enters “what is a binomial distribution”, the knowledge engine responds with a precise definition of binomial distributions, including synonyms and links to related broader mathematical concepts. Enter ‘binomial distribution properties”, and the engine responds with the parameters associated with binomial distributions, the binomial probability formula, and statistical formulas for the mean, variance, and standard deviation of a binomial distribution. Students are able to easily obtain precise and useful information to aid their learning.

Many students have found the programs in the knowledge engine to be particularly useful. Wolfram Alpha contains numerous programs that accept parameters for mathematical and statistical formulas and output corresponding solutions. Examples which are of interest to statistics students are the probability distribution programs. If a student enters “binomial probability”, the engine outputs a program (see **fig. 2**) which allows the user to enter in binomial distribution parameters. This program outputs a list of binomial probabilities which correspond to the inputted parameters. By adjusting the input criteria, students can find single random variable probabilities or cumulative probabilities. This program is similar to programs available on the TI-83 graphing calculator and in Microsoft Excel.

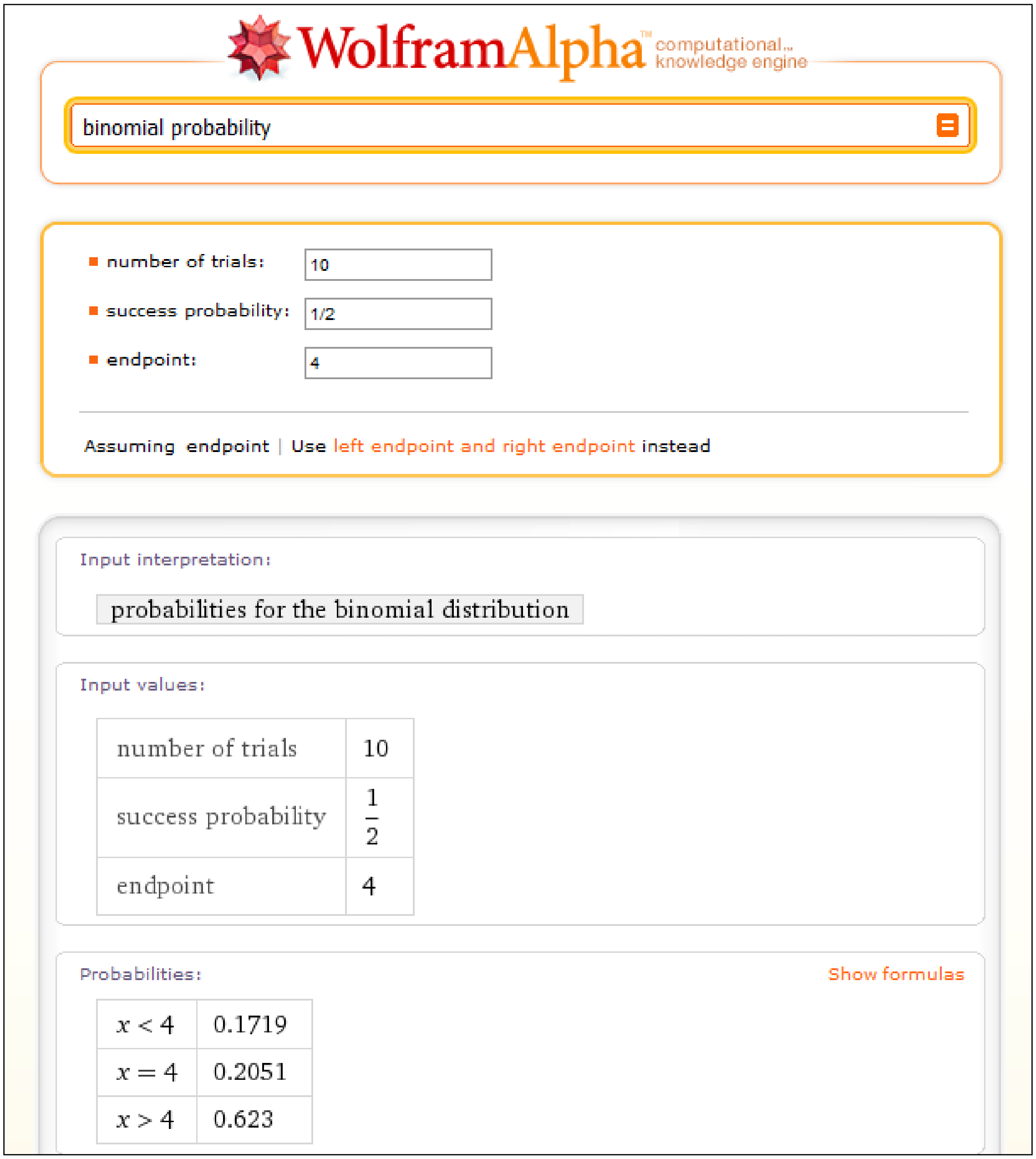


