University of the State of New York

Examination Department

151ST EXAMINATION

PLANE GEOMETRY

Wednesday, March 23, 1898—9:15 a. m. to 12:15 p. m., on

---

100 *credits, necessary to pass,* 75

Answer eight questions including one from each of the three division If more than eight are answered only the first eight answers will be co sidered. Draw carefully and neatly each figure in construction or pro using letters instead of numerals. Arrange work logically. Ea complete answer will receive 12½ *credits.*

First division

1 Define and illustrate *vertical angles, perimeter, rhomboi trapezium, corollary.*

2 Prove that if two parallel straight lines are cut by a thi straight line the alternate interior angles are equal.

3 Prove that if two triangles have their sides respective proportional they are similar.

4 In equal circles, angles at the center have the same rat as their intercepted arcs. Prove for the case of incommens rable arcs.

5 Prove that the area of a parallelogram is equal to t product of the base by the altitude.

Second division

6 Find the area of a triangle whose sides are 51, 53, 100.

7 The sides of a triangle are 8, 10, 12; find the segments the opposite side formed by the bisector of the largest angl

8 A tangent and a secant are drawn from the same point a circle whose radius is 5 inches; the length of the tangent 12 inches; the secant passes through the center of the circl Find the distance from the point to the circumference.

9 *ABC* is an isosceles triangle inscribed in a circle; t vertical angle *A* is 30° and *D* is the middle point of the arc *A* If the line *BD* intersects side *AC* in *O*, what is the value the angle *AOD?*

10 The base of a triangle is 10 inches and its altitude 4 inche find the area of a trapezoid cut off by a line 3 inches fro the vertex.

Third division

11 Construct a line parallel to a given line and tangent to given circle.

12 Prove that the side of a regular hexagon is equal to t radius of the circumscribed circle.

13 *ABC* is a triangle in which $\angle A = \angle B = 2 \angle C$; show th if the bisector of angle *A* meets the opposite side at *D*, *AB* a mean proportional between *BD* and *BC*.

14 Prove that the bisectors of the angles of a rhomboid for a rectangle.

15 Given a line *a*; construct a line that shall be incomme surable with *a*.