

University of the State of New York

# Examinations Department

111th examination

## PLANE GEOMETRY

Wednesday, June 14, 1893 — 9:15 a. m. to 12:15 p. m., only

100 credits, necessary to pass, 75

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

- 1 Define and illustrate *adjacent angles, rhombus, regular polygon, similar arcs, diagonal.* 20
- 2 The difference between A and B, two angles of a parallelogram adjacent to one side, is M; find an expression in terms of M for each of the angles of the parallelogram. 6
- 3 Prove that two angles whose sides are perpendicular each to each are either equal or supplementary. State when the angles are equal and when supplementary. 16
- 4 Prove that the line which divides two sides of a triangle proportionally is parallel to the third side. 14
- 5 Prove that any two similar polygons are to each other as the squares of any two homologous sides. 12
- 6 Make and demonstrate the following constructions:
  - a Through a given point draw a straight line parallel to a given straight line; 8
  - b Construct a square equivalent to the sum of two given squares. 8
- 7 A triangle, whose base is 12 feet and whose other sides are 9 feet and 15 feet, is divided into two equivalent parts by a line parallel to the base; find the length of each of the three sides of the triangle cut off. 9
- 8 Find the area of an isosceles triangle whose base is  $b$  and each of whose equal sides is  $c$ . 7