Examinations Department

108th examination

PLANE GEOMETRY

Wednesday, March 15, 1893 — 9 : 15 a. m. to 12 : 15 p. m., only

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100 *credits, necessary to pass,* 75

NOTE — Draw carefully and neatly each figure in construction or proof, using letters instead of numerals. Arrange work logically.

1 Define and illustrate *parallels, obtuse triangle, circumscribed polygon, incommensurable ratio.* 16

2 Let *A*, *B* and *C* represent the angles of the triangle *ABC*; find, in terms of the angle C, the value of the angle formed (*a*) by the bisectors of *A* and *B*; (*b*) by the perpendiculars to the sides *AC* and *BC* respectively. 10

3 Distinguish between (*a*) equivalent and similar polygons; (*b*) theorem and problem. 8

4 Prove that an angle formed by a tangent and a chord is measured by one half the intercepted arc. 12

5 Prove that the areas of two triangles which have an angle of the one equal to an angle of the other are to each other as the products of the sides including the equal angles. 16

6 Prove that the area of a regular polygon is equal to half the product of its perimeter and apothem. 10

7 Make the following constructions and prove the correctness of each :

   a To divide a given straight line into four equal parts ; 8

   b To construct a square equivalent to a given triangle. 10

8 A line intersecting two parallel sides of a parallelogram cuts off two thirds of one of these sides and one half of the other ; what part of the area does it cut off? 10