Figure 2 Wolfram Alpha calculating binomial distribution probabilities

In addition to providing probability values, Wolfram Alpha outputs a plot showing a graph of the probability distribution function (see **fig. 3**). Students are able to see multiple representations of the probability distribution function on the same screen. The knowledge engine contains similar programs for the normal distribution, Student's t-distribution, Poisson distribution, and several other discrete and continuous probability distributions. These programs are user friendly and a quick and effective solution checker.

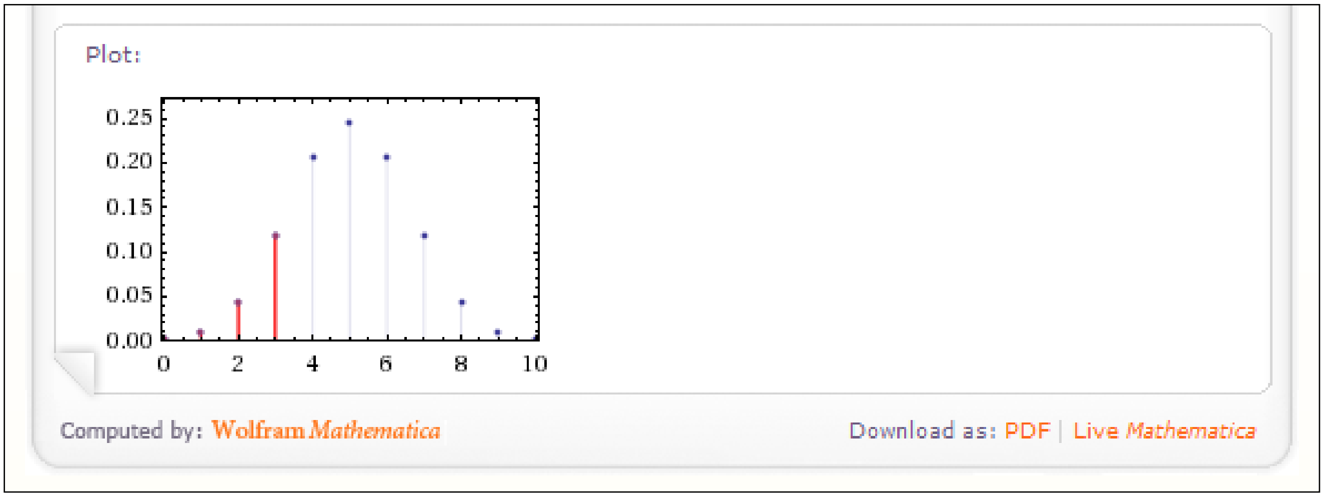


Figure 3 Wolfram Alpha plotting a binomial distribution

It is well known that students in mathematics and statistics also benefit from exposure to dynamic visualizations. Dynamic visualizations promote active learning, focus student attention on the impact of changing parameters in mathematical and statistical models, and promote exploration. For these reasons, the dynamic visualizations available at Wolfram Demonstrations Project (http://demonstrations.wolfram.com) are particularly valuable. This online resource provides students hundreds of dynamic applets which they can access for free online. To access the visualization, students download a *Mathematica* player and visualizations of interest. Students and teachers can also contribute to the website by creating and posting visualizations on the website.

