University of the State of New York
Examinations Department
80th examination

PLANE GEOMETRY

Wednesday, March 16, 1892—9:15 a.m. to 12:15 p.m., only

40 credits, necessary to pass, 30

Note.—Draw carefully and neatly each figure in construction or proof, using letters instead of numerals. Arrange work logically.

1. Define and illustrate (a) plane angle; (b) angle at the center; (c) ratio; (d) similar sectors; (e) inscribed polygon.

2. If \( \alpha \) is the angle at the vertex of an isosceles triangle, what is the angle formed by the bisectors of the angles at the base?

3. An interior angle of a regular polygon is five-thirds of a right-angle; find the number of sides.

4. Prove that an inscribed angle is measured by one-half the arc intercepted between its sides (3 cases).

5. Prove that two triangles which have their sides parallel or perpendicular each to each are similar.

6. Prove that the area of a regular polygon equals one-half the product of its perimeter and apothem.

7. Solve the following and prove the correctness of each construction:
   (a) To construct, on a given straight line, a segment of a circle which shall contain a given angle.
   (b) On a given line to construct a polygon similar to a given polygon.

8. The form of the arch of a bridge is the arc of a circle whose radius is 312 feet. The height of the arch is 24 feet, find its span (the chord of the arc).