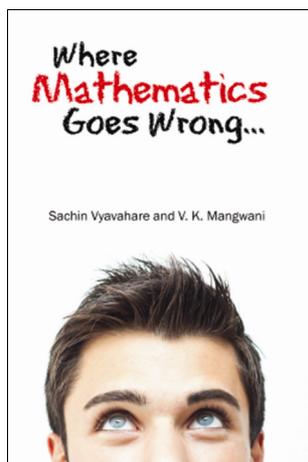


entrants or aspirants alike, this book will be very useful as a protocol book and an excellent resource material for the essentials of botanical extraction.

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Where Mathematics Goes Wrong...: Mathematical Fallacies, Howlers & Number Tricks.... Sachin Vyavahare and V. K. Mangwani. Notion Press, 5 Muthu Kalathy Street, Triplicane, Chennai 600 005. 2014. xii + 84 pages. Price: Rs 130. Soft, ISBN: 9789383808991.

Beyond all doubt, all will invariably agree with the statement that the sum of angles in a triangle is equal to 180 degrees. But the aforesaid statement is true only in Euclidean Geometry. As one progresses to hyperbolic geometry and elliptic geometry, axioms, definitions, theorems and laws start changing. It has been proved by a few experts that the sum of angles in a triangle will always be less than 180° in hyperbolic geometry and it has also been proved by a few experts that in elliptic geometry the sum of angles in a triangle will always be

greater than 180° . Interestingly, all the three assertions (sum of angles of a triangle = 180° , sum of angles of a triangle $> 180^\circ$, sum of angles of a triangle $< 180^\circ$) are correct! Thanks to mathematicians and scientists such as Bernhard Riemann and Gauss–Bolyai–Lobacheskvy. New knowledge (which might challenge existing knowledge so far believed to be correct) is being added only because of the painstaking efforts of people of their ilk.

Can 1 and 2 be equal to each other? Can 3 and 5 be equal to each other? Many books dwell on an algebraic proof to prove that 1 and 2 (or 3 and 5) are equal to each other. But in the work under review the authors have not only provided an algebraic viewpoint, but also examined the aforesaid fallacy using derivatives, the concepts of commutative and associative laws of addition, inequality, limits, integration, theory of complex numbers, trigonometry, matrices, binomial theorem, simple arithmetic and induction. The famous missing square puzzle (created by noted American neuropsychiatrist L. Vosburgh Lions based on a phenomenon observed by a world-famous magician by the name of Paul Curry), Tangram paradox (based on the work of the mathematician named Henry Ernest Dudeney), TrollPi (or $\pi = 4$) have been beautifully explained via means of intricate drawings and easy-to-understand text.

The book under review is a mesmerizing odyssey of fallacies, howlers and novel number tricks coupled with well-labelled diagrams and hilarious pictures which are bound to keep the reader engaged and stimulate thinking and reasoning on similar or dissimilar patterns. The book has been effectively divided into three parts. The first part is devoted to fallacies (including multivalve functions fallacies, calculus fallacies, power and root fallacies, dissection fallacies), the second part dwells on howlers and the third part lays bare useful and interesting number tricks. The book performs a minute dissection of the differences between a *simple mistake* and a *mathematical fallacy*. The authors have explained

the significance, meaning and uses of fallacies and howlers in great detail by unfolding them in a layer-by-layer manner which will help the reader in stretching his/her imagination. The book is a kaleidoscope of logic, patterns, and will help in developing a positive approach to mathematics.

Life is a game of mathematics. It may not be an exaggeration to say that Mathematics is as vast as the firmament or as unfathomable as the universe (or shall we say multiverses) and no amount of exploration will help in comprehending the entire firmament or the universe. Nonetheless, exploration is imperative and it certainly enriches us in several ways. The work under review touches on interesting and confounding concepts in mathematics which have been simplified by the authors because of their superlative presentation skills. The book will definitely help the reader in developing a deeper understanding of mathematics and provide meaningful insights into the subject. It will be of special interest to the aficionados of Mathematics. The book under review is a landmark effort. It is charming, exciting and will be of great help to exegetes, polemicists and all those who are seeking intellectual challenges. It offers much for further verification and exploration. The reader might perhaps have two misgivings after reading and comprehending the work under review. The first might be with the caption of the book *Where Mathematics Goes Wrong* because Mathematics does not go wrong, it is human thinking which might be wrong! Second, the reader might feel that more paradoxes, fallacies and howlers should have been provided because the book whets the reader's appetite for similar mathematical fallacies and paradoxes. Even so, the book is indeed a collector's item.

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