The Binomial Distribution visualization (see **fig. 4**) is a prime example of a visualization which promotes constructive engagement. At the moment in the course when binomial distribution graphs were introduced, my students used the visualization to investigate how changing parameters affected the graph of the probability distribution function. Students were able to make necessary connections in a time-efficient manner, and the online availability enabled students the opportunity for future exploration outside of class.

Visualizations for other probability distributions were also informative. The Normal Distribution visualization dynamically displayed how the mean and standard deviation of a normal curve affect the shape its graph. In each of these teaching and learning scenarios students were able to compare several graphs. Without the use of a dynamic technology, this level of experimentation and analysis would be impractical.

Technology which was previously unavailable to many students is now open for public use. Wolfram's computational features and dynamic visualizations enable educators to create new learning opportunities for students. These resources go beyond the computational domain emphasizing conceptual understanding, mathematical modeling, and statistical applications. The intelligent integration of these quality open-access online technologies has the potential to significantly improve statistics education. This new reality promotes a new teaching paradigm and promises exciting new teaching and learning opportunities.

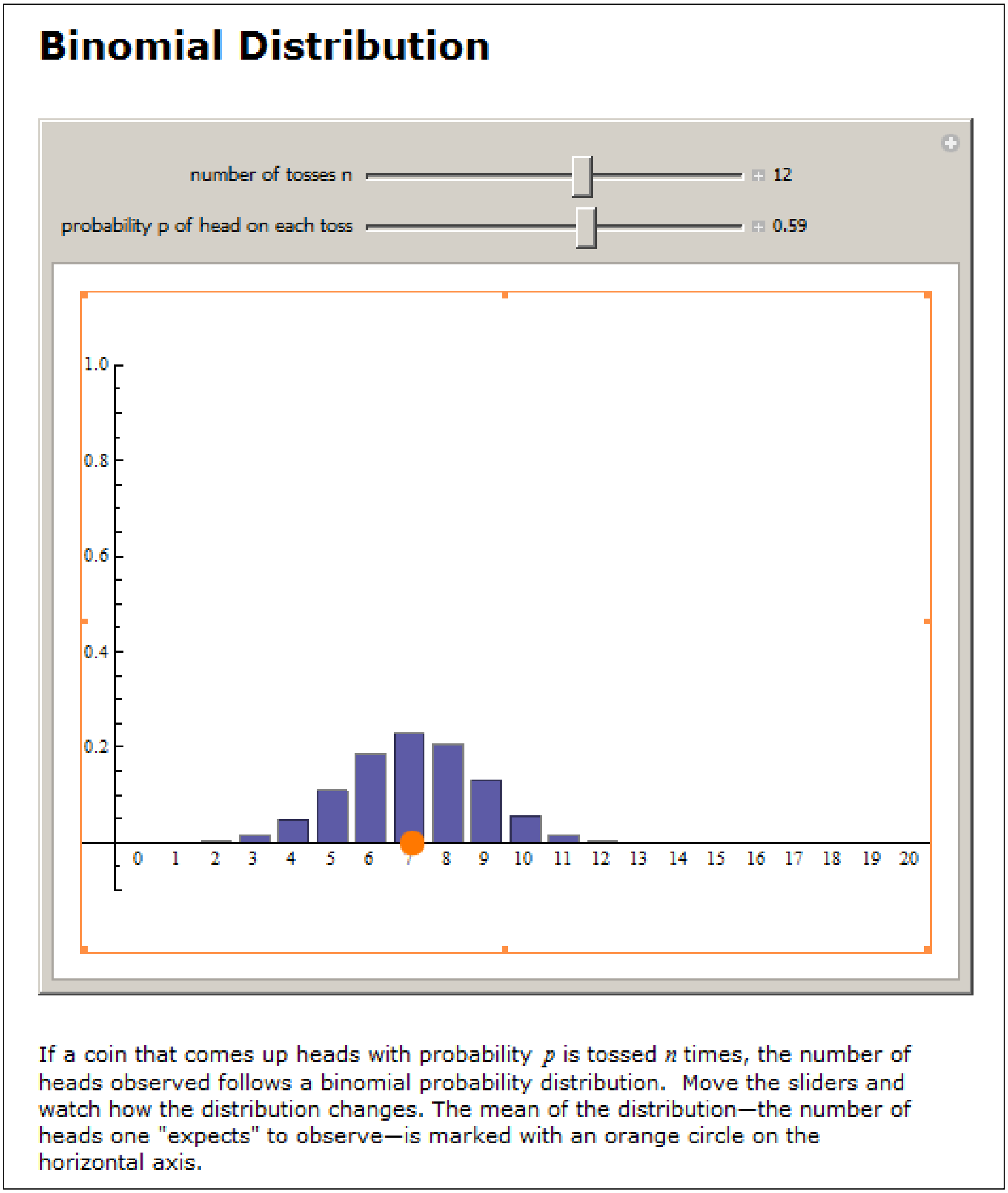


Figure 4 Wolfram Demonstrations Project: Binomial Distribution visualization

Steve Krevisky's Journeys

Submitted by:
Steve Krevisky
Professor of Mathematics
Middlesex Community College
April 2011

