University of the State of New York.

36th Academic Examination.

PLANE GEOMETRY.

Tuesday, Jan. 21, 1890—Time, 9:30 A. M. to 12:30 P. M., only.

36 credits, necessary to pass, 27.

1. Define and illustrate by a figure each of the following: alternate angles; tangent; secant; circle; circumference; altitude; similar polygons ................................................................. 7

2. Define theorem, problem ................................................................. 2

3. Mention four kinds of triangles named from the angles they contain ................................................................. 4

4. Prove that if two triangles have a side and the two adjacent angles of the one equal to a side, and the two adjacent angles of the other, each to each, the triangles will be equal in all their parts ................................................................. 2

5. Prove that two parallels intercept equal arcs of a circumference (three cases) ................................................................. 3

6. Prove that the square described on the hypothenuse of a right-angled triangle is equal to the sum of the squares described on the other two sides ................................................................. 3

7. Prove that triangles which are mutually equiangular are similar ................................................................. 2

8. Prove that the circumferences of circles are to each other as their radii, and the areas are to each other as the squares of their radii ................................................................. 2

9. Make the following constructions and show that each construction meets the conditions required:

   (a) To circumscribe a circle about a given triangle ....... 2
   (b) To construct a triangle equivalent to a given polygon .... 2
   (c) To trisect a right angle ........................................ 2
   (d) Through a given point without a circle to draw a tangent to the circle ........................................ 2

10. Find the circumference of a circle the side of whose inscribed square is six feet ................................................................. 3