

University of the State of New York

Examination Department

135TH EXAMINATION

PLANE GEOMETRY

Wednesday, March 25, 1896—9:15 a. m. to 12:15 p. m., only

100 credits, necessary to pass, 75

Answer 10 questions but no more. If more than 10 questions are answered only the first 10 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 altitude of a triangle, chord, regular polygon, theorem, corollary.

2-3 Prove that in equal circles angles at the center are proportional to their intercepted arcs.

4-5 Prove that the areas of any two rectangles are to each other as the products of their bases and altitudes.

6-7 Prove that a circle may be circumscribed about any regular polygon.

8 The base of a certain triangle is 8 feet; find the base of a similar triangle whose area is $2\frac{1}{4}$ times that of the former.

9 Find the radius of a circle inscribed in an equilateral triangle whose side is 15 feet.

10 The perimeter of a certain rectangle is 14 feet and its diagonal is 5 feet; find the sides of the rectangle.

11 Given the hypotenuse of a right triangle and the distance from the vertex of the right angle to the hypotenuse, construct the triangle.

12-13 Prove that the shortest distance from a point to a circumference is measured along a line passing through the center.

14 Given three lines, a , b and c , construct a fourth line x so that $x = \frac{ab}{c}$.

15 Find the area of a regular triangle whose side is s .