$$x = \sqrt{\frac{p\ (m+n)}{2}} \quad \text{N. S.}$$

$$= \sqrt{p \times \frac{m+n}{2}}$$

make $\frac{m+n}{2} = y$ by drawing a line parallel to the bases, at equal distance from each; then

$$x = \sqrt{p\ y} \qquad \text{G. S.}$$

PROBLEM X.

To find the side x of a square x^2, equivalent to a given regular polygon.

Let c = the side of the polygon; a = the number of sides; and r = the apothem; then

$$x = \sqrt{\frac{a\ c\ r}{2}} \qquad \text{N. S.}$$

$$= \sqrt{\frac{a}{2}\ c \times r} \qquad \text{G. S.}$$

N.B.—a being a given number, then $\frac{a}{2}\ c$ is only one literal factor, and we have the 3rd formula.

PROBLEM XI.

To find the side x of a square x^2, equivalent to a given triangle $\frac{a\ h}{2}$, rectangle $b\ d$, trapezoid $\frac{p\ (m+n)}{2}$, and regular pentagon $\frac{5\ c\ r}{2}$

$$x = \sqrt{\frac{a\ h}{2} + b\ d + p\ \frac{(m+n)}{2} + \frac{5\ c\ r}{2}} \quad \text{N. S.}$$

Transform the four expressions which are under the radical, into equivalent squares, y^2, y'^2, y''^2, y'''^2, by the Problems VII., VIII., IX., X., then

$$x = \sqrt{y^2 + y'^2 + y''^2 + y'''^2}$$

make $y^2 + y'^2 = z^2$ (See Intro. IV., Ex. 6) then

$$x = \sqrt{z^2 + y''^2 + y'''^2}$$

making $z^2 + y''^2 = z'^2$, then

$$x = \sqrt{z'^2 + y'''^2} \qquad \text{G. S.}$$