23

University of the State of New York

Examination Department

128th examination

PLANE GEOMETRY

Wednesday, March 13, 1895 — 9 : 15 a. m. to 12 : 15 p. m., only

---

100 *credits, necessary to pass,* 75

Answer questions 1-5 and five of the others but **no more.** *If more than five of these other questions are answered only the first five of these answers will be considered. Division of groups is not allowed. Draw carefully and neatly each figure in construction or proof, using letters instead of numerals. Arrange work logically. Each complete answer will receive 10 credits.*

1 Define and illustrate by figures *supplementary angles, complementary angles, rhombus, diagonal, sector of a circle.*

2–3 Prove that the side of a regular hexagon is equal to the radius of the circumscribed circle.

4–5 Prove that two triangles which are mutually equiangular are similar.

6 Through a point outside a circle construct a line tangent to the circle. Give proof.

7–8 Two triangles have an angle in each equal, the bounding sides being 8 feet and 12 feet in one case, 6 feet and 20 feet in the other; the area of the smaller triangle is 27 square feet; find the area of the larger.

9 The bisector of the vertical angle of a triangle divides the base into segments of 2 feet 3 inches and 3 feet; one of the other sides of the triangle is 18 feet; find the third side.

10 Prove that the bisectors of the three angles of a triangle meet at a point.

11–12 Construct a rectangle having a given base and equivalent to a given square.

13–14 Through a given point construct a line so that the angles which it makes with two given lines shall be equal.

15 Determine the locus of the middle points of all the chords drawn from a fixed point in the circumference of a circle.