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Adventures With Hyperbolic
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Crocheting Adventures With Hyperbolic Planes

Fascinators, headbands and hair clips of every shape and size dominate the high street and this collection of eye catching projects

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shows you how to make and create your own unique quirky and colourful hair accessories. The projects are made using a range of needlecraft techniques including sewing, embroidery, knitting and crochet. Headbands and hair clips

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are embellished with embroidery stitches, buttons and beads for a totally original look that you can't buy on the high street. Easy to follow instructions make these projects quick and easy to complete. Create unique gifts for

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friends and family with these original design ideas for all kinds of hair accessories. Get ready to turn heads with these fun and fabulous fascinators!

Since quasi-uniform spaces were defined in 1948, a diverse and

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widely dispersed literature concerning them has emerged. In Quasi-Uniform Spaces, the authors present a comprehensive study of these structures, together with the theory of quasi-proximities. In

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In addition to new results unavailable elsewhere, the volume unites fundamental material heretofore scattered throughout the literature. Quasi-Uniform Spaces shows by example that these structures provide a natural

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approach to the study of point-set topology. It is the only source for many results related to completeness, and a primary source for the study of both transitive and quasi-metric spaces. Included are H. Junnila's

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analogue of Tamano's theorem, J. Kofner's result showing that every GO space is transitive, and R. Fox's example of a non-quasi-metrizable r -space. In addition to numerous interesting problems mentioned throughout the text ,

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22 formal research problems are featured. The book nurtures a radically different viewpoint of topology, leading to new insights into purely topological problems. Since every topological space admits a quasi-uniformity,

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the study of quasi-uniform spaces can be seen as no less general than the study of topological spaces. For such study, Quasi-Uniform Spaces is a necessary, self-contained reference for both researchers and graduate students

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of general topology . Information is made particularly accessible with the inclusion of an extensive index and bibliography .

Math and Art: An Introduction to Visual Mathematics explores the potential of mathematics to

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generate visually appealing objects and reveals some of the beauty of mathematics. With a CD-ROM and a 16-page full-color insert, it includes numerous illustrations, computer-generated graphics, photographs, and art

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reproductions to demonstrate how
mathemat

Maintaining the standard of
excellence set by the previous
edition, this textbook covers the
basic geometry of two- and three-
dimensional spaces Written by a

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master expositor, leading researcher in the field, and MacArthur Fellow, it includes experiments to determine the true shape of the universe and contains illustrated examples and engaging exer

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Mathematical craftwork has become extremely popular, and mathematicians and crafters alike are fascinated by the relationship between their crafts. The focus of this book, written for mathematicians, needleworkers,

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and teachers of mathematics, is on the relationship between mathematics and the fiber arts (including knitting, crocheting, cross-stitch, and quilting). Each chapter starts with an overview of the mathematics and the

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needlework at a level understandable to both mathematicians and needleworkers, followed by more technical sections discussing the mathematics, how to introduce the mathematics in the classroom

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through needlework, and how to make the needlework project, including patterns and instructions.

Through revealing photographs and accompanying text, this book offers an enchanting and beautiful

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glimpse into the inner life of the Institut des Hautes Études Scientifiques (IHES). The IHES in France is an institute of advanced research in mathematics and theoretical physics with an interest in epistemology and the history of

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science. It provides exceptionally gifted scientists with a place where they can devote themselves entirely to their research, free of teaching and administrative constraints, and offers them the opportunity to invite visitors with

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whom they wish to work.

Convexity is an ancient idea going back to Archimedes. Used sporadically in the mathematical literature over the centuries, today it is a flourishing area of research and a mathematical subject in its

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own right. Convexity is used in optimization theory, functional analysis, complex analysis, and other parts of mathematics. Convex Analysis introduces analytic tools for studying convexity and provides analytical

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applications of the concept. The book includes a general background on classical geometric theory which allows readers to obtain a glimpse of how modern mathematics is developed and how geometric ideas may be

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studied analytically. Featuring a user-friendly approach, the book contains copious examples and plenty of figures to illustrate the ideas presented. It also includes an appendix with the technical tools needed to understand certain

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arguments in the book, a tale of notation, and a thorough glossary to help readers with unfamiliar terms. This book is a definitive introductory text to the concept of convexity in the context of mathematical analysis and a

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suitable resource for students and faculty alike.

