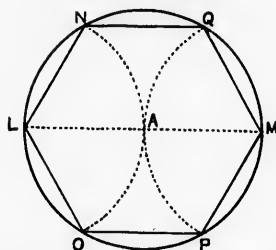


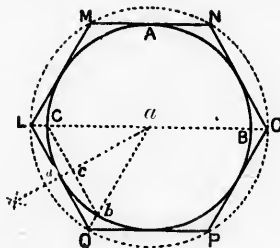
PROBLEM 57.—IN A GIVEN CIRCLE WITH CENTRE A, TO INSCRIBE A REGULAR HEXAGON.



Draw any diameter and from its extremities **L**, **M**, mark off chords **LN**, **LO**, **MQ**, **MP**, equal to the radius of the circle.

LNQMPLO will be the required hexagon.

PROBLEM 58.—TO DESCRIBE A REGULAR HEXAGON ABOUT A GIVEN CIRCLE **ABC**.



Draw any diameter **CAB** and from the point **C** in the circumference of the circle set off the chord **Cb** equal to the radius **Ca**.

Bisect **Cb** by a perpendicular, cutting the circle in **d**.

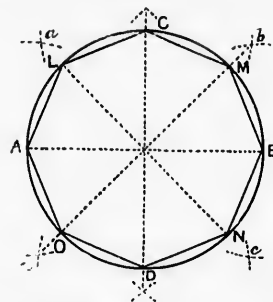
At **d** draw the tangent **LdQ**, meeting the diameter **BC** produced in **L**.

From **a** as centre with **aL** as radius, describe a circle and produce the diameter of the given circle **CB** to meet the circumference of the larger one in **O**.

From **L** and **O** as centres with **La** as radius, mark the points **M**, **N**, **Q**, **P**.

The lines joining these points will be tangent to the given circle and will form the required hexagon.

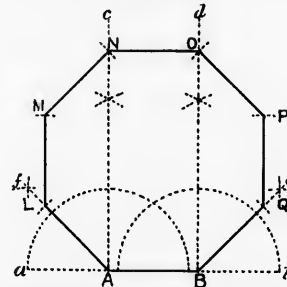
PROBLEM 59.—IN A GIVEN CIRCLE **ACB** TO DESCRIBE AN OCTAGON.



Draw the diameters **AB**, **CD**, at right angles to each other. Bisect the quadrants in **L**, **M**, **N** and **O**.

Join **AL**, **LC**, etc., to form the required octagon.

PROBLEM 60.—UPON A GIVEN STRAIGHT LINE **AB** TO CONSTRUCT AN OCTAGON.



At the extremities **A** and **B** erect perpendiculars **Ac**, **Bd**, to the given line. Produce **AB** to **a** and **b**, and bisect the angles **aAc**, **bBd** by **Af** and **Bg** respectively.

Make **AL** and **BQ** equal to **AB**.

Through **L** and **Q** draw **LM**, **QP**, parallel to **Ac** and equal to **AB**, and through **M** and **P** draw lines parallel to **BQ** and **AL** respectively and meeting **Ac** and **Bd** in **N** and **O** respectively. **MN** and **OP** will be equal to **AB** and on joining **NO** the required octagon will be completed.