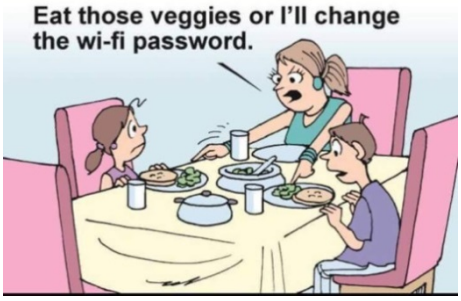
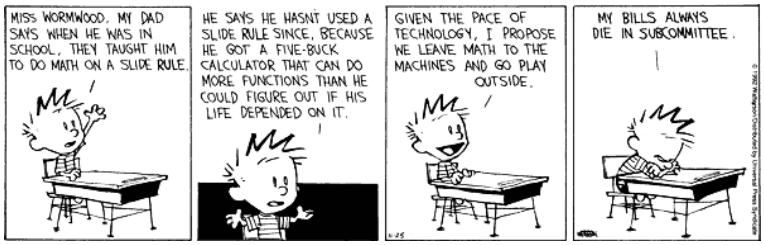
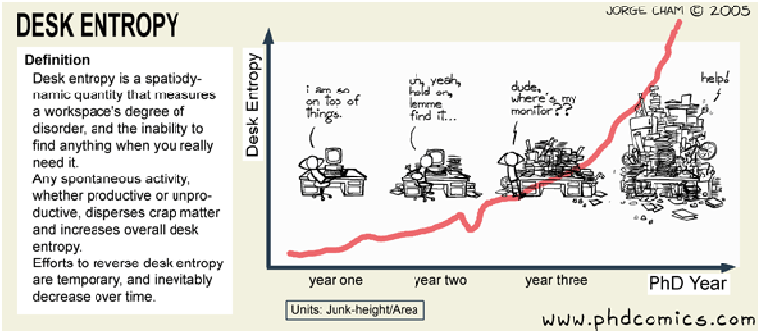
$$x^3 - 6'147x^2 + 12'594'419x - 8'600'917'233 = 0$$







	1	F	(1803) Guglielmo Libri Carucci dalla Sommaja (1878) Agner Krarup Erlang (1894) Satyendranath Bose (1912) Boris Gnedenko	RM132 RM168
	2	S	(1822) Rudolf Julius Emmanuel Clausius (1905) Lev Genrichovich Shnirelman (1938) Anatoly Samoilenko	RM240
	3	S	(1917) Yuri Alexeievich Mitropolsky	
1	4	M	(1643) Isaac Newton	RM071
	5	T	(1723) Nicole-Reine Étable de Labrière Lepaute (1838) Marie Ennemond Camille Jordan (1871) Federigo Enriques (1871) Gino Fano	 RM084
	6	W	(1807) Jozeph Mitza Petzval (1841) Rudolf Sturm	
	7	T	(1871) Felix Edouard Justin Émile Borel (1907) Raymond Edward Alan Christopher Paley	
	8	F	(1888) Richard Courant (1924) Paul Moritz Cohn (1942) Stephen William Hawking	RM156
	9	S	(1864) Vladimir Adreievich Steklov (1882) Pavel Aleksandrovič Florenskij (1915) Mollie Orshansky	 RM252
	10	S	(1875) Issai Schur (1905) Ruth Moufang	
2	11	M	(1545) Guidobaldo del Monte (1707) Vincenzo Riccati (1734) Achille Pierre Dionis du Sejour	RM120
	12	T	(1853) Gregorio Ricci-Curbastro (1906) Kurt August Hirsch (1915) Herbert Ellis Robbins	 RM156
	13	W	(1864) Wilhelm Karl Werner Otto Fritz Franz Wien (1876) Luther Pfahler Eisenhart (1876) Erhard Schmidt (1902) Karl Menger	
	14	T	(1901) Alfred Tarski	RM096
	15	F	(1704) Johann Castillon (1717) Mattew Stewart (1850) Sofia Vasilievna Kovalevskaya	 RM144
	16	S	(1801) Thomas Klausen	
	17	S	(1647) Catherina Elisabetha Koopman Hevelius (1847) Nikolay Egorovich Zukowsky (1858) Gabriel Koenigs	
3	18	M	(1856) Luigi Bianchi (1880) Paul Ehrenfest	 RM204
	19	T	(1813) Rudolf Friedrich Alfred Clebsch (1879) Guido Fubini (1908) Aleksandr Gennadievich Kurosh	
	20	W	(1775) André Marie Ampère (1895) Gabor Szegő (1904) Renato Caccioppoli	 RM072
	21	T	(1846) Pieter Hendrik Schoute (1882) Pavel Aleksandrovič Florenskij (1915) Yuri Vladimirovich Linnik	 RM252
	22	F	(1561) Francis Bacon (1592) Pierre Gassendi (1886) John William Navin Sullivan (1908) Lev Davidovich Landau	 RM228
	23	S	(1840) Ernst Abbe (1862) David Hilbert	 RM060
	24	S	(1891) Abram Samoilovitch Besicovitch (1902) Oskar Morgenstern (1914) Vladimir Petrovich Potapov	
4	25	M	(1627) Robert Boyle (1736) Joseph-Louis Lagrange (1843) Karl Hermann Amandus Schwarz	 RM048
	26	T	(1799) Benoît Paul Émile Clapeyron (1862) Eliakim Hastings Moore	
	27	W	(1832) Charles Lutwidge Dodgson	RM108
	28	T	(1701) Charles Marie de La Condamine (1888) Louis Joel Mordell (1892) Carlo Emilio Bonferroni	
	29	F	(1817) William Ferrel (1888) Sidney Chapman	
	30	S	(1619) Michelangelo Ricci	RM216
	31	S	(1715) Giovanni Francesco Fagnano dei Toschi (1841) Samuel Loyd (1896) Sofia Alexandrovna Janowskaja (1945) Persi Warren Diaconis	 RM192 RM180

Rudi Mathematici

January

Putnam 2006, A1

Find the volume of the region of points (x, y, z) such that

$$(x^2 + y^2 + z^2 + 8)^2 \leq 36(x^2 + y^2).$$

Math's Jokes

Maths Teacher: Now suppose the number of sheep is x...
Student: Yes sir, but what happens if the number of sheep is not x?

The Ways of the Statisticians

Statisticians do it continuously but discretely.

Histories make men wise; poets, witty; the mathematics, subtle; natural philosophy, deep; moral, grave; logic and rhetoric, able to contend.

Francis Bacon

One of the endlessly alluring aspects of mathematics is that its thorniest paradoxes have a way of blooming into beautiful theories.

Philip J. Davis

The propositions of mathematics have, therefore, the same unquestionable certainty which is typical of such propositions as "All bachelors are unmarried", but they also share the complete lack of empirical content which is associated with that certainty: The propositions of mathematics are devoid of all factual content; they convey no information whatever on any empirical subject matter.

Carl G. Hempel

I have tried to avoid long numerical computations, thus following Riemann's postulate that proofs should be given by means of ideas and not bulky accounts.

David Hilbert

Mathematics is dangerous, because it absorbs students to the point that it blunts their senses for everything else.

Prince Kraft of Hohlenlohe-Ingelfingen

If I have been able to see further, it was only because I stood on the shoulders of giants.

Isaac Newton

The existence of an actual infinite quantity is impossible. In fact, any set of things that we consider must be a specific set. And the sets of things are specified by the number of things in them. But no number is infinite, because numbers are obtained by counting through a set in units. Therefore no set of things can be inherently unlimited, nor can it happen that it has no limits.

San Tommaso D'Aquino

Perhaps the non-feminine nature of science instinctively made her hide her love for it. But the most profound reason is that in her mind mathematics was directly opposed to literature. She would not have allowed to confess how infinitely more she would have preferred the exactness, the astral impersonality of the figures to the confusion, agitation and vagueness of the highest prose.