The twentieth century was a time of unprecedented development in mathematics, as well as in all sciences: more theorems were proved and results found in a

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hundred years than in all of previous history. In The Mathematical Century, Piergiorgio Odifreddi distills this unwieldy mass of knowledge into a fascinating and authoritative overview of the subject. He

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concentrates on thirty highlights of pure and applied mathematics. Each tells the story of an exciting problem, from its historical origins to its modern solution, in lively prose free of technical details. Odifreddi opens by discussing the

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four main philosophical foundations of mathematics of the nineteenth century and ends by describing the four most important open mathematical problems of the twenty-first century. In presenting the thirty problems at

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the heart of the book he devotes equal attention to pure and applied mathematics, with applications ranging from physics and computer science to biology and economics. Special attention is dedicated to the famous "23

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problems" outlined by David Hilbert in his address to the International Congress of Mathematicians in 1900 as a research program for the new century, and to the work of the winners of the Fields Medal, the

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equivalent of a Nobel prize in mathematics. This eminently readable book will be treasured not only by students and their teachers but also by all those who seek to make sense of the elusive macrocosm of twentieth-century

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mathematics.

[Tactile Mathematics, Art and Craft
for all to Explore, Second Edition
Topological Circle Planes and
Topological Quadrangles
The Geometry of Musical Rhythm
An Exploration of the Intersection](#)

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of Higher Geometry and Feminine
Handicraft

Euclidean and Non-Euclidean with
History

Origami 5

Origami Tessellations

21 Fabulous Fascinators, Hair Clips

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and Accessories to Stitch and Sew
Images You Should Not Masturbate
To
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Spectral Functions in Mathematics
and Physics

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[Geometry and Topology](#)

[Exploring 3D Geometric Designs](#)

Eric Gjerde demonstrates 25 of his favorite tessellations and turns them into projects for newcomers as well as experienced origamists. With step-by-step instructions, illustrated crease patterns, and how-to photos, you'll

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learn to create these wonderful designs yourself. Eric's first book covers the fundamentals of origami tessellations, provides history, and describes simple beginning techniques with detailed illustrations and photographs. An extensive gallery showcases tessellations folded by the world's

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leading origami fine artists---inspiring you to experiment, innovate, and eventually create your own unique designs.

The distinctive approach of Henderson and Taimina's volume stimulates readers to develop a broader, deeper, understanding of mathematics through

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active experience--including discovery, discussion, writing fundamental ideas and learning about the history of those ideas. A series of interesting, challenging problems encourage readers to gather and discuss their reasonings and understanding. The volume provides an understanding of

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the possible shapes of the physical universe. The authors provide extensive information on historical strands of geometry, straightness on cylinders and cones and hyperbolic planes, triangles and congruencies, area and holonomy, parallel transport, SSS, ASS, SAA, and AAA, parallel

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*postulates, isometries and patterns,
dissection theory, square roots,
pythagoras and similar triangles,
projections of a sphere onto a plane,
inversions in circles, projections
(models) of hyperbolic planes,
trigonometry and duality, 3-spheres
and hyperbolic 3-spaces and*

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polyhedra. For mathematics educators and other who need to understand the meaning of geometry.

