

PROBLEM XXXV.

Let the radius of the circle circumscribed to a polygon to be represented by R ; the radius of the inscribed circle to be represented by r ; and the surface of the polygon to be expressed by S .—Then, having given the three sides a, b, c of a triangle, and S , to find R and r .

$$R = \frac{abc}{4S} \quad \text{N. S.}$$

$$r = \frac{2S}{a+b+c} \quad \text{N. S.}$$

PROBLEM XXXVI.

Having given the side a of an equilateral triangle, to find R , r and S (See Problem XXXV.).

$$R = \sqrt{\frac{a^2}{3}}$$

$$r = \sqrt{\frac{a^2}{3} - \frac{a^2}{4}}$$

$$S = \frac{a^2 \sqrt{3}}{4}$$

PROBLEM XXXVII.

Having given the side a of a regular hexagon, find R , r and S (See Problem XXXV.).

$$R = a$$

$$r = \sqrt{a^2 - \frac{a^2}{4}}$$

$$S = \frac{3a^2 \sqrt{3}}{2}$$

PROBLEM XXXVIII.

Having given the side a of a square, to find R and r (See XXXV.).

$$R = \sqrt{\frac{2a^2}{4}} \quad \text{N. S.}$$

$$= \sqrt{a \times \frac{2a}{4}} \quad \text{G. S.}$$

$$r = \sqrt{\frac{a^2}{4}} \quad \text{N. S.}$$

$$= \sqrt{a \times \frac{a}{4}} \quad \text{G. S.}$$