Since last spring, I have been fortunate to have some fascinating journeys. I presented at the New Mexico affiliate meeting in May 2010. I then chaired a session on Sports and Statistics at the International conference on Teaching Statistics (ICOTS) in Ljubljana, Slovenia, which I last visited in 1988. This took place in July 2010. I got to visit such fascinating places as Sarajevo, Mostar, Dubrovnik and Split, all in the former Yugoslavia, along with Zagreb, the Croatian capital, Bratislava in Slovakia, and Budapest, Hungary (which I first visited in 1988, when the ICME was there).

In August, I presented at the annual conference of the Society for American Baseball Research (SABR) down in Atlanta, and also visited Greenville, SC and Charleston, SC. All nice to see, but quite hot and humid.

At the annual AMATYC conference in Boston in Nov. 2010, I helped to organize and participated in a pre-conference workshop on international math education, which was quite worthwhile. I organized a poster session on this same topic, which had various photos of my trip to the ICOTS conference. I also presented, presided and was a delegate to the annual meeting.

Over the winter, I attended the joint winter math meetings in New Orleans, and enjoyed being back there again. I was in Florida over spring break, watching the Yankees in spring training, as well as all the NCAA basketball games.

More travels to come this summer! I also hope to get to the next ICME in Korea in 2012!

Steve Krevisky's Pi Day Poem (March 14th)

Submitted by:
Steve Krevisky
Professor of Mathematics
Middlesex Community College
April 2011

3.14159 - A MAGICAL NUMBER, SO SUBLIME!

THAT RADIAN MEASURE IS OH SO NEAT!

FOR CALC AND TRIG, IT'S REALLY SWEET!

2 PI* R - AROUND THE CIRCLE!

PI *R SQUARED - IT'S SUCH A MIRACLE!

ANCIENT CULTURES KNEW IT WELL.

WITH INVERSE FUNCTIONS, IT'S REALLY SWELL!

3.14159 - IT'S QUITE A NUMBER - REALLY FINE!

E TO THE I PI IS NEGATIVE 1.

WITH SUCH EQUATIONS, SO MUCH FUN!

THE FIBONACCI'S CONNECT TO PI

IT'S JUST ENOUGH TO MAKE YOU SIGH!

SO HERE'S TO YOU, THAT # PI.

THIS APPRECIATION'S NOT PI IN THE SKY!

Troubadour Steve Sings Another Math Song!