From the Preface: "This book is addressed to all who are curious about the nature of mathematics and its role in society. It is neither a text book nor a specialists' book. It consists of a

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number of loosely linked essays that may be read independently and for which I have tried to provide a leitmotif by throwing light on the relationship between m

Accessible, concise, and self-contained, this book offers an outstanding introduction to three

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related subjects: differential geometry, differential topology, and dynamical systems. Topics of special interest addressed in the book include Brouwer's fixed point theorem, Morse Theory, and the geodesic flow. Smooth manifolds, Riemannian metrics, affine connections, the curvature tensor,

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differential forms, and integration on manifolds provide the foundation for many applications in dynamical systems and mechanics. The authors also discuss the Gauss-Bonnet theorem and its implications in non-Euclidean geometry models. The differential topology aspect of the book

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centers on classical, transversality theory, Sard's theorem, intersection theory, and fixed-point theorems. The construction of the de Rham cohomology builds further arguments for the strong connection between the differential structure and the topological structure. It also furnishes some of the

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tools necessary for a complete understanding of the Morse theory. These discussions are followed by an introduction to the theory of hyperbolic systems, with emphasis on the quintessential role of the geodesic flow. The integration of geometric theory, topological theory, and

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concrete applications to dynamical systems set this book apart. With clean, clear prose and effective examples, the authors' intuitive approach creates a treatment that is comprehensible to relative beginners, yet rigorous enough for those with more background and experience in

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the field.

*Peek “behind the scenes” of the universe—and see math in brilliant color! For curious minds throughout history, math was truly an art. In *Visions of the Universe*, you can pick up right where Isaac Newton, Blaise Pascal, and other luminaries left*

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off—by coloring 58 exquisite patterns inspired by great discoveries in math: Intricate geometric designs like those that grace the mosques of Mecca Felix Klein's astounding diagram—drawn in 1897—of light reflecting between five mirrored spheres A mind-bending puzzle so beautiful it once hung

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*outside a Japanese temple, and more!
Plus, in the Creating chapter, you'll
help complete 10 additional images by
following simple steps that give
spectacular results. No math
knowledge is required: Anyone can be
an artist in Numberland!
The literature on the spectral analysis*

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of second order elliptic differential operators contains a great deal of information on the spectral functions for explicitly known spectra. The same is not true, however, for situations where the spectra are not explicitly known. Over the last several years, the author and his colleagues have

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developed new,

The subject of mathematics is not something distant, strange, and abstract that you can only learn about—and often dislike—in school. It is in everyday situations, such as housekeeping, communications, traffic, and weather reports. Taking you on a

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trip into the world of mathematics, Do I Count? Stories from Mathematics describes in a clear and captivating way the people behind the numbers and the places where mathematics is made. Written by top scientist and engaging storyteller Günter M. Ziegler and translated by Thomas von

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Foerster, the book presents mathematics and mathematicians in a manner that you have not previously encountered. It guides you on a scenic tour through the field, pointing out which beds were useful in constructing which theorems and which notebooks list the prizes for solving particular

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problems. Forgoing esoteric areas, the text relates mathematics to celebrities, history, travel, politics, science and technology, weather, clever puzzles, and the future. Can bees count? Is 13 bad luck? Are there equations for everything? What's the real practical value of the Pythagorean Theorem?

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Are there Sudoku puzzles with fewer than 17 entries and just one solution? Where and how do mathematicians work? Who invented proofs and why do we need them? Why is there no Nobel Prize for mathematics? What kind of life did Paul Erdős lead? Find out the answers to these and other

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questions in this entertaining book of stories. You'll see that everyone counts, but no computation is needed. Designed for crafters, puzzle lovers, and pattern designers alike, Crafting Conundrums: Puzzles and Patterns for the Bead Crochet Artist provides methods, challenges, and patterns that

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offer a springboard for creative exploration. All are illustrated with beautiful color diagrams and photographs. Experienced bead crochet crafters looking for a project may choose to skip ahead to the pattern pages and begin crocheting from an abundance of unique,

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mathematically inspired designs. Those wishing to design their own patterns will find many useful tools, template patterns, and a new methodology for understanding how to do so even without using math. Puzzle lovers without previous knowledge of bead crochet will also find ample

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inspiration for learning the craft. The first part of the book describes the basic requirements and constraints of a bead crochet pattern and explains what makes designing in this medium so tricky. The authors present their new design framework and offer insight on how best to approach design

