Find its centre, the distance of the centre from a side, and the area of the pentagon.

10. The first, second, and third sides of a quadrilateral are respectively, 95, 285, and 120 feet. The angle contained by the first and second sides is 120°, and that by the second and third sides is 65°. Find the fourth side and the other angles. (*D*, 1899.)

11. A tower is in a level country. To determine its height a man measured its angle of elevation as observed from a certain point on the ground and found it to be 43°; and that as observed at a point 200 feet nearer to the tower he found to be 70°. How high was the tower?

12. Draw the hexagon *ABCDEF* and measure its angles, given $AB = 69$, $BC = 87$, $CD = 77$, $DE = 51$, $EF = 67$, $FA = 63$, $AE = 121$, $AD = 163$, and $BD = 149$.

13. A telephone post is 60 feet high and an electric light post is 35 feet high. The distance between them is 30 feet. How far from the shorter post must a man whose eye is 5 feet from the ground stand in order to just see the top of each post?

14. A ship sails east 20 miles, northwest 45 miles, and northeast 60 miles. Find the distance and direction from the point of starting. (*C*, 1899.)

15. Three lines *OA*, *OB*, and *OC* are drawn from *O*, making equal angles with each other. $OA = 215$ inches, $OB = 259$ inches, $OC = 307$ inches. Find the lengths of *AB*, *BC*, and *CA*. (*C*, 1903.)

16. *ABCD* is a quadrilateral. $AB = 40$, $AD = 25$, and $AC = 35$ inches. Also angle $BAC = 27°$, and angle $CAD = 43°$. Draw the quadrilateral and measure *BC*, *BD*, and *CD*. Also find the area of the quadrilateral.