University of the State of New York

Examinations Department

108th examination

SOLID GEOMETRY

Friday, March 17, 1893—1:15 to 4:15 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 *symmetric triedral angles, perpendicular planes, altitude of a prism, right cylinder.*
16

2 Can two vertical planes intersect? Can two horizontal planes intersect? Explain each answer.
8

3 Prove that two straight lines perpendicular to the same plane are parallel.
12

4 Prove that the sections of the lateral faces of a prism, made by parallel planes, are equal polygons.
12

5 Prove that the area generated by a straight line revolving about an axis in its plane is equal to the product of the projection of the line on the axis by the circumference whose radius is the perpendicular erected at the middle point of the line and terminated by the axis.
16

6 The diameters of two spheres are 8 inches and 18 inches respectively; find the ratio (a) of their surfaces; (b) of their volumes. State the principle according to which each ratio is obtained.
12

7 The altitude of a cone and the diameter of its base are equal to the edge of a given cube; find the ratio of the volumes of the cube and of the cone.
12

8 Find expressions representing the dimensions of a parallelopiped whose volume is v and the ratio of whose length, breadth and hight respectively is $m : n : p$.
12