Virginia Woolf

5	1	M	(1900) John Charles Burkill	
	2	T	(1522) Lodovico Ferrari	
			(1893) Cornelius Lanczos	
			(1897) Gertrude Blanch	RM229
	3	W	(1893) Gaston Maurice Julia	RM073
	4	T	(1905) Eric Cristopher Zeeman	RM241
	5	F	(1757) Jean Marie Constant Duhamel	
	6	S	(1465) Scipione del Ferro	RM064
			(1612) Antoine Arnauld	
			(1695) Nicolaus (II) Bernoulli	RM093
	7	S	(1877) Godfried Harold Hardy	RM049
			(1883) Eric Temple Bell	
6	8	M	(1700) Daniel Bernoulli	RM093
			(1875) Francis Ysidro Edgeworth	
			(1928) Ennio de Giorgi	RM133
	9	T	(1775) Farkas Wolfgang Bolyai	
			(1907) Harold Scott Macdonald Coxeter	RM097
	10	W	(1747) Aida Yasuaki	RM121
			(1932) Vivienne Malone-Mayes	
	11	T	(1657) Bernard Le Bovier de Fontenelle	
			(1800) William Henry Fox Talbot	RM205
			(1839) Josiah Willard Gibbs	
			(1915) Richard Wesley Hamming	
	12	F	(1914) Hanna Caemmerer Neumann	
			(1921) Kathleen Rita Mcnulty Mauchly Antonelli	
	13	S	(1805) Johann Peter Gustav Lejeune Dirichlet	RM145
	14	S	(1468) Johann Werner	RM253
			(1849) Hermann Hankel	
			(1877) Edmund Georg Hermann Landau	RM063
			(1896) Edward Artur Milne	
			(1932) Maurice Audin	RM194
7	15	M	(1564) Galileo Galilei	RM085
			(1850) Sophie Willock Bryant	
			(1861) Alfred North Whitehead	
			(1946) Douglas Hofstadter	
	16	T	(1822) Francis Galton	
			(1903) Beniamino Segre	
	17	W	(1890) Sir Ronald Aylmer Fisher	
			(1891) Adolf Abraham Halevi Fraenkel	
			(1905) Rózsa Péter	
	18	T	(1404) Leon Battista Alberti	RM157
			(1919) Clifford Truesdell	
	19	F	(1473) Nicolaus Copernicus	RM181
	20	S	(1844) Ludwig Boltzmann	RM061
	21	S	(1591) Girard Desargues	
			(1915) Evgeny Michailovich Lifshitz	
8	22	M	(1857) Heinrich Rudolf Hertz	
			(1903) Frank Plumpton Ramsey	RM217
	23	T	(1561) Henry Briggs	RM169
			(1583) Jean-Baptiste Morin	
			(1905) Derrick Henry Lehmer	RM215
			(1922) Anneli Cahn Lax	
			(1951) Shigefumi Mori	
	24	W	(1871) Felix Bernstein	
	25	T	(1827) Henry Watson	
	26	F	(1786) Dominique Francois Jean Arago	RM193
	27	S	(1881) Luitzen Egbertus Jan Brouwer	
	28	S	(1735) Alexandre Théophile Vandermonde	
	29		(1860) Herman Hollerith	RM109

February

Putnam 2006, A2

Alice and Bob play a game in which they take turns removing stones from a heap that initially has n stones. The number of stones removed at each turn must be one less than a prime number. The winner is the player who takes the last stone. Alice plays first. Prove that there are infinitely many n such that Bob has a winning strategy. (For example, if n=17, then Alice might take 6 leaving 11; then Bob might take 1 leaving 10; then Alice can take the remaining stones to win.)

Math's Jokes

If parallel lines meet at infinity, infinity must be a very noisy place with all those lines crashing together!

The Ways of the Statisticians

Statisticians do it when it counts.

How happy the lot of the mathematician! He is judged solely by his peers, and the standard is so high that no colleague or rival can ever win a reputation he does not deserve.

Wystan Hugh Auden

When asked how long he expected to reach certain mathematical conclusions, Gauss replied that he had them for some time, and that what worried him was how to reach them!

René Jules Dubos

There is no scorn more profound, or on the whole more justifiable, than that of the men who make for the men who explain. Exposition, criticism, appreciation, is work for second-rate minds.

Godfried Harold Hardy

One cannot escape the feeling that these mathematical formulas have an independent existence and an intelligence of their own, that they are wiser than we are, wiser even than their discoverers, that we get more from them than they originally had within them.

Heinrich Rudolf Hertz

Euclid alone has looked on Beauty bare.

Edna St. Vincent Millay

There is a tradition of opposition between adherents of induction and of deduction. In my view it would be just as sensible for the two ends of a worm to quarrel.

Alfred North Whitehead

9	1	M	(1611) John Pell (1879) Robert Daniel Carmichael
	2	T	(1836) Julius Weingarten
	3	W	(1838) George William Hill (1845) Georg Cantor RM062 (1916) Paul Richard Halmos
	4	T	(1822) Jules Antoine Lissajous
	5	F	(1512) Gerardus Mercator (1759) Benjamin Gompertz (1817) Angelo Genocchi RM230 (1885) Pauline Sperry (1915) Laurent Schwartz RM194 (1931) Vera Pless
	6	S	(1866) Ettore Bortolotti
	7	S	(1792) William Herschel RM146 (1824) Delfino Codazzi (1922) Olga Alexandrovna Ladyzhenskaya
10	8	M	(1851) George Chrystal
	9	T	(1818) Ferdinand Joachimsthal (1900) Howard Hathaway Aiken
	10	W	(1864) William Fogg Osgood (1872) Mary Ann Elizabeth Stephansen
	11	T	(1811) Urbain Jean Joseph Le Verrier (1853) Salvatore Pincherle (1870) Louis Bachelier RM158
	12	F	(1685) George Berkeley (1824) Gustav Robert Kirchhoff (1859) Ernesto Cesaro
	13	S	(1861) Jules Joseph Drach (1957) Rudy D'Alembert
	14	S	(1864) Jozef Kurschak (1879) Albert Einstein RM074 (1904) Lyudmila Vsevolodovna Keldysh
11	15	M	(1860) Walter Frank Raphael Weldon (1868) Grace Chisolm Young
	16	T	(1750) Caroline Herschel RM146 (1789) Georg Simon Ohm (1846) Magnus Gosta Mittag-Leffler
	17	W	(1876) Ernest Benjamin Esclangon (1897) Charles Fox (1915) Wolfgang (Vincent) Döblin (Doblin) RM254
	18	T	(1640) Philippe de La Hire (1690) Christian Goldbach RM122 (1796) Jacob Steiner (1870) Agnes Sime Baxter
	19	F	(1862) Adolf Kneser (1910) Jacob Wolfowitz
	20	S	(1840) Franz Mertens (1884) Philip Franck (1938) Sergei Petrovich Novikov
	21	S	(1768) Jean Baptiste Joseph Fourier RM242 (1884) George David Birkhoff
12	22	M	(1394) Ulugh Beg RM206 (1891) Lorna Mary Swain (1917) Irving Kaplansky (1944) Margaret Hilary Ashworth Millington
	23	T	(1749) Pierre-Simon de Laplace (1754) Georg Freiherr von Vega (1882) Emmy Amalie Noether RM050 (1897) John Lighton Synge
	24	W	(1809) Joseph Liouville (1948) Sun-Yung (Alice) Chang (1966) Gigliola Staffilani RM142
	25	T	(1538) Christopher Clausius
	26	F	(1848) Konstantin Andreev (1913) Paul Erdős RM110
	27	S	(1857) Karl Pearson
	28	S	(1928) Alexander Grothendieck RM086
13	29	M	(1825) Francesco Faà Di Bruno RM170 (1873) Tullio Levi-Civita RM098 (1896) Wilhelm Ackermann
	30	T	(1892) Stefan Banach RM134 (1921) Alfréd Rényi
	31	W	(1596) René Descartes RM218

March

Putnam 2006, A3

Let 1, 2, 3, …, 2005, 2006, 2007, 2009, 2012, 2016, … be a sequence defined by $x_k = k$ for $k = 1, 2, \ldots, 2006$ and $x_{k+1} = x_k + x_{k-2005}$ for $k \geq 2006$. Show that the sequence has 2005 consecutive terms each divisible by 2006.

Math's Jokes

Normal people believe that if it ain't broke, don't fix it. Engineers believe that if it ain't broke, it doesn't have enough features yet (Actually, if it ain't broke, we need to take it apart to find out why.).

The Ways of the Statisticians

Statisticians do it with 95% confidence.

I thought the following four [rules] would be enough, provided that I made a firm and constant resolution not to fail even once in the observance of them. The first was never to accept anything as true if I had not evident knowledge of its being so; that is, carefully to avoid precipitancy and prejudice, and to embrace in my judgment only what presented itself to my mind so clearly and distinctly that I had no occasion to doubt it. The second, to divide each problem I examined into as many parts as was feasible, and as was requisite for its better solution. The third, to direct my thoughts in an orderly way; beginning with the simplest objects, those most apt to be known, and ascending little by little, in steps as it were, to the knowledge of the most complex; and establishing an order in thought even when the objects had no natural priority one to another. And the last, to make throughout such complete enumerations and such general surveys that I might be sure of leaving nothing out.

