

8. Out of 7 chemical elements how many ternary compounds can be formed?

9. Sum to  $n$  terms  $\frac{1}{1.3} + \frac{1}{3.5} + \frac{1}{5.7} + \frac{1}{7.9} + \&c.$

10. Expand into a series  $\frac{a}{\sqrt{b^2 - c^2 x^2}}$ , carrying the work through five terms.

11. Divide the distance 817.25 miles into three parts proportional to three given arcs, of which the first is  $12^\circ 85'$ , the second  $15^\circ 20'$ , and the third  $19^\circ 11'$ .

EUCLID. - Honors.

PROFESSOR DUPUIS, EXAMINER.

1. A triangle has six parts; if any three of these be known the triangle is completely known.

Give the exceptions to this statement.

2. Divide a given line into two parts so that the rectangle under the whole line and one of the parts shall be equal in area to the square upon the other part. (Euc. II. 11.)

Show that the same construction solves the problem:

To divide a line into two parts so that the difference of the areas of the squares upon the parts shall be equal to the area of the rectangle contained by the parts.

3. In any circle if an angle at the centre and an angle at the circumference stand upon the same arc, the angle at the centre is double the angle at the circumference. (Euc. III. 20.)

The diagonals of a quadrilateral in a circle divide the quadrilateral into two pairs of equiangular triangles.

4. A line which touches a circle is perpendicular to the diameter which is drawn to the point of contact. (Euc. III. 16.)

Two circles have the same centre, and a tangent to one circle is a chord to the other. Show that the chord is bisected at the point of contact.

5. Triangles with equal altitudes are to one another as their bases. (Euc. VI. 1.)

Triangles with equal bases are to one another as their altitudes.