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*choices and issues unique to bead
crochet. The second part presents a
series of bead crochet design
challenges informed by colorful bits of
mathematics, including topology, graph
theory, knot theory, tessellations, and
wallpaper groups. Each chapter in this
section begins with a design puzzle*

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accompanied by an introduction to the mathematical idea that inspired it. The authors then discuss what made the challenge difficult, present some of their solutions, and describe the thinking and ideas behind their approach. The final part contains nearly 100 original bead crochet

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patterns, including solutions to all the design challenges. This part also provides a tutorial on the fundamentals of bead crochet technique. Behind the deceptively simple and uniform arrangement of beads is a subtle geometry that produces compelling design challenges and fascinating

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mathematical structures. In color throughout, Crafting Conundrums gives both math enthusiasts and crafters an innovative approach to creating bead crochet patterns while addressing a variety of mathematically inspired design questions. Supplementary materials, including demo videos, are

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*available on the book's CRC Press
web page.*

[The 30 Greatest Problems of the Last
100 Years](#)

[A Cultural Perspective](#)

[The Theory That Would Not Die](#)

[With a View to Dynamical Systems](#)

[Tactile Mathematics, Art and Craft for](#)

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[Numbers at Work](#)

[Experiencing Geometry](#)

This book discusses topics ranging from traditional areas of topology, such as knot theory and the topology of manifolds, to areas such as differential and algebraic geometry.

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It also discusses other topics such as three-manifolds, group actions, and algebraic varieties.

Winner, Euler Book Prize, awarded by the Mathematical Association of America. With over 200 full color photographs, this non-traditional,

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tactile introduction to non-Euclidean geometries also covers early development of geometry and connections between geometry, art, nature, and sciences. For the crafter or would-be crafter, there are detailed instructions for how to

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crochet various geometric models and how to use them in explorations. New to the 2nd Edition; Daina Taimina discusses her own adventures with the hyperbolic planes as well as the experiences of some of her readers. Includes recent

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applications of hyperbolic geometry such as medicine, architecture, fashion & quantum computing. Pick up this book and dive into one of eight chapters relating mathematics to fiber arts! Amazing exposition transports any interested

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person on a mathematical exploration that is rigorous enough to capture the hearts of mathematicians. The zenith of creativity is achieved as readers are led to knit, crochet, quilt, or sew a project specifically designed to

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illuminate the mathematics through its physical realization. The beautiful finished pieces provide a visual understanding of the mathematics that can be shared with those who view them. If you love mathematics or fiber arts, this book

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is for you!

"Now perhaps the world's largest participatory art and science project, the Crochet Coral Reef combines mathematics, marine biology, environmental consciousness-raising and community art practice. Almost

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8,000 people around the world have contributed to making an ever-evolving archipelago of giant woolen seascapes, which have been exhibited at the Hayward Gallery, the Smithsonian and many other venues. This fully illustrated book,

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written by the project's creators--Margaret and Christine Wertheim of the Institute For Figuring--brings together the scientific and mathematical content behind the project, along with essays about the artistic and cultural

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resonances of this unique experiment in radical craft practice. With a wealth of color illustrations, the book serves as a record of the 30-plus Crochet Reefs worldwide and names all 7,000-plus contributors in a specially designed

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section." --Amazon.

"This account of how a once reviled theory, Baye's rule, came to underpin modern life is both approachable and engrossing" (Sunday Times). A New York Times Book Review Editors'

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Choice Bayes' rule appears to be a straightforward, one-line theorem: by updating our initial beliefs with objective new information, we get a new and improved belief. To its adherents, it is an elegant statement about learning from experience. To

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its opponents, it is subjectivity run amok. In the first-ever account of Bayes' rule for general readers, Sharon Bertsch McGrayne explores this controversial theorem and the generations-long human drama surrounding it. McGrayne traces the

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rule's discovery by an 18th century amateur mathematician through its development by French scientist Pierre Simon Laplace. She reveals why respected statisticians rendered it professionally taboo for 150 years—while practitioners relied on it

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to solve crises involving great uncertainty and scanty information, such as Alan Turing's work breaking Germany's Enigma code during World War II. McGrayne also explains how the advent of computer technology in the 1980s

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proved to be a game-changer.