René Descartes

If my theory of relativity is proven successful, Germany will claim me as a German and France will declare that I am a citizen of the world. Should my theory prove untrue, France will say that I am a German and Germany will declare that I am a Jew.

Albert Einstein

The joy of suddenly learning a former secret and the joy of suddenly discovering a hitherto unknown truth are the same to me -- both have the flash of enlightenment, the almost incredibly enhanced vision, and the ecstasy and euphoria of released tension.

Paul Richard Halmos

Descartes … commanded the future from his study more than Napoleon from his throne.

Oliver Wendell Holmes

Napoleon: You have written this huge book on the system of the world without once mentioning the author of the universe.
Laplace: Sire, I had no need of that hypothesis.
Later when told by Napoleon about the incident, Lagrange commented: Ah, but that is a fine hypothesis. It explains so many things.

Pierre-Simon De Laplace

	1	T	(1640) Georg Mohr (1776) Marie-Sophie Germain (1895) Alexander Craig Aitken	RM219
	2	F	(1878) Edward Kasner (1934) Paul Joseph Cohen (1984) Alessio Figalli	RM243
	3	S	(1835) John Howard Van Amringe (1892) Hans Rademacher (1900) Albert Edward Ingham (1909) Stanislaw Marcin Ulam (1971) Alice Riddle	RM171
	4	S	(1809) Benjamin Peirce (1842) François Édouard Anatole Lucas (1949) Shing-Tung Yau	RM123
14	5	M	(1588) Thomas Hobbes (1607) Honoré Fabri (1622) Vincenzo Viviani (1869) Sergei Alexeievich Chaplygin	
	6	T	(1801) William Hallowes Miller	
	7	W	(1768) François-Joseph Français	
	8	T	(1903) Marshall Harvey Stone	
	9	F	(1791) George Peacock (1816) Charles Eugene Delaunay (1894) Cypra Cecilia Krieger Dunaij (1919) John Presper Heckert	
	10	S	(1857) Henry Ernest Dudeney	RM183
	11	S	(1953) Andrew John Wiles	RM207
15	12	M	(1794) Germinal Pierre Dandelin (1852) Carl Louis Ferdinand von Lindemann (1903) Jan Tinbergen	
	13	T	(1728) Paolo Frisi (1813) Duncan Farquharson Gregory (1869) Ada Isabel Maddison (1879) Francesco Severi	
	14	W	(1629) Christiaan Huygens	RM135
	15	T	(1452) Leonardo da Vinci (1548) Pietro Antonio Cataldi (1707) Leonhard Euler (1809) Herman Gunther Grassmann	RM051
	16	F	(1682) John Hadley (1823) Ferdinand Gotthold Max Eisenstein	
	17	S	(1798) Étienne Bobillier (1853) Arthur Moritz Schonflies (1863) Augustus Edward Hough Love	
	18	S	(1791) Ottaviano Fabrizio Mossotti (1907) Lars Valerian Ahlfors (1918) Hsien Chung Wang (1949) Charles Louis Fefferman	RM150
16	19	M	(1880) Evgeny Evgenievich Slutsky (1883) Richard von Mises (1901) Kiyoshi Oka (1905) Charles Ehresmann	
	20	T	(1839) Francesco Siacci	
	21	W	(1652) Michel Rolle (1774) Jean Baptiste Biot (1875) Teiji Takagi	RM231
	22	T	(1811) Otto Ludwig Hesse (1887) Harald August Bohr (1935) Bhama Srinivasan (1939) Sir Michael Francis Atiyah	RM063
	23	F	(1858) Max Karl Ernst Ludwig Planck (1910) Sheila Scott Macintyre	
	24	S	(1863) Giovanni Vailati (1899) Oscar Zariski	RM099
	25	S	(1849) Felix Christian Klein (1900) Wolfgang Pauli (1903) Andrei Nicolayevich Kolmogorov	RM255 RM159
17	26	M	(1889) Ludwig Josef Johan Wittgenstein	
	27	T	(1755) Marc-Antoine Parseval des Chenes (1932) Gian-Carlo Rota	RM195
	28	W	(1906) Kurt Gödel	RM087
	29	T	(1854) Jules Henri Poincaré	RM075
	30	F	(1777) Johann Carl Friedrich Gauss (1916) Claude Elwood Shannon	RM147 RM111

April

Putnam 2006, A4

Let $S = \{1, 2, \ldots, n\}$ for some integer $n>1$. Say a permutation π of S has a local maximum at $k \in S$ if

(i) $\pi(k) > \pi(k+1)$ for $k=1$;

(ii) $\pi(k-1) < \pi(k)$ and $\pi(k) > \pi(k+1)$ for $1<k<n$;

(iii) $\pi(k-1) < \pi(k)$ for $k=n$.

(For example, if $n=5$ and π takes values at 1, 2, 3, 4, 5 of 2, 1, 4, 5, 3, then π has a local maximum of 2 at $k=1$, and a local maximum of 5 at $k = 4$.) What is the average number of local maxima of a permutation of S, averaging over all permutations of S?

Math's Jokes

Theorem: All positive integers are equal.
Proof: Sufficient to show that for any two positive integers, A and B, A=B. Further, it is sufficient to show that for all N>0, if A and B (positive integers) satisfy (MAX(A, B) = N) then A=B.
Proceed by induction.
If N=1, then A and B, being positive integers, must both be 1. So A=B.
Assume that the theorem is true for some value k. Take A and B with MAX(A, B) = k+1. Then MAX((A–1), (B–1)) = k. And hence (A–1) = (B–1). Consequently, A=B.

The Ways of the Statisticians

Statisticians do it with large numbers.

I mean the word proof not in the sense of the lawyers, who set two half proofs equal to a whole one, but in the sense of a mathematician, where half proof = 0, and it is demanded for proof that every doubt becomes impossible.

Johann Carl Friedrich Gauss

An important scientific innovation rarely makes its way by gradually winning over and converting its opponents: it rarely happens that Saul becomes Paul. What does happen is that its opponents gradually die out, and that the growing generation is familiarised with the ideas from the beginning.

Max Karl Ernst Ludwig Planck

Mathematicians do not study objects, but relations between objects. Thus, they are free to replace some objects by others so long as the relations remain unchanged. Content to them is irrelevant: they are interested in form only.

Jules Henri Poincarè

Mathematics is the most exact science, and its conclusions are capable of absolute proof. But this is so only because mathematics does not attempt to draw absolute conclusions. All mathematical truths are relative, conditional.

Charles P. Steinmetz

In many cases, mathematics is an escape from reality. The mathematician finds his own monastic niche and happiness in pursuits that are disconnected from external affairs. Some practice it as if using a drug. Chess sometimes plays a similar role. In their unhappiness over the events of this world, some immerse themselves in a kind of self-sufficiency in mathematics. (Some have engaged in it for this reason alone.).