Submitted by:
Steve Krevisky
Professor of Mathematics
Middlesex Community College
April 2011

(A PRESENTATION TO KICK OFF THE BEST PRACTICES SEGMENT OF THE JAN. 19, 2011 MXCC PROFESSIONAL DAY, SUNG TO THE TUNE OF BOB DYLAN'S: I AIN'T GONNA WORK ON MAGGIE'S FARM NO MORE!)

WELL, I AINT' GONNA GRAPH THAT STRAIGHT LINE NO MORE!
YEAH, I AIN'T GONNA GRAPH THAT STRAIGHT LINE NO MORE!
'CAUSE THAT SLOPE, IT IS TOO STEEP, WHICH REALLY MAKES ME WEEP,
AND I CAN'T EVEN SKI DOWN THAT HILL TODAY, HEY, HEY!
YEAH, I AINT' GONNA GRAPH THAT STRAIGHT LINE NO MORE!

WELL, I AIN'T GONNA DO THOSE BASEBALL STATS NO MORE!
YEAH, I AINT' GONNA DO THOSE BASEBALL STATS NO MORE!
'CAUSE THOSE FORMULAS ARE STRANGE, AND IT IS ALL SO ARCANE,
AND WHO CARES ABOUT THOSE ERA'S TODAY, HEY HEY!
YEAH, I AIN'T GONNA DO THOSE BASEBALL STATS NO MORE!

WELL, I AIN'T GONNA DO THOSE QUADRATICS NO MORE!
YEAH, I AIN'T GONNA DO THOSE QUADRATICS NO MORE!
'CAUSE THOSE GRAPHS DRIVE ME INSANE, WHICH REALLY IS INANE,
AND THEY OFTEN HAVE NO ROOTS THERE ANYWAY, HEY HEY!
YEAH, I AIN'T GONNA DO THOSE QUADRATICS NO MORE!

WELL, I AIN'T GONNA DO THOSE LOGARITHMS NO MORE!

YEAH, I AIN'T GONNA DO THOSE CRAZY LOGS NO MORE!

'CAUSE THEIR PROPERTIES CONFUSE ME, WHICH REALLY WON'T AMUSE ME,

AND ITS GRAPH SEEMS SO INVERTED ANYWAY, HEY HEY!

YEAH, I AIN'T GONNA DO THOSE LOGARITHMS NO MORE!

WELL, I AIN'T GONNA DO THOSE WORD PROBLEMS NO MORE!

YEAH, I AIN'T GONNA DO THOSE WORD PROBLEMS NO MORE!

'CAUSE THOSE WORDS ARE SO UNCLEAR, WHICH GIVES ME SO MUCH FEAR,

AND WE'RE NEVER GONNA USE THEM ANYWAY, HEY HEY!

YEAH, I AIN'T GONNA DO THOSE WORD PROBLEMS NO MORE!

Yankee Uniform Number Problems!

Submitted by:
Steve Krevisky
Professor of Mathematics
Middlesex Community College

Given the following information:

2=DEREK JETER	9=ROGER MARIS
3=BABE RUTH	16=WHITEY FORD
4=LOU GEHRIG	21=PAUL O'NEILL
5=JOE DIMAGGIO	23=DON MATTINGLY
7=MICKEY MANTLE	24=TINO MARTINEZ
8=YOGI BERRA	

Solve:

1. BABE RUTH + LOU GEHRIG = ?
2. LOU GEHRIG + JOE DIMAGGIO = ?
3. WHITEY FORD ÷ DEREK JETER = ?
4. ROGER MARIS + MICKEY MANTLE = ?
5. PAUL 0'NEILL ÷ BABE RUTH = ?
6. DON MATTINGLY – ROGER MARIS = ?
7. (BABE RUTH)^2 = ?
8. (JOE DIMAGGIO)^2 – (LOU GEHRIG SQUARED)^2 =?
9. DON MATTINGLY – PAUL O'NEILL = ?
10. BABE RUTH × MICKEY MANTLE = ?

Newsletter Prepared by:
Andre Freeman
Associate Professor of Mathematics
Capital Community College