Today, Bayes' rule is used everywhere from DNA de-coding to Homeland Security. Drawing on primary source material and interviews with statisticians and other scientists, *The Theory That*

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Would Not Die is the riveting account of how a seemingly simple theorem ignited one of the greatest controversies of all time.

This book is a great resource for people who enjoy polyhedra, symmetry, geometry, mathematics

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and origami. The types of models presented are similar in nature to the models in Mukerji's *Marvelous Modular Origami*, but some of the chapters are more advanced and all of the designs are new. The reader can learn about polyhedra while

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making these models and is left with the ability to design one's own models. Step-by-step folding instructions for over 40 models are presented. Although the book is for intermediate folders, beginners are encouraged to try because origami

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basics are explained. The diagrams are easy to follow and each model is accompanied by breathtaking finished model photographs.

Better than a cold shower-and a lot funnier. Choke the chicken, spank the monkey, charm the snake-

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however you refer to it, none of the images in this book will encourage you to pleasure yourself. This deceptively simple and strangely addictive book presents a laugh-out-loud collection of random pictures virtually guaranteed to dampen the

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urge of even the strongest libido.

Knot Projections offers a comprehensive overview of the latest methods in the study of this branch of topology, based on current research inspired by Arnold's theory of plane curves, Viro's

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quantization of the Arnold invariant, and Vassiliev's theory of knots, among others. The presentation exploits the intuitiveness of knot projections to introduce the material to an audience without a prior background in topology, making the

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book suitable as a useful alternative to standard textbooks on the subject. However, the main aim is to serve as an introduction to an active research subject, and includes many open questions.

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[A Project](#)

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[Knot Projections](#)

[How Bayes' Rule Cracked the](#)

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Enigma Code, Hunted Down

Russian Submarines, & Emerged

Triumphant from Two Centuries of

C

Perfect Rigour

In 2006, an eccentric Russian
mathematician named Grigori Perelman

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solved one of the world's greatest intellectual puzzles. The Poincare conjecture is an extremely complex topological problem that had eluded the best minds for over a century. In 2000, the Clay Institute in Boston named it one of seven great unsolved mathematical problems, and promised a million dollars

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to anyone who could find a solution.

Perelman was awarded the prize this year - and declined the money. Journalist Masha Gessen was determined to find out why. Drawing on interviews with Perelman's teachers, classmates, coaches, teammates, and colleagues in Russia and the US - and informed by her own background as a

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math whiz raised in Russia - she set out to uncover the nature of Perelman's astonishing abilities. In telling his story, Masha Gessen has constructed a gripping and tragic tale that sheds rare light on the unique burden of genius.

Winner of the Euler Book Prize --

Awarded by the Mathematical Association

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of America With more than 200 full color photographs, this non-traditional, tactile introduction to non-Euclidean geometries also covers early development of geometry and connections between geometry, art, nature, and sciences. For the crafter or would-be crafter, there are detailed instructions for how to crochet various

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geometric models and how to use them in explorations. From the Foreword by William Thurston: "These models have a fascination far beyond their visual appearance. As illustrated in the book, there is actually negative curvature and hyperbolic geometry all around us, but people generally see it without seeing it.

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You will develop an entirely new understanding by actually following the simple instructions and crocheting! The models are deceptively interesting. Perhaps you will come up with your own variations and ideas. In any case, I hope this book gives you pause for thought and changes your way of thinking about

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mathematics."

Although the properties of hyperbolic space were known for 200 years, it was only in 1997 that mathematician Daina Taimina worked out how to make physical models of it. The method she used was crochet. In this book, Margaret Wertheim presents a brief history of hyperbolic space

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in mathematics and nature, and offers a "field guide" to its crocheted manifestations.

Geometry and Martingales in Banach Spaces provides a compact exposition of the results explaining the interrelations existing between the metric geometry of Banach spaces and the theory of

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martingales, and general random vectors with values in those Banach spaces.