Stanislaw Marcin Ulam

	1	**S**	(1825) Johann Jacob Balmer	RM122
			(1908) Morris Kline	
			(1977) Maryam Mirzakhani	RM189
	2	**S**	(1860) D'Arcy Wentworth Thompson	RM138
			(1905) Kazimierz Zarankiewitz	
18	**3**	**M**	(1842) Otto Stolz	
			(1860) Vito Volterra	RM136
			(1892) George Paget Thomson	RM161
	4	**T**	(1845) William Kingdon Clifford	
	5	**W**	(1833) Lazarus Emmanuel Fuchs	
			(1883) Anna Johnson Pell Wheeler	
			(1889) René Eugène Gateaux	RM196
			(1897) Francesco Giacomo Tricomi	RM256
			(1923) Cathleen Synge Morawetz	
	6	**T**	(1872) Willem de Sitter	
			(1906) André Weil	RM088
	7	**F**	(1854) Giuseppe Veronese	RM220
			(1881) Ebenezer Cunningham	
			(1896) Pavel Sergieievich Alexandrov	
			(1926) Alexis Claude Clairaut	
	8	**S**	(1859) Johan Ludwig William Valdemar Jensen	
			(1905) Winifred Lydia Caunden Sargent	
	9	**S**	(1746) Gaspard Monge	RM208
			(1876) Gilbert Ames Bliss	
			(1965) Karen Ellen Smith	
19	**10**	**M**	(1788) Augustin Jean Fresnel	
			(1847) William Karl Joseph Killing	
			(1904) Edward James Mcshane	
			(1958) Piotr Rezierovich Silverbrahms	
	11	**T**	(1902) Edna Ernestine Kramer Lassar	
			(1918) Richard Phillips Feynman	RM076
	12	**W**	(1820) Florence Nightingale	RM104
			(1845) Pierre René Jean Baptiste Henry Brocard	
			(1902) Frank Yates	
	13	**T**	(1750) Lorenzo Mascheroni	
			(1899) Pelageia Yakovlevna Polubarinova Kochina	
	14	**F**	(1832) Rudolf Otto Sigismund Lipschitz	
			(1863) John Charles Fields	RM100
	15	**S**	(1939) Brian Hartley	
			(1964) Sijue Wu	
	16	**S**	(1718) Maria Gaetana Agnesi	RM112
			(1821) Pafnuti Lvovi Chebyshev	
			(1911) John (Jack) Todd	RM139
20	**17**	**M**	(1940) Alan Kay	
	18	**T**	(1850) Oliver Heaviside	RM160
			(1892) Bertrand Arthur William Russell	RM052
	19	**W**	(1865) Flora Philip	
			(1919) Georgii Dimitirievich Suvorov	
	20	**T**	(1861) Henry Seely White	
	21	**F**	(1471) Albrecht Dürer	RM124
			(1792) Gustave Gaspard de Coriolis	
	22	**S**	(1865) Alfred Cardew Dixon	
	23	**S**	(1914) Lipa Bers	RM148
21	**24**	**M**	(1544) William Gilbert	
	25	**T**	(1838) Karl Mikailovich Peterson	
	26	**W**	(1667) Abraham de Moivre	
			(1896) Yuri Dimitrievich Sokolov	
	27	**T**	(1862) John Edward Campbell	
	28	**F**	(1676) Jacopo Francesco Riccati	RM232
			(1710) Johann (II) Bernoulli	RM093
	29	**S**	(1882) Harry Bateman	
	30	**S**	(1814) Eugene Charles Catalan	RM184
22	**31**	**M**	(1926) John Kemeny	

May

Putnam 2006, A5

Let n be a positive odd integer and let θ be a real number such that θ/π is irrational. Set $a_k = \tan(\theta + k\pi/n)$, k=1, 2, …, n. Prove that

$$\frac{a_1 + a_2 + \cdots + a_n}{a_1 a_2 \ldots a_n}$$

is an integer, and determine its value.

Math's Jokes

Theorem: a cat has nine tails.
Proof: No cat has eight tails. A cat has one tail more than no cat. Therefore, a cat has nine tails.

The Ways of the Statisticians

Statisticians do it with only a 5% chance of being rejected.

You must, especially as a young man, use geometry as a guide to symmetry in the composition of your works. I know that more or less romantic painters argue that these mathematical scaffolds kill the artist's inspiration, giving him too much to think and reflect. Do not hesitate for a moment to respond promptly that, on the contrary, it is just not to have to think and reflect on certain things that you use them.

Salvador Dalí

I don't believe in the idea that there are a few peculiar people capable of understanding math, and the rest of the world is normal. Math is a human discovery, and it's no more complicated than humans can understand. I had a calculus book once that said, 'What one fool can do, another can.' What we've been able to work out about nature may look abstract and threatening to someone who hasn't studied it, but it was fools who did it, and in the next generation, all the fools will understand it.

Richard Phillips Feynman

This seems to be one of the many cases in which the admitted accuracy of mathematical processes is allowed to throw a wholly inadmissible appearance of authority over the results obtained by them. Mathematics may be compared to a mill of exquisite workmanship, which grinds your stuff to any degree of fineness; but, nevertheless, what you get out depends on what you put in; and as the grandest mill in the world will not extract wheat flour from peascods, so pages of formulae will not get a definite result out of loose data.

Thomas Henry Huxley

The desire to understand the world and the desire to reform it are the two great engines of progress.

Bertrand Arthur William Russell

	1	T	(1796) Sadi Leonard Nicolas Carnot (1851) Edward Bailey Elliott (1899) Edward Charles Titchmarsh	
	2	W	(1895) Tibor Radó	
	3	T	(1659) David Gregory (1954) Susan Landau	
	4	F	(1809) John Henry Pratt (1966) Svetlana Yakovlevna Jitomirskaya	RM197
	5	S	(1814) Pierre Laurent Wantzel (1819) John Couch Adams (1883) John Maynard Keynes	RM065
	6	S	(1436) Johann Müller Regiomontanus (1857) Aleksandr Michailovitch Lyapunov (1906) Max August Zorn	RM185 RM077
23	7	M	(1863) Edward Burr Van Vleck	
	8	T	(1625) Giovanni Domenico Cassini (1858) Charlotte Angas Scott (1860) Alicia Boole Stott (1896) Eleanor Pairman (1923) Gloria Olive (1924) Samuel Karlin	RM245 RM209
	9	W	(1885) John Edensor Littlewood	RM049
	10	T	(940) Mohammad Abu'L Wafa Al-Buzjani (1887) Vladimir Ivanovich Smirnov	RM257 RM101
	11	F	(1881) Hilda Phoebe Hudson (1937) David Bryant Mumford	
	12	S	(1888) Zygmunt Janyszewski (1937) Vladimir Igorevich Arnold	 RM221
	13	S	(1831) James Clerk Maxwell (1872) Jessie Chrystal Macmillan (1876) William Sealey Gosset (Student) (1928) John Forbes Nash	RM113 RM149
24	14	M	(1736) Charles Augustin de Coulomb (1856) Andrei Andreyevich Markov (1903) Alonzo Church	 RM125 RM233
	15	T	(1640) Bernard Lamy (1894) Nikolai Gregorievich Chebotaryov	
	16	W	(1915) John Wilder Tukey	
	17	T	(1898) Maurits Cornelius Escher	RM097
	18	F	(1858) Andrew Russell Forsyth (1884) Charles Ernest Weatherburn (1884) Frieda Nugel (1913) Paul Teichmüller (1915) Alice Turner Schafer	 RM148
	19	S	(1623) Blaise Pascal (1902) Wallace John Eckert	RM053
	20	S	(1873) Alfred Loewy (1917) Helena Rasiowa	
25	21	M	(1781) Simeon Denis Poisson (1828) Giuseppe Bruno (1870) Maria Skłodowska Curie	 RM182
	22	T	(1822) Mario Pieri (1864) Hermann Minkowsky (1910) Konrad Zuse (1932) Mary Wynne Warner	
	23	W	(1912) Alan Mathison Turing	RM089
	24	T	(1880) Oswald Veblen	
	25	F	(1908) William Van Orman Quine	
	26	S	(1824) William Thomson, Lord Kelvin (1918) Yudell Leo Luke	RM161
	27	S	(1806) Augustus de Morgan	
26	28	M	(1875) Henri Léon Lebesgue	RM173
	29	T	(1888) Aleksandr Aleksandrovich Friedmann (1979) Artur Avila Cordeiro de Melo	RM101 RM189
	30	W	(1791) Felix Savart (1958) Abigail Thompson	

Rudi Mathematici

June

Putnam 2006, A6

Four points are chosen uniformly and independently at random in the interior of a given circle. Find the probability that they are the vertices of a convex quadrilateral.

Math's Jokes

Did you hear the one about the statistician?
Probably...

The Ways of the Statisticians

Statisticians do it with two-tail T tests.

Languages grew confused as the tower of Babel rose—perhaps because its foundation in all the variety of a common speech was too broad. The tower of mathematics is inverted, widening up and outward from its few axioms. These unify a greater and greater diversity.

Robert & Ellen Kaplan

In presenting a mathematical argument the great thing is to give the educated reader the chance to catch on at once to the momentary point and take details for granted: his successive mouthfuls should be such as can be swallowed at sight; in case of accidents, or in case he wishes for once to check in detail, he should have only a clearly circumscribed little problem to solve (e.g. to check an identity: two trivialities omitted can add up to an impasse). The unpractised writer, even after the dawn of a conscience, gives him no such chance; before he can spot the point he has to tease his way through a maze of symbols of which not the tiniest suffix can be skipped.

John Edensor Littlewood

I tell them if they will occupy themselves with the study of mathematics they will find in it the best remedy against the lusts of the flesh.

Thomas Mann

What is man in nature? Nothing in relation to the infinite, all in relation to nothing, a mean between nothing and everything.

Blaise Pascal

Inspiration is needed in geometry, just as much as in poetry.

Aleksandr Sergeyevich Pushkin

For some logic systems, it has been shown that there is no machine capable of distinguishing the demonstrable formulas of the system from the non-demonstrable ones. So if a machine is built with this goal it must, in certain cases, fail. On the other hand, if a mathematician were confronted with such a problem, he would look around and look for new methods of proof, to finally arrive at a decision about the given formula.

