

**ELEMENTARY GEOMETRY:
WITH APPLICATIONS IN
MENSURATION**

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Elementary Geometry: With Applications in Mensuration by Charles Davies

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CHARLES DAVIES

**ELEMENTARY GEOMETRY:
WITH APPLICATIONS IN
MENSURATION**

ELEMENTARY
GEOMETRY,

WITH

APPLICATIONS IN MENSURATION.

BY CHARLES DAVIES, L.L. D.

AUTHOR OF FIRST LESSONS IN ARITHMETIC, ELEMENTARY ALGEBRA,
PRACTICAL GEOMETRY, ELEMENTS OF SURVEYING, ELEMENTS
OF DESCRIPTIVE GEOMETRY, SHADES, SHADOWS AND
PERSPECTIVE, ANALYTICAL GEOMETRY,
DIFFERENTIAL AND INTEGRAL
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P R E F A C E .

THOSE who are conversant with the preparation of elementary text-books, have experienced the difficulty of adapting them to the various wants which they are intended to supply.

The institutions of education are of all grades, from the college to the district school, and although there is a wide difference between the extremes, the level, in passing from one grade to the other, is scarcely broken.

Each of these classes of seminaries requires text-books adapted to its own peculiar wants; and if each held its proper place in its own class, the task of supplying suitable works would not be difficult.

An indifferent college is generally inferior in the system and scope of its instruction to the academy or high school; while the district school is often found to be superior to its neighboring academy.

The Geometry of Legendre, embracing a complete course of Geometrical science, is all that is desired in the colleges and higher seminaries; while the Practical Geometry, published a few years since, meets the wants of those schools which are strictly elementary in their systems of instruction.

But still a large class of seminaries remained unsupplied with a suitable text-book on Geometry : viz., those where the pupils are carried beyond the acquisition of facts and mere practical knowledge, but have not time to go through with a full course of mathematical studies

It is for such, that the following work is designed. It has been the aim of the author to present the striking and important truths of Geometry in a form more simple and concise than could be adopted in a complete treatise, and yet to preserve the exactness of rigorous reasoning.

In this system of Geometry nothing has been taken for granted, and nothing passed over without being fully demonstrated.

In order, however, to render the applications of Geometry to the mensuration of surfaces and solids complete in itself, a few rules have been given which are not demonstrated. This forms an exception to the general plan of the work, but being added in the form of an appendix, it does not materially break its unity.

That the work may be useful in advancing the interests of education, is the hope and ardent wish of the author.

HARTFORD,

April, 1841.

CONTENTS.


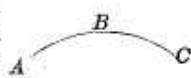
BOOK I.		Page.
DEFINITIONS and Remarks, - - - - -	- - - - -	9—16
AXIOMS, - - - - -	- - - - -	16
Properties of Polygons, - - - - -	- - - - -	17—37
BOOK II.		
Of the Circle, - - - - -	- - - - -	38
Problems relating to the First and Second Books, - - -	- - -	53—68
BOOK III.		
Ratios and Proportions, - - - - -	- - - - -	69—81
BOOK IV.		
Measurement of Areas and Proportions of Figures, - - -	- - -	82—108
Problems relating to the Fourth Book, - - - - -	- - - - -	109—113
Appendix—Regular Polygons, - - - - -	- - - - -	113—115
BOOK V.		
Of Planes and their Angles, - - - - -	- - - - -	116—125
BOOK VI.		
Of Solids, - - - - -	- - - - -	127—162
Appendix, - - - - -	- - - - -	163—164

APPLICATIONS OF GEOMETRY.		Page.
MENSURATION OF SURFACES, - - - - -		166
General Principles, - - - - -		166—167
Area of a Rectangle, Square, or Parallelogram, - - -		167—169
Area of a Triangle, - - - - -		169—170
Properties of Right Angled Triangles, - - - - -		170—174
Area of the Trapezoid, - - - - -		174—175
Area of the Quadrilateral, - - - - -		175—176
Area of the Regular Polygon, - - - - -		176—179
Area of Irregular Figures, - - - - -		179—180
Of the Circle, - - - - -		180—191
Area of an Ellipse, - - - - -		191—192
Area of Circular Rings, - - - - -		192—193
MENSURATION OF SOLIDS, - - - - -		193
General Principles, - - - - -		193—194
To find the Surface of a Prism, - - - - -		194—195
To find the Solidity of a Prism, - - - - -		195—197
To find the Surface of a Pyramid, - - - - -		197—198
To find the Surface of the Frustum of a Pyramid, - - -		198
To find the Solidity of a Pyramid, - - - - -		199—200
To find the Solidity of the Frustum of a Pyramid, - - -		200—201
MENSURATION OF THE ROUND BODIES, - - - - -		202
To find the Surface of a Cylinder, - - - - -		202—203
To find the Solidity of a Cylinder, - - - - -		203—204
To find the Surface of a Cone, - - - - -		204—205
To find the Solidity of a Cone, - - - - -		205—206
To find the Surface of the Frustum of a Cone, - - - - -		207
To find the Solidity of the Frustum of a Cone, - - - - -		208
To find the Surface of a Sphere, - - - - -		209
To find the Surface of a Spherical Zone, - - - - -		209—210
To find the Solidity of a Sphere, - - - - -		210—211
To find the Solidity of a Spherical Segment, - - - - -		212
To find the Solidity of a Spheroid, - - - - -		212—214
To find the Surface of a Cylindrical Ring, - - - - -		214—215
To find the Solidity of a Cylindrical Ring, - - - - -		215—216

ELEMENTARY
G E O M E T R Y .

BOOK I.

DEFINITIONS AND REMARKS.

1. A *Line* is length without breadth or thickness.
2. The *Extremities of a Line* are called points: and any place between the extremities is also called a point.
3. A *Straight Line* is the shortest distance between two points. Thus AB is a straight line, and is the shortest distance from A to B .

4. A *Curve Line* is one which changes its direction at every point. Thus, ABC is a curve line.

5. The word *Line*, used by itself, means a straight line; and the word *Curve*, means a curve line.
6. A *Surface* is that which has length and breadth, without height or thickness.
7. A *Plane Surface* is that which lies even throughout its whole extent, and with which a straight line, laid in any direction, will exactly coincide in its whole length.
8. A *Curved Surface* has length and breadth without thickness, and like a curve line is constantly changing its direction.
9. A *Solid* or *Body* is that which has length, breadth, and thickness. Length, breadth, and thickness, are called dimen-