Geometric concepts such as dentability, uniform smoothness, uniform convexity, Beck convexity, etc. turn out to characterize asymptotic behavior of martingales with values in Banach spaces.

"There is perhaps no better way to prepare

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for the scientific breakthroughs of tomorrow than to learn the language of geometry." -Brian Greene, author of The Elegant Universe The word "geometry" brings to mind an array of mathematical images: circles, triangles, the Pythagorean Theorem. Yet geometry is so much more than shapes and numbers; indeed, it

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governs much of our lives—from architecture and microchips to car design, animated movies, the molecules of food, even our own body chemistry. And as Siobhan Roberts elegantly conveys in *The King of Infinite Space*, there can be no better guide to the majesty of geometry than Donald Coxeter, perhaps the greatest

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geometer of the twentieth century. Many of the greatest names in intellectual history—Pythagoras, Plato, Archimedes, Euclid—were geometers, and their creativity and achievements illuminate those of Coxeter, revealing geometry to be a living, ever-evolving endeavor, an intellectual adventure that has always been a building

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block of civilization. Coxeter's special contributions-his famed Coxeter groups and Coxeter diagrams-have been called by other mathematicians "tools as essential as numbers themselves," but his greatest achievement was to almost single-handedly preserve the tradition of classical geometry when it was under attack in a

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mathematical era that valued all things austere and rational. Coxeter also inspired many outside the field of mathematics. Artist M. C. Escher credited Coxeter with triggering his legendary Circle Limit patterns, while futurist/inventor Buckminster Fuller acknowledged that his famed geodesic dome owed much to

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Coxeter's vision. *The King of Infinite Space* is an elegant portal into the fascinating, arcane world of geometry. *The Geometry of Musical Rhythm: What Makes a "Good" Rhythm Good?* is the first book to provide a systematic and accessible computational geometric analysis of the musical rhythms of the

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world. It explains how the study of the mathematical properties of musical rhythm generates common mathematical problems that arise in a variety of seemingly disparate contexts. This research note presents a complete treatment of the connection between topological circle planes and topological generalized quadrangles. The author uses

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this connection to provide a better understanding of the relationships between different types of circle planes and to solve a topological version of the problem of Apollonius. Topological Circle Planes and Topological Quadrangles begins with a foundation in classical circle planes and the real symmetric generalized quadrangle

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and the connection between them. This provides a solid base from which the author offers a more generalized exploration of the topological case. He also compares this treatment to the finite case. Subsequent chapters examine Laguerre, Möbius, and Minkowski planes and their respective relationships to

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antiregular quadrangles. The author addresses the Lie geometry of each and discuss the relationships of circle planes - the "sisters" of Möbius, Laguerre, and Minkowski planes - and concludes by solving a topological version of the problem of Apollonius in Laguerre, Möbius, and Minkowski planes. The

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treatment offered in this volume offers complete coverage of the topic. The first part of the text is accessible to anyone with a background in analytic geometry, while the second part requires basic knowledge in general and algebraic topology. Researchers interested in geometry-particularly in topological

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geometry-will find this volume intriguing and informative. Most of the results presented are new and can be applied to various problems in the field of topological circle planes. Features The Handbook and Atlas of Curves describes available analytic and visual properties of plane and spatial curves.

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Information is presented in a unique format, with one half of the book detailing investigation tools and the other devoted to the Atlas of Plane Curves. Main definitions, formulas, and facts from curve theory (plane and spatial) are disc

[Differential Geometry and Topology](#)
[Figuring Fibers](#)

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Intrinsically noncommutative

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spaces today are considered from the perspective of several branches of modern physics, including quantum gravity, string theory, and statistical physics. From this point of view, it is ideal to devise a concept of space and

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its geometry that is fundamentally noncommutative. Providing a clear introduction to noncommutative topology, Virtual Topology and Functor Geometry explores new aspects of these areas as well as more established

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facets of noncommutative algebra. Presenting the material in an easy, colloquial style to facilitate understanding, the book begins with an introduction to category theory, followed by a chapter on noncommutative