Alan Mathison Turing

	1	T	(1643) Gottfried Wilhelm von Leibniz	RM054
			(1788) Jean-Victor Poncelet	
			(1906) Jean Alexandre Eugène Dieudonné	RM246
	2	F	(1820) William John Racquorn Rankine	
			(1852) William Burnside	
			(1925) Olga Arsen'evna Oleinik	
	3	S	(1807) Ernest Jean Philippe Fauque de Jonquiere	RM162
			(1897) Jesse Douglas	
	4	S	(1906) Daniel Edwin Rutherford	
			(1917) Michail Samoilovich Livsic	
27	5	M	(1936) James Mirrlees	
	6	T	(1849) Alfred Bray Kempe	
	7	W	(1816) Johann Rudolf Wolf	
			(1906) William Feller	
			(1922) Vladimir Aleksandrovich Marchenko	
	8	T	(1760) Christian Kramp	
			(1904) Henri Paul Cartan	RM126
	9	F	(1845) George Howard Darwin	RM138
			(1931) Valentina Mikhailovna Borok	RM197
	10	S	(1856) Nikola Tesla	RM174
			(1862) Roger Cotes	
			(1868) Oliver Dimon Kellogg	
	11	S	(1857) Sir Joseph Larmor	
			(1888) Jacob David Tamarkin	RM101
			(1890) Giacomo Albanese	
28	12	M	(1875) Ernest Sigismund Fischer	
			(1895) Richard Buckminster Fuller	RM066
			(1935) Nicolas Bourbaki	RM126
	13	T	(1527) John Dee	RM234
			(1741) Karl Friedrich Hindenburg	
	14	W	(1671) Jacques D'Allonville	
			(1793) George Green	RM078
	15	T	(1865) Wilhelm Wirtinger	
			(1898) Mary Taylor Slow	
			(1906) Adolph Andrej Pavlovich Yushkevich	
	16	F	(1678) Jakob Hermann	
			(1903) Irmgard Flugge-Lotz	
	17	S	(1831) Victor Mayer Amédeé Mannheim	
			(1837) Wilhelm Lexis	
			(1944) Krystyna Maria Trybulec Kuperberg	
	18	S	(1013) Hermann von Reichenau	
			(1635) Robert Hooke	RM114
			(1853) Hendrik Antoon Lorentz	RM161
29	19	M	(1768) Francois Joseph Servois	
	20	T	(1876) Otto Blumenthal	RM258
			(1947) Gerd Binnig	RM222
	21	W	(1620) Jean Picard	
			(1848) Emil Weyr	
			(1849) Robert Simpson Woodward	
			(1861) Herbert Ellsworth Slaught	
	22	T	(1784) Friedrich Wilhelm Bessel	RM198
	23	F	(1775) Étienne-Louis Malus	
			(1854) Ivan Slezynsky	
	24	S	(1851) Friedrich Hermann Schottky	
			(1871) Paul Epstein	
			(1923) Christine Mary Hamill	
	25	S	(1808) Johann Benedict Listing	
30	26	M	(1903) Kurt Mahler	
	27	T	(1667) Johann Bernoulli	RM093
			(1801) George Biddel Airy	
			(1848) Lorand Baron von Eötvös	RM210
			(1867) Derrick Norman Lehmer	RM215
			(1871) Ernst Friedrich Ferdinand Zermelo	RM090
	28	W	(1954) Gerd Faltings	RM222
	29	T	(1898) Isidor Isaac Rabi	
	30	F	(1889) Vladimir Kosma Zworkyn	
	31	S	(1704) Gabriel Cramer	RM186
			(1712) Johann Samuel Koenig	
			(1926) Hilary Putnam	

July

Putnam 2006, B1

Show that the curve $x^3 + 3xy + y^3 = 1$ contains only one set of three distinct points, A, B, and C, which are vertices of an equilateral triangle, and find its area.

Math's Jokes

Facts are stubborn, but statistics are more pliable. Mark Twain (1835-1910)
Statistics show that of those who contract the habit of eating, very few survive. Wallace Irwin (1875-1959)

The Ways of the Statisticians

Statisticians do it. After all, it's only normal.

[Quoting Italo Calvino, <Philosophy and literature>] In "that extraordinary and indefinable zone of the imagination from which the works of Lewis Carroll, Queneau, Borges have emerged" the concepts of mathematics can be a precious aid to discover, or invent, the possible ways of a "new relationship between the phantom lightness of ideas and the heaviness of the world".

Claudio Bartocci

A well-conceded statistic works better than a "big lie" in the manner of Hitler's propaganda: it deceives, but does not reveal the origin of the fraud.

Darrell Huff

The study of mathematics cannot be replaced by any other activity that will train and develop man's purely logical faculties to the same level of rationality.

Cletus Odia Oakley

It is important to realize that simulation does not coincide with reproduction and the importance of this fact is the same for thinking about arithmetic as for feeling anguish. It is not that the calculator only goes to the middle of the pitch instead of reaching the penalty area. The computer doesn't even start: he doesn't play this game.

John Rogers Searle

Cantor began to write, without a moment's respite, the articles that would make him famous. He sat down to work until sunset, inspired by a voice that - he was sure - was not just about him. Like the ancient scribes, he traced the immeasurable on the sheets with the same conviction and the same faith with which he recited his morning prayers. Thanks to his new theory of sets, inspired by the ideas of Dedekind, Cantor was now able to begin his approach to the unlimited. After having added and subtracted sets, after having treated them as abstractions independent of reality and having adapted them to traditional arithmetic analysis, after having thrown them all over the place and having breathed life into them as if they were his creatures, Cantor found himself in a dead end: it was some kind of sickness or upheaval that could have driven him mad. This anomaly, this math-inscribed symptom of madness, was revealed when he realized that infinity could be measured.

Jorge Volpi

August

	1	S	(1861) Ivar Otto Bendixson (1881) Otto Toeplitz (1955) Bernadette Perrin-Riou	
31	2	M	(1856) Ferdinand Rudio (1902) Mina Spiegel Rees	
	3	T	(1914) Mark Kac	RM115
	4	W	(1805) Sir William Rowan Hamilton (1838) John Venn	RM079
	5	T	(1802) Niels Henrik Abel (1941) Alexander Keewatin Dewdney	RM055
	6	F	(1638) Nicolas Malebranche (1741) John Wilson	
	7	S	(1868) Ladislaus Josephowitsch Bortkiewitz	
	8	S	(1902) Paul Adrien Maurice Dirac (1931) Sir Roger Penrose (1974) Manjul Bhargava	RM103 RM189
32	9	M	(1537) Francesco Barozzi (Franciscus Barocius) (1940) Linda Goldway Keen	RM223
	10	T	(1602) Gilles Personne de Roberval (1901) Franco Dino Rasetti (1926) Carol Ruth Karp	 RM235
	11	W	(1730) Charles Bossut (1842) Enrico D'Ovidio	 RM259
	12	T	(1882) Jules Antoine Richard (1887) Erwin Rudolf Josef Alexander Schrödinger	 RM103
	13	F	(1625) Erasmus Bartholin (1819) George Gabriel Stokes (1861) Cesare Burali-Forti	 RM187
	14	S	(1530) Giovanni Battista Benedetti (1842) Jean Gaston Darboux (1865) Guido Castelnuovo (1866) Charles Gustave Nicolas de La Vallée-Poussin	
	15	S	(1863) Aleksei Nikolaevich Krylov (1892) Louis Pierre Victor Duc de Broglie (1901) Piotr Sergeevich Novikov	 RM175
33	16	M	(1773) Louis-Benjamin Francoeur (1821) Arthur Cayley	
	17	T	(1601) Pierre de Fermat	RM091
	18	W	(1685) Brook Taylor	
	19	T	(1646) John Flamsteed (1739) Georg Simon Klügel	
	20	F	(1710) Thomas Simpson (1863) Corrado Segre (1882) Wacław Sierpiński	RM247
	21	S	(1789) Augustin-Louis Cauchy	RM127
	22	S	(1647) Denis Papin	
34	23	M	(1683) Giovanni Poleni (1829) Moritz Benedikt Cantor (1842) Osborne Reynolds	
	24	T	(1561) Bartholomeo Pitiscus (1942) Karen Keskulla Uhlenbeck	 RM163
	25	W	(1561) Philip Van Lansberge (1844) Thomas Muir	 RM199
	26	T	(1728) Johann Heinrich Lambert (1875) Giuseppe Vitali (1965) Marcus Peter Francis du Sautoy	
	27	F	(1858) Giuseppe Peano	RM067
	28	S	(1796) Irénée Jules Bienaymé (1862) Roberto Marcolongo	 RM187
	29	S	(1904) Leonard Roth	
35	30	M	(1703) Giovanni Ludovico Calandrini (1856) Carle David Tolmé Runge (1906) Olga Taussky-Todd	RM186 RM139
	31	T	(1821) Hermann Ludwig Ferdinand von Helmholtz (1885) Herbert Westren Turnbull	RM211

Putnam 2006, B2

Prove that, for every set X = $\{x_1, x_2, \ldots, x_n\}$ of n real numbers, there exists a non-empty subset S of X and an integer m such that

$$|m + \sum_{s\in S} s| \le \frac{1}{n+1}.$$

Math's Jokes

Q: How many topologists does it take to change a light bulb?
A: It really doesn't matter, since they'd rather knot.

