

# 2010 Calendar: 12 Theorems by Women Mathematicians

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This is the third in the series of calendars from Theorem of the Day entitled “12 Theorems by Women Mathematicians”. In this year’s calendar you will find theorems spanning almost a complete century, from Boole Stott’s second publication on four dimensional polytopes in 1910 to Susan Holmes work on the dynamics of coin-tossing with Persi Diaconis and Richard Montgomery, published just three years ago. It is impossible to be so broad in scope as regards mathematical topics, or to cover even a small part of the whole of mathematics, although perhaps these calendars will approach it in the limit! But you will find here theorems from topology, theoretical computer science, noncommutative algebra, number theory, combinatorics, group theory, geometry and statistical physics. It is also impossible to pay tribute to even a small part of community of women mathematicians; perhaps that is another asymptote I can strive for? If so I am making life difficult for myself, because three mathematicians here have been featured before: Cheryl Praeger and Vera Sós in 2008 and Emmy Noether in 2008 and 2009. That is just how things turned out—my choice of theorems is determined very much by a random walk through the mathematical landscape.

If this random walk is constrained by my ignorance it is very much facilitated by numerous experts who patiently look at my theorem descriptions and put me right on matters mathematical, historical, grammatical, graphical and typographical. To these people I owe a huge debt. I would particularly like to mention, in connection with the theorems in this calendar, Emmanuel Amiot, George Andrews, Jenny Baglivo, Ethan Bolker, Georgina Bygott, Peter Cameron, Fan Chung, Henry Crapo, Mathieu Dutour Sikirić, Kimmo Eriksson, Tony Forbes, Jacob Fox, Ronald Graham, Jack Graver, Edmund Harriss, Jo Heath, Anthony Hilton, Susan Holmes, Bill Jackson, Tibor Jordán, David Lewis, Annabelle McIver, Stephan Mertens, Silvio Micali, Peter M. Neumann, Tony Phillips, Peter Roquette, Carrie Rutherford, Carla Savage, Jon Selig, Emil Vaughan, Dominic Welsh and Robin Wilson. I should mention particularly Carrie Rutherford’s Maths Study Group at London South Bank University, which is a great source of inspiration and expertise, as is Peter Cameron’s Combinatorics Study Group at Queen Mary University of London. And I should hasten to add that any residual errors are all my own unaided work.

We all owe an intellectual debt to those inspirational women whose work is celebrated in this calendar. The attributions are given in the descriptions of the individual theorems but the stars of each month should have their names in lights here, and I will draw attention as well to some ‘best actresses in a supporting role’:

<b>January</b>	Vera Sós (Katie Leonard’s MS dissertation provides the web link)
<b>February</b>	Hazel Perfect
<b>March</b>	Annabelle McIver
<b>April</b>	Jo Heath
<b>May</b>	Alicia Boole Stott (links to another fine dissertation, by Irene Polo-Blanco, and the recommended book is co-authored by Heidi Burgiel)
<b>June</b>	Jenny Baglivo
<b>July</b>	Mireille Bousquet-Mélou (the web link here is by Carla Savage)
<b>August</b>	Shafi Goldwasser
<b>September</b>	Cheryl Praeger
<b>October</b>	Fan Chung
<b>November</b>	Susan Holmes
<b>December</b>	Emmy Noether (Käte Hey certainly deserves a special mention here!)

Biographical information can be found by following the relevant links from the Index of Mathematicians at the Theorem of the Day web site.

Following last year’s precedent, I have omitted all holidays, religious festivals, etc, from the month layouts in the calendar, leaving it to individuals to mark what is relevant to their place, religion, family, occupation and so on. The only exceptions are that I have marked International Women’s Day (8 March) and, a particular highlight for 2010, the International Conference of Women Mathematicians which prefaces the ICM in Hyderabad in August. I have, however, again marked the anniversaries of famous women mathematicians, with my criteria for inclusion being, roughly speaking, that they appear in *Notable Mathematicians* by Robyn V. Young (Gale, Detroit, 1998) and that they are no longer living. If you do not have to hand a copy of this excellent book you can find more information on almost all the names by looking them up at [www-history.mcs.st-and.ac.uk](http://www-history.mcs.st-and.ac.uk) or [www.agnesscott.edu/Lriddle/women/women.htm](http://www.agnesscott.edu/Lriddle/women/women.htm).

Robin Whitty, London, January 2010

**Image credits:** appearing on the front cover, from bottom left to top right, are Jo Heath, Mireille Bousquet-Mélou, Annabelle McIver, Jenny Baglivo, Cheryl Praeger and Emmy Noether. My thanks to all these people for letting me use their photographs, except Noether whose picture is from the indispensable MacTutor History of Mathematics archive at [www-history.mcs.st-and.ac.uk](http://www-history.mcs.st-and.ac.uk). The picture of Jenny Baglivo is by Ching-Ti Liu. The picture of Cheryl Praeger also appears courtesy of the University of Western Australia. The coin images in November’s theorem are from the US Mint. All other images belong to Theorem of the Day and may be freely used under the terms mentioned at [www.theoremoftheday.org](http://www.theoremoftheday.org).

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