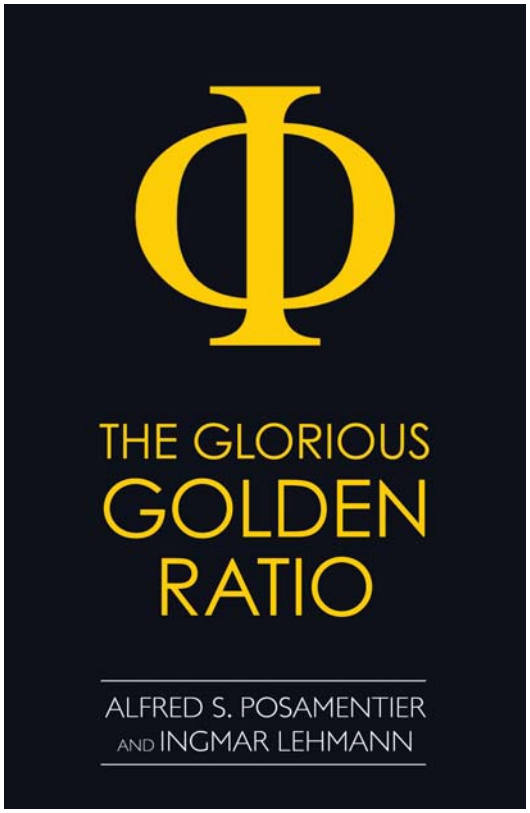
Errata and more:



The Glorious Golden Ratio

Alfred S. Posamentier & Ingmar Lehmann

Amherst (New York), Prometheus Books,

2012, 350 p.

ISBN 978-1-61614-423-4

Also available in ebook format

Contents

Introduction

Few mathematical concepts, if any, have an impact on as many aspects of our visual and intellectual lives as the golden ratio. In the simplest form, the golden ratio refers to the division of a given line segment into a unique ratio that gives us an aesthetically pleasing proportion. This proportion is formed in the following way: The longer segment (L) is to the shorter segment (S) as the entire original segment ($L+S$) is to the longer segment. Symbolically, this is written as $\frac{L}{S} = \frac{L+S}{L}$.

Let us consider a rectangle whose length is L and whose width is S, and whose dimensions are in the golden ratio. We call this a golden rectangle, which derives its name from the apparent beauty of its shape: a view supported through numerous psychological studies in a variety of cultures. The shape of the golden rectangle can be found in many architectural masterpieces as well as in famous classical works of art.

When the golden ratio is viewed in terms of its numerical value, it seems to infiltrate just about every aspect of mathematics. We have selected those manifestations of the golden ratio that allow the reader to appreciate the beauty and power of mathematics. In some cases, our endeavors will open new vistas for the reader; in other cases, they will enrich the reader's understanding and appreciation for areas of mathematics that may not have been considered from this unusual vantage point. For example, the golden ratio is a value, frequently referred to by the Greek letter ϕ (phi), which has the unique characteristic in that it differs from its reciprocal by 1, that is, $\phi - \frac{1}{\phi} = 1$. This unusual characteristic leads to a plethora of fascinating properties and genuinely connects ϕ to such familiar topics as the Fibonacci numbers and the Pythagorean theorem.

In the field of geometry, the applications of the golden ratio are practically boundless, as are their beauty. To fully appreciate their visual aspects, we will take you through journey of geometric experiences that will include some rather unusual ways of constructing the golden ratio, as well as exploring the many surprising geometric figures into which the golden ratio is embedded. All this requires of the reader is to be merely fortified with nothing more than some elementary high school geometry.

Join us now as we embark on our journey through the many wonderful appearances of the golden ratio, beginning with a history of these sightings dating from before 2560 BCE all the way to the present day. We hope that throughout this mathematical excursion, you will get to appreciate the quotation by the famous German mathematician and scientist Johannes Kepler (1571–1630), who said, "Geometry harbors two great treasures: One is the Pythagorean theorem, and the other is the golden ratio. The first we can compare with a heap of gold, and the second we simply call a priceless jewel." This "priceless jewel" will enrich, entertain, and fascinate us, and perhaps open new doors to unanticipated vistas.

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By Alfred S. Posamentier and Ingmar Lehmann
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Errata

Page 25: Figure 1-10 is missing, instead figure 1-9 appears twice. Figure 1-10 should be:

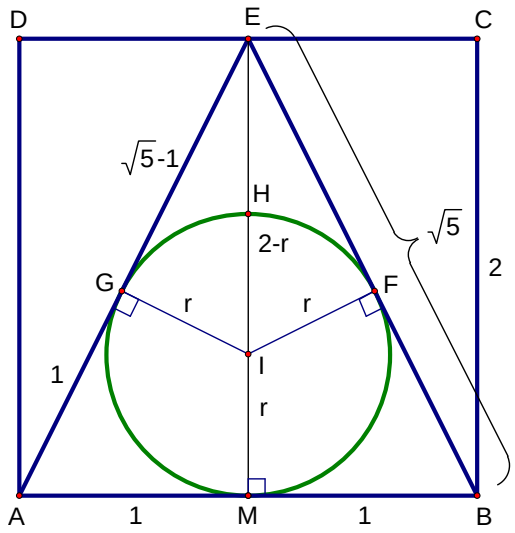

Figure 1-10

Page 169, Line 5: change “(ca. 1446–1517)” to “(ca. 1446–1514 or 1517)”.

We appreciate any comments about the book as well as any typographical errors that have not yet been detected so that they can be incorporated in future printings of the book.

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