The Ways of the Statisticians

Statisticians probably do it.

Other qualities of a far more subtle sort, chief among which in both cases is imagination, go to the making of a good artist or of a good mathematician.

Maxime Bocher

Mere poets are stupid like drunks, living in a perpetual fog, without seeing or judging anything clearly. A man should be well versed in several sciences, and should have a reasonable, philosophical and in a certain sense mathematical head to be a complete and excellent poet.

John Dryden

Mathematics has a completely false reputation for coming to infallible conclusions. Its infallibility is nothing more than identity. Two by two is not four, but it is only two by two, and we call this 'four' for convenience. But four is nothing new. And the mathematics goes on like this in its conclusions: only that in the most advanced formulas identity disappears from sight.

Wolfgang Goethe

It is in fact a fundamental ingredient of both the mathematical method and the scientific method in general to make conjectures, perhaps individually, and then, all together, to try to falsify them with counterexamples or to try to prove them. It is not serious, therefore, to make mistakes. The real mistake is to persist on a thesis, without accepting critical discussion, the only one that can lead us to find a better solution.

Furio Honsell

It is hard to know what you are talking about in mathematics, yet no one questions the validity of what you say. There is no other realm of discourse half so queer.

James R. Newman

It is noteworthy that all the superb theories of nature have proved extraordinarily fertile as sources of mathematical ideas. There is a beautiful and profound mystery in the fact that these superbly accurate theories are also extraordinarily fruitful simply from the mathematical point of view.

Sir Roger Penrose

	1	W	(1647) Giovanni Ceva (1659) Joseph Saurin (1835) William Stanley Jevons	RM203
	2	T	(1878) Mauriche René Frechet (1923) René Thom	RM080
	3	F	(1814) James Joseph Sylvester (1884) Solomon Lefschetz (1908) Lev Semenovich Pontryagin	RM104
	4	S	(1809) Luigi Federico Menabrea	RM150
	5	S	(1667) Giovanni Girolamo Saccheri (1725) Jean-Étienne Montucla	RM128
36	6	M	(1859) Boris Jakovlevich Bukreev (1863) Dimitri Aleksandrovich Grave	
	7	T	(1707) George Louis Leclerc Comte de Buffon (1948) Cheryl Elisabeth Praeger (1955) Efim Zelmanov	
	8	W	(1584) Gregorius Saint-Vincent (1588) Marin Mersenne	RM092
	9	T	(1860) Frank Morley (1914) Marjorie Lee Browne	
	10	F	(1839) Charles Sanders Peirce	RM123
	11	S	(1623) Stefano degli Angeli (1798) Franz Ernst Neumann (1877) Sir James Hopwood Jeans	RM224
	12	S	(1891) Antoine André Louis Reynaud (1894) Dorothy Maud Wrinch (1900) Haskell Brooks Curry	RM260 RM212
37	13	M	(1873) Constantin Carathéodory (1885) Wilhelm Johann Eugen Blaschke	
	14	T	(1858) Henry Burchard Fine (1891) Ivan Matveevich Vinogradov	
	15	W	(973) Abu Arrayhan Muhammad Ibn Ahmad Al'Biruni (1886) Paul Pierre Levy	RM164
	16	T	(1494) Francisco Maurolico (1736) Johann Nikolaus Tetens	
	17	F	(1743) Marie Jean Antoine Nicolas de Caritat de Condorcet (1826) Georg Friedrich Bernhard Riemann	RM176 RM068
	18	S	(1752) Adrien-Marie Legendre	RM140
	19	S	(1749) Jean-Baptiste Delambre	
38	20	M	(1842) Alexander Wilhelm von Brill (1861) Frank Nelson Cole	
	21	T	(1899) Juliusz Pawel Schauder (1917) Phyllis Nicolson	
	22	W	(1765) Paolo Ruffini (1769) Louis Puissant (1803) Jaques Charles Francois Sturm	RM116
	23	T	(1768) William Wallace (1900) David Van Dantzig	
	24	F	(1501) Girolamo Cardano (1625) Johan de Witt (1801) Michail Vasilevich Ostrogradski (1862) Winifred Edgerton Merrill (1945) Ian Nicholas Stewart	RM064 RM188 RM056 RM236
	25	S	(1819) George Salmon (1888) Stefan Mazurkiewicz	
	26	S	(1688) Willem Jakob 's Gravesande (1854) Percy Alexander Macmahon (1891) Hans Reichenbach	
39	27	M	(1855) Paul Émile Appell (1876) Earle Raymond Hedrick (1919) James Hardy Wilkinson	
	28	T	(1698) Pierre Louis Moreau de Maupertuis (1761) Ferdinand François Desiré Budan de Boislaurent (1873) Julian Lowell Coolidge	RM152
	29	W	(1540) François Viète (1561) Adriaan Van Roomen (1812) Adolph Gopel	RM200 RM200
	30	T	(1775) Robert Adrain (1829) Joseph Wolstenholme (1883) Ernst Hellinger (1891) Otto Yulyevich Schmidt	RM248

Rudi Mathematici

September

Putnam 2006, B3

Let S be a finite set of points in the plane. A linear partition of S is an unordered pair {A,B} of subsets of S such that $A \cup B = S$, $A \cap B = \emptyset$, and A and B lie on opposite sides of some straight line disjoint from S (A or B may be empty). Let L_S be the number of linear partitions of S. For each positive integer n, find the maximum of L_S over all sets S of n points.

Math's Jokes

Q: How many mathematicians does it take to screw in a lightbulb?
A: None. It's left to the reader as an exercise.

The Ways of the Statisticians

Statisticians do it with significance.

The counting process ends just because we are out of breath; it does not end because we are left without numbers. Well, an almost immortal being could possibly be left without a universe in which to write numbers, or without a time to pronounce them.

Jack Cohen, Terry Pratchett, Ian Stewart

Leonhard Euler [was] such a prolific author that we might consider him the Terry Pratchett of eighteenth-century mathematics.

Jack Cohen, Terry Pratchett, Ian Stewart

But I still wanted to have something, something of mine. And so it was the turn of pure mathematics. I had never had mathematical skills; it was only stubbornness that drove me. [...] And do you know why mathematics had that effect? I understood this when I was there. Because it is above everything. The works of Abel and Kronecker are as current today as they were four hundred years ago, and they will always be. New systems will arise, but the old ones will continue to guide us, never getting old.

Stanislaw Lem

A singular consequence of the view – which has prevailed for much of the history of philosophy – that metaphysical reasoning should be similar to mathematical reasoning, only even more mathematical, has been that sane mathematicians believed they were qualified – as mathematicians. – to discuss philosophy: and there is no worse metaphysics than theirs.

Charles Sanders Peirce

Mathematics is the field in which logic made its first weapons, achieved its first great victories.

Gaetano Scorza

Many people have found poetry in a bottle of wine. Not much math, though – you need to keep your head clear.

Ian Nicholas Stewart

Number, place, combination [are] the three superimposed, distinct but intersecting spheres of thought to which all mathematical ideas can be referred ... the three cardinal notions of Number, Space and Order.