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spaces. This chapter examines noncommutative lattices, noncommutative opens, sheaf theory, the generalized Stone space, and Grothendieck topology. The author then studies Grothendieck categorical

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representations to formulate an abstract notion of "affine open". The final chapter proposes a dynamical version of topology and sheaf theory, providing at least one solution of the problem of sheafification independent of

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generalizations of topos theory. By presenting new ideas for the development of an intrinsically noncommutative geometry, this book fosters the further unification of different kinds of noncommutative geometry and

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the expression of observations that involve natural phenomena. Lewis Burke Frumkes, one of America's very best satirists, sharpens his pen on the fads, fears, and fashions of the urban landscape. Here are 49 hilarious

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ways to cope with them. Explore the benefits of aerobic typing. Wile a friend with "Exotic Gifts from Harry and Larry" including "Road Imperial Valium—America's Favorite Tranquilizer—Only Better." Take

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charge of your next meeting with Frumkes's "New Rules of Order," which include Blurting, Interrupting, and Bullwhipping. Jump in the saddle and rope a roach—apartment style. And, of course, raise your I.Q. with a

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delicious "Gifted Child Fricassee."
Mathematical card effects offer
both beginning and experienced
magicians an opportunity to
entertain with a minimum of
props. Featuring mostly original
creations, Mathematical Card

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Magic: Fifty-Two New Effects presents an entertaining look at new mathematically based card tricks. Each chapter contains four card effects, generally starting with simple applications of a particular mathematical principle

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and ending with more complex ones. Practice a handful of the introductory effects and, in no time, you'll establish your reputation as a "mathemagician." Delve a little deeper into each chapter and the mathematics gets

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more interesting. The author explains the mathematics as needed in an easy-to-follow way. He also provides additional details, background, and suggestions for further explorations. Suitable for

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recreational math buffs and amateur card lovers or as a text in a first-year seminar, this color book offers a diverse collection of new mathemagic principles and effects.

From the editors of the popular

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Making Mathematics with Needlework, this book presents projects that highlight the relationship between types of needlework and mathematics. Chapters start with accessible overviews presenting the interplay

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between mathematical concepts and craft expressions. Following sections explain the mathematics in more detail, and provide suggestions for classroom activities. Each chapter ends with specific crafting instructions.

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Types of needlework included are knitting, crochet, needlepoint, cross-stitch, quilting, temari balls, beading, tatting, and string art. Instructions are written as ordinary patterns, so the formatting and language will be

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familiar to crafters.

Origami5 continues in the excellent tradition of its four previous incarnations, documenting work presented at an extraordinary series of meetings that explored the

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connections between origami, mathematics, science, technology, education, and other academic fields. The fifth such meeting, 5OSME (July 13–17, 2010, Singapore Management University) followed the precedent

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previous meetings to explore the interdisciplinary connections between origami and the real world. This book begins with a section on origami history, art, and design. It is followed by sections on origami in education

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and origami science, engineering, and technology, and culminates with a section on origami mathematics—the pairing that inspired the original meeting. Within this one volume, you will find a broad selection of historical

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information, artists' descriptions of their processes, various perspectives and approaches to the use of origami in education, mathematical tools for origami design, applications of folding in engineering and technology, as

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well as original and cutting-edge research on the mathematical underpinnings of origami.

Drawing primarily from historical examples, this book explains the tremendous role that numbers and, in particular, mathematics

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play in all aspects of our civilization and culture. The lively style and illustrative examples will engage the reader who wants to understand the many ways in which mathematics enables science, technology, art, music,

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politics, and rational foundations of human thought. Each chapter focuses on the influence of mathematics in a specific field and on a specific historical figure, such as "Pythagoras: Numbers and Symbol"; "Bach: Numbers

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and Music"; "Descartes: Numbers
and Space."

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Crochet Artist

A Genius and the Mathematical
Breakthrough of a Lifetime
Geometry and Martingales in
Banach Spaces