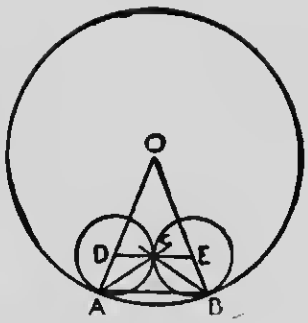
preceding is as follows: Suppose the number of small circles is to be 8, 9, . . . Let AOB be the 8th, 9th, . . . , as the case may be, part of 360°. Bisect the angles **OAB, OBA** by **AC, BC**. Through **C** draw **DCE** parallel to **AB**. Then evidently **DA, DC, EB, EC** are all equal, and the circle described with **D** as centre, and **DA** or **DC** as radius, will touch the circle described with **E** as centre, and **EB** or **EC** as radius; and both circles will touch the large one.



Exercises.

1. In a circle of radius $1\frac{1}{2}$ in., inscribe a regular hexagon.

2. Describe a regular hexagon, the sides being 35 millimetres.

3. Describe a regular hexagon with side of 2 in. Join alternate angles, so obtaining a star-shaped figure with six points. What is the six-sided figure at centre of this? Apply tests. What are the various triangles in the figure? Apply tests.

4. In the figure of the preceding question, at what various angles are the sides of the hexagon at centre inclined to any side of the original hexagon?

5. About a circle of radius 40 millimetres describe a hexagon with angles 90°, 100°, 110°, 130°, 140°, 150°.

6. A regular hexagon is described about a circle of radius 2 in. Show that the side of the hexagon is $\frac{4}{\sqrt{3}}$ in.

7. The side of a regular hexagon is 2 in. What is the length of the radius of the circle inscribed in it?

8. Inscribe a regular octagon in a circle of radius 32 millimetres. Test accuracy of construction.

9. In a circle of radius 50 millimetres, inscribe a regular octagon, ABCDEFGH. Join AD, DG, GB, ... , each time passing over two angles, and so obtaining a star-shaped figure with eight points. What is the figure formed at centre? Apply tests.