James Joseph Sylvester

	1	**F**	(1671) Luigi Guido Grandi	RM177
			(1898) Bela Kerekjarto'	
			(1912) Kathleen Timpson Ollerenshaw	
	2	**S**	(1825) John James Walker	
			(1908) Arthur Erdélyi	
	3	**S**	(1944) Pierre René Deligne	
40	**4**	**M**	(1759) Louis Francois Antoine Arbogast	
			(1797) Jerome Savary	
	5	**T**	(1732) Nevil Maskelyne	
			(1781) Bernhard Placidus Johann Nepomuk Bolzano	RM117
			(1861) Thomas Little Heath	
	6	**W**	(1552) Matteo Ricci	RM141
			(1831) Julius Wilhelm Richard Dedekind	RM081
			(1908) Sergei Lvovich Sobolev	
	7	**T**	(1885) Niels Bohr	RM063
	8	**F**	(1908) Hans Arnold Heilbronn	
	9	**S**	(1581) Claude Gaspard Bachet de Meziriac	RM201
			(1704) Johann Andrea von Segner	
			(1873) Karl Schwarzschild	RM153
			(1949) Fan Rong K Chung Graham	RM110
	10	**S**	(1861) Heinrich Friedrich Karl Ludwig Burkhardt	
41	**11**	**M**	(1675) Samuel Clarke	
			(1777) Barnabè Brisson	
			(1881) Lewis Fry Richardson	
			(1885) Alfred Haar	
			(1910) Cahit Arf	RM261
	12	**T**	(1860) Elmer Sperry	
	13	**W**	(1890) Georg Feigl	
			(1893) Kurt Werner Friedrich Reidemeister	
			(1932) John Griggs Thomson	
	14	**T**	(1687) Robert Simson	
			(1801) Joseph Antoine Ferdinand Plateau	
			(1868) Alessandro Padoa	
	15	**F**	(1608) Evangelista Torricelli	RM165
			(1735) Jesse Ramsden	
			(1776) Peter Barlow	
			(1931) Eléna Wexler-Kreindler	
	16	**S**	(1879) Philip Edward Bertrand Jourdain	
	17	**S**	(1759) Jacob (II) Bernoulli	RM093
			(1888) Paul Isaac Bernays	
42	**18**	**M**	(1945) Margaret Dusa Waddington Mcduff	RM249
	19	**T**	(1903) Jean Frédéric Auguste Delsarte	
			(1910) Subrahmanyan Chandrasekhar	RM153
	20	**W**	(1632) Sir Christopher Wren	RM105
			(1863) William Henry Young	
			(1865) Aleksandr Petrovich Kotelnikov	
	21	**T**	(1677) Nicolaus (I) Bernoulli	RM093
			(1823) Enrico Betti	RM150
			(1855) Giovan Battista Guccia	RM129
			(1893) William Leonard Ferrar	
			(1914) Martin Gardner	RM137
	22	**F**	(1587) Joachim Jungius	
			(1895) Rolf Herman Nevanlinna	
			(1907) Sarvadaman Chowla	
	23	**S**	(1865) Piers Bohl	
	24	**S**	(1804) Wilhelm Eduard Weber	
			(1873) Edmund Taylor Whittaker	
43	**25**	**M**	(1811) Évariste Galois	RM069
	26	**T**	(1849) Ferdinand Georg Frobenius	
			(1857) Charles Max Mason	
			(1911) Shiing-Shen Chern	
	27	**W**	(1678) Pierre Remond de Montmort	
			(1856) Ernest William Hobson	
	28	**T**	(1804) Pierre François Verhulst	
	29	**F**	(1925) Klaus Roth	
	30	**S**	(1906) Andrej Nikolaevich Tichonov	
			(1946) William Paul Thurston	RM237
	31	**S**	(1711) Laura Maria Caterina Bassi	RM189
			(1815) Karl Theodor Wilhelm Weierstrass	RM057
			(1935) Ronald Lewis Graham	RM110

October

Putnam 2006, B4

Let Z denote the set of points in $\mathbb{R}^n$ whose coordinates are 0 or 1. (Thus Z has 2^n elements, which are the vertices of a unit hypercube in $\mathbb{R}^n$.) Given a vector subspace V of $\mathbb{R}^n$, let $Z(V)$ denote the number of members of Z that lie in V. Let k be given, $0 \le k \le n$. Find the maximum, over all vector subspaces $V \subseteq \mathbb{R}^n$ of dimension k, of the number of points in $V \cap Z$. [Editorial note: the proposers probably intended to write $Z(V)$ instead of "the number of points in $V \cap Z$", but this changes nothing.].

Math's Jokes

The study of non-linear physics is like the study of non-elephant biology. (Stanislaw Ulam).

The Ways of the Statisticians

Probabilists do it on random walks.

Physical demonstrations follow the standards of English justice, where the accused is presumed innocent until proven guilty. The mathematical proofs follow the standards of Stalinist justice, where the accused is presumed guilty until proven innocent.

Unknown Author

The so-called Pythagoreans, who were the first to do mathematics, not only developed it but completely immersed themselves in it, believing that the principles of mathematics were the principles of all things.

Aristotle

For a disease to become an epidemic, the spread factor must be greater than 1. If the factor can be kept below 1 – that is, if each carrier can be assured on average less than one other person during the which is infected – then the epidemic will die out. This probably makes "1" the single most important number in the history of epidemiology.

Rob Eastaway E Jeremy Wyndham

Unfortunately it is not known how the most valid scientific books are those in which the author clearly indicates what he does not know; an author never does more damage to his readers than when he hides a difficulty.

Évariste Galois

To avoide the tediouse repetition of these woordes: is equalle to: I will settle as I doe often in woorke use, a paire of paralleles, or gemowe [twin] lines of one lengthe: =, bicause noe .2. thynges, can be moare equalle.

Robert Recorde

For several years I have devoted myself to a series of novels on the subject of cryptology. But since cryptology is mathematics, which most people don't find interesting reading, I have broadened my scope a bit to include related subjects such as Money (i.e. digital currency), War (i.e. Enigma) and Power (i.e. cryptography export controls), which can be the basis for a more immersive storyline.

Neal Stephenson

44	1	M	(1535) Giambattista della Porta	RM226
	2	T	(1815) George Boole	RM094
			(1826) Henry John Stephen Smith	
	3	W	(1867) Martin Wilhelm Kutta	
			(1878) Arthur Byron Coble	
			(1896) Raymond Louis Wilder	
			(1906) Carl Benjamin Boyer	
	4	T	(1744) Johann (III) Bernoulli	RM093
			(1865) Pierre Simon Girard	
	5	F	(1848) James Whitbread Lee Glaisher	
			(1930) John Frank Adams	
	6	S	(1906) Emma Markovna Trotskaia Lehmer	RM215
	7	S	(1567) Clara Immerwahr	RM182
			(1660) Thomas Fantet de Lagny	
			(1799) Karl Heinrich Graffe	
			(1878) Lise Meitner	RM238
			(1898) Raphael Salem	
45	8	M	(1656) Edmond Halley	RM190
			(1781) Giovanni Antonio Amedeo Plana	RM154
			(1846) Eugenio Bertini	
			(1848) Fredrich Ludwig Gottlob Frege	
			(1854) Johannes Robert Rydberg	
			(1869) Felix Hausdorff	RM178
	9	T	(1847) Carlo Alberto Castigliano	RM202
			(1885) Theodor Franz Eduard Kaluza	
			(1885) Hermann Klaus Hugo Weyl	RM082
			(1906) Jaroslav Borisovich Lopatynsky	
			(1913) Hedwig Eva Maria Kiesler (Hedy Lamarr)	RM144
			(1922) Imre Lakatos	
	10	W	(1829) Helwin Bruno Christoffel	
	11	T	(1904) John Henry Constantine Whitehead	
	12	F	(1825) Michail Egorovich Vashchenko-Zakharchenko	
			(1842) John William Strutt Lord Rayleigh	
			(1927) Yutaka Taniyama	
	13	S	(1876) Ernest Julius Wilkzynsky	
			(1878) Max Wilhelm Dehn	
	14	S	(1845) Ulisse Dini	
			(1919) Paulette Libermann	
			(1975) Martin Hairer	RM189
46	15	M	(1688) Louis Bertrand Castel	
			(1793) Michel Chasles	
			(1794) Franz Adolph Taurinus	
	16	T	(1835) Eugenio Beltrami	RM262
	17	W	(1597) Henry Gellibrand	
			(1717) Jean-Baptiste Le Rond D'Alembert	RM166
			(1790) August Ferdinand Möbius	RM118
	18	T	(1872) Giovanni Enrico Eugenio Vacca	
			(1927) Jon Leslie Britton	
	19	F	(1894) Heinz Hopf	
			(1900) Michail Alekseevich Lavrentev	
			(1901) Nina Karlovna Bari	RM214
	20	S	(1889) Edwin Powell Hubble	
			(1924) Benoît Mandelbrot	
			(1963) William Timothy Gowers	
	21	S	(1867) Dimitri Sintsov	
47	22	M	(1803) Giusto Bellavitis	
			(1840) Émile Michel Hyacinthe Lemoine	
	23	T	(1616) John Wallis	RM070
			(1820) Issac Todhunter	
			(1917) Elizabeth Leonard Scott	RM106
	24	W	(1549) Duncan Maclaren Young Sommerville	
			(1909) Gerhard Gentzen	
	25	T	(1841) Fredrich Wilhelm Karl Ernst Schröder	
			(1873) Claude Louis Mathieu	
			(1943) Evelyn Merle Roden Nelson	
	26	F	(1894) Norbert Wiener	RM172
			(1946) Enrico Bombieri	
	27	S	(1867) Arthur Lee Dixon	
	28	S	(1898) John Wishart	
48	29	M	(1803) Christian Andreas Doppler	RM250
			(1849) Sir Horace Lamb	
			(1879) Nikolay Mitrofanovich Krylov	
	30	T	(1549) Sir Henry Savile	
			(1969) Matilde Marcolli	RM142

Rudi Mathematici

November

Putnam 2006, B5

For each continuous function f: $[0, 1]\to\mathbb{R}$, let $I(f) = \int_0^1 x^2 f(x)dx$ and $J(x) = \int_0^1 x(f(x))^2 dx$. Find the maximum value of $I(f)-J(f)$ over all such functions f.

