University of the State of New York

Examination Department

133D EXAMINATION

PLANE GEOMETRY

Wednesday, September 25, 1895—9:15 a.m. to 12:15 p.m., only

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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 *theorem, problem, inscribed angle, pentagon, axiom.*

2–3 Prove that two triangles are equal in all respects if they have the three sides of the one respectively equal to the three sides of the other.

4–5 State and prove a theorem, the conclusion of which is, *the triangles are similar.*

6–7 Prove that any two rectangles are to each other as the products of their bases and altitudes.

8 Derive an expression for the area of a regular triangle whose side is s.

9 State in words the process of constructing a circumference with a given radius and passing through two given points.

10 Find, correct to two places of decimals, the area of a square inscribed in a circle whose radius is 16 feet.

11 It is required to construct a circular arch with a span of 24 feet, the hight of its center being 8 feet above the level of the plane from which the arch springs. Find the radius of the circle.

12 Show how to draw a line parallel to a given line and passing through a given point.

13 Show how to construct a polygon similar to any given polygon and double its area.

14 In a parallelogram whose sides are 12 feet and 16 feet respectively, one of the diagonals is 25 feet; find the length of the other diagonal.

15 Show how to construct an isosceles triangle having given the base and the radius of the inscribed circle.