

University of the State of New York

Examinations Department

103d examination

PLANE GEOMETRY

August 1892 — Three hours only

40 credits, necessary to pass, 30

NOTE.—Draw carefully and neatly each figure in construction or proof, using letters, not numerals. Arrange work logically.

- 1 Define *scalene triangle, trapezium, sector, tangent line, secant.* 5
- 2 Prove that two triangles are equal in all respects if the three sides of the one are respectively equal to the three sides of the other. 5
- 3 In a triangle $A B C$, the angle B is twice A , and C is three times B ; find the number of degrees in each angle. 3
- 4 Prove that any two rectangles are to each other as the products of their bases and altitudes. 5
- 5 Find the side of a square which shall be equal in area to the sum of two rectangles whose dimensions are 25×32 ft and 20×40 ft. 3
- 6 Draw a line tangent to a given circle and passing through a given point outside the circle. Prove correctness of construction. 4
- 7 Prove that the lines joining the middle points of the sides of any quadrilateral form a parallelogram. 2
- 8 Prove that the bisectors of the angles of a triangle pass through the same point. 5
- 9 Find an expression for the area of the largest triangle that can be inscribed in a circle whose radius is r . 5
- 10 The three sides of a triangle are 7 ft, 9 ft and 12 ft. Show whether the angle opposite the greatest side is right, acute or obtuse. 3