Math's Jokes

Law of Selective Gravity: An object will fall so as to do the most damage.

The Ways of the Statisticians

Probabilists do it stochastically.

Seven and three make ten not just now, but always; and never, in any way, seven and three did not make ten or never seven and three will not make ten. Therefore this is the incorruptible truth of the number which I have said is common to me and to every reasonable being.

Sant'Agostino

Once I had a feeling about mathematics: I saw it all. Depth after depth was being revealed to me – the Abyss. I saw – as you might see the passage of Venus or the Mayor's speech – a quantity that passed through infinity and changed its sign from plus to minus. I saw exactly what was happening and why it was inevitable to procrastinate: but it was after dinner time and I let it go.

Sir Winston Spencer Churchill

Virtually nothing less desirable can happen to a scientist than having the foundations of his work collapse just when it is finished. I was placed in this position by a letter from Mr. Bertrand Russell when my work was practically in printing.

Fredrich Ludwig Gottlob Frege

Unfortunately, while computers continually surprise us for all they can do, almost nothing is known about what they cannot do.

William Timothy Gowers

How can a modern anthropologist embark upon a generalization with any hope of arriving at a satisfactory conclusion? By thinking of the organizational ideas that are present in any society as a mathematical pattern.

Edmund Ronald Leach

Statistics are like bikinis. What they reveal is suggestive, but what they conceal is vital.

Aaron Levenstein

Descartes' system ... would seem to give a plausible reason for all those phenomena; and this reason would seem all the more correct since it is simple and understandable by all. But in philosophy a student should doubt those things which he seems to understand too easily, just as much as those which he does not understand.

Voltaire

What most experimenters take for granted before they begin their experiments is infinitely more interesting than any results to which their experiments lead.

Norbert Wiener

	1	W	(1792) Nikolay Yvanovich Lobachevsky	RM083
			(1847) Christine Ladd-Franklin	
	2	T	(1831) Paul David Gustav du Bois-Reymond	
			(1869) Dimitri Fedorovich Egorov	RM214
			(1901) George Frederick James Temple	
	3	F	(1903) Sidney Goldstein	
			(1924) John Backus	
	4	S	(1795) Thomas Carlyle	
	5	S	(1868) Arnold Johannes Wilhelm Sommerfeld	
			(1901) Werner Karl Heisenberg	RM155
			(1907) Giuseppe Occhialini	RM122
49	6	M	(1682) Giulio Carlo Fagnano dei Toschi	
	7	T	(1823) Leopold Kronecker	RM239
			(1830) Antonio Luigi Gaudenzio Giuseppe Cremona	RM150
			(1924) Mary Ellen Rudin	
	8	W	(1508) Regnier Gemma Frisius	
			(1865) Jaques Salomon Hadamard	RM263
			(1919) Julia Bowman Robinson	RM227
	9	T	(1883) Nikolai Nikolaievich Luzin	RM214
			(1906) Grace Brewster Murray Hopper	
			(1917) Sergei Vasilovich Fomin	
	10	F	(1804) Karl Gustav Jacob Jacobi	RM251
			(1815) Augusta Ada King Countess Of Lovelace	RM059
	11	S	(1882) Max Born	RM155
	12	S	(1832) Peter Ludwig Mejdell Sylow	
			(1913) Emma Castelnuovo	RM191
50	13	M	(1724) Franz Ulrich Theodosius Aepinus	
			(1887) George Pólya	RM131
	14	T	(1546) Tycho Brahe	
	15	W	(1802) János Bolyai	RM083
			(1923) Freeman John Dyson	
	16	T	(1804) Wiktor Yakovievich Bunyakowsky	
	17	F	(1706) Gabrielle Émilie Le Tonnelier de Breteuil du Châtelet	
			(1835) Felice Casorati	
			(1842) Marius Sophus Lie	
			(1900) Dame Mary Lucy Cartwright	
	18	S	(1856) Joseph John Thomson	RM161
			(1917) Roger Lyndon	
			(1942) Lenore Blum	
	19	S	(1783) Charles Julien Brianchon	
			(1854) Marcel Louis Brillouin	
			(1887) Charles Galton Darwin	RM138
51	20	M	(1494) Oronce Fine	
			(1648) Tommaso Ceva	RM203
			(1875) Francesco Paolo Cantelli	
	21	T	(1878) Jan Łukasiewicz	
			(1921) Edith Hirsch Luchins	
			(1932) John Robert Ringrose	
	22	W	(1824) Francesco Brioschi	RM150
			(1859) Otto Ludwig Hölder	
			(1877) Tommaso Boggio	
			(1887) Srinivasa Aiyangar Ramanujan	
	23	T	(1872) Georgii Yurii Pfeiffer	
	24	F	(1822) Charles Hermite	RM095
			(1868) Emmanuel Lasker	RM167
	25	S	(1642) Isaac Newton	RM071
			(1900) Antoni Zygmund	
	26	S	(1780) Mary Fairfax Greig Somerville	
			(1791) Charles Babbage	RM059
			(1937) John Horton Conway	RM119
52	27	M	(1571) Johannes Kepler	
			(1654) Jacob (Jacques) Bernoulli	RM093
	28	T	(1808) Louis Victoire Athanase Dupré	
			(1882) Arthur Stanley Eddington	RM179
			(1903) John von Neumann	RM107
	29	W	(1856) Thomas Jan Stieltjes	
	30	T	(1897) Stanislaw Saks	
	31	F	(1872) Volodymyr Levitsky	
			(1896) Carl Ludwig Siegel	
			(1945) Leonard Adleman	RM143
			(1952) Vaughan Frederick Randall Jones	

Rudi Mathematici

December

Putnam 2006, B6

Let k be an integer greater than 1. Suppose $a_0>0$, and define $a_{n+1} = a_n + \frac{1}{\sqrt[n]{a_n}}$, for $n > 0$. Evaluate

$$\lim_{n\to\infty} \frac{a_n^{k+1}}{n^k}.$$

Math's Jokes

According to a recent survey, 33% of the people say they participate in surveys.

The Ways of the Statisticians

Statisticians do all the standard deviations.

Even as the finite encloses an infinite series
And in the unlimited limits appear,
So the soul of immensity dwells in minutia
And in the narrowest limits no limit in here.
What joy to discern the minute in infinity!
The vast to perceive in the small, what divinity!

Jacob Bernoulli

It is natural that a man should consider the work of his hands or his brain to be useful and important. Therefore nobody will object to an ardent experimentalist boasting of his measurements and rather looking down on the 'paper and ink' physics of his theoretical friend, who on his part is proud of his lofty ideas and despises the dirty fingers of the other.

Max Born

A poll is a pun in figures.

Albert Brie

Believe it or not, the needs of a mathematician are quite similar to yours. He needs to discover a problem connected with the existing mathematical culture. He needs reassurance and encouragement as he struggles to resolve it. And when he comes to propose a solution he needs criticism, or consensus. However isolated or self-sufficient he may be, it depends on his mathematical community which is the source of his work and the place of its verification.

Reuben Hersh

"At ubi materia, ibi Geometria."
Where there is matter, there is geometry.

Johannes Kepler

Mathematics is the cheapest science. Unlike physics or chemistry, it does not require any expensive equipment. All one needs for mathematics is a pencil and paper.

George Polya

[writing to Hardy from the Marlock sanatorium:] I have been here for a month and I have not been allowed to turn on the heating one day. They promised me warming on days when I do serious mathematical work. That day has not yet arrived, and I am left in this exposed and terribly cold room.

Srinivasa Aiyangar Ramanujan