New York State Education Department

204TH HIGH SCHOOL EXAMINATION

PLANE GEOMETRY

Tuesday, June 13, 1911-9.15 a.m. to 12.15 p.m., only

Write at top of first page of answer paper (a) name of school where you have studied, (b) number of weeks and recitations a week in plane geometry. The minimum time requirement is five recitations a week for a school year.

Answer eight questions, selecting two from each group.

Group Vt Prove that of two lines drawn from the same point in a perpendicular and cutting off unequal segments from the foot of the perpendicular, the more remote is the greater.

Prove that the diagonals of a rhombus bisect each other at right angles.

Prove that in the same circle or in equal circles the greater of two arcs is subtended by the greater chord.

Group II 4 Prove that the area of a regular polygon is equal to one half the product of its perimeter by its apothem.

5 Divide a line into any number of equal parts. Give proof. Construct an equilateral triangle, given the perimeter.

V6 Prove that if two chords in a circle intersect, the product of the segments of one chord is equal to the product of the segments of the other chord.

Group III 7 The upper base of an isosceles trapezoid is 8 inches, each leg is 5 inches and the projection of each leg on the base is 4 inches; find the side of a square equivalent to the trapezoid.

8 The altitude of an equilateral triangle is 9 inches; find the area of the triangle.

9 From a given point, a tangent 24 inches long is drawn to a circle whose radius is 18 inches; find the distance of the point from the center of the circle.

Group IV 10 Prove that in a rectangle not a square the bisectors of the angles inclose a square.

a point within a circle is perpendicular to the diameter at that point.

12 Prove that the ratio of the area of an inscribed equilateral triangle to the area of a circumscribed equilateral triangle is 1:4.