

Program MATFYZ umí vypočítat tyto vzorce (matematika - plošné obrazce)

Čtverec

$$\begin{aligned} a &= \sqrt{\frac{u^2}{2}} & a &= \frac{O}{4} & a &= \sqrt{S} \\ u &= \sqrt{2a^2} & u &= \sqrt{2S} & u &= \sqrt{2\left(\frac{O}{4}\right)^2} \\ S &= a^2 & S &= \frac{u^2}{2} & S &= \left(\frac{O}{4}\right)^2 \\ O &= 4a & O &= 4\sqrt{\frac{u^2}{2}} & O &= 4\sqrt{S} \end{aligned}$$

Kosočtverec

$$\begin{aligned} S &= \frac{u_1 \times u_2}{2} & S &= aV & O &= 4a \\ u_1 &= \frac{2S}{u_2} & u_2 &= \frac{2S}{u_1} & V &= \frac{S}{a} \\ a &= \frac{O}{4} & a &= \frac{S}{V} \end{aligned}$$

Lichoběžník

$$\begin{aligned} a &= O - b - c - d & a &= \frac{2S}{V} - c \\ O &= a + b + c + d \\ b &= O - a - c - d \\ c &= O - b - a - d & c &= \frac{2S}{V} - a \\ d &= O - b - c - a & S &= \frac{V(a+c)}{2} \end{aligned}$$

Kruh

$$\begin{aligned} d &= \sqrt{\frac{4S}{\pi}} & d &= \frac{O}{\pi} & d &= 2r \\ r &= \sqrt{\frac{S}{\pi}} & r &= \frac{O}{2\pi} & r &= \frac{d}{2} \\ S &= \frac{\pi d^2}{4} & S &= \frac{Od}{4} & S &= \pi r^2 \\ O &= 2\sqrt{\pi S} & O &= \pi d & O &= 2\pi r \end{aligned}$$

Obdelník

$$\begin{aligned} u &= \sqrt{a^2 + b^2} & S &= ab & O &= 2(a+b) \\ a &= \frac{S}{b} & a &= \sqrt{u^2 - b^2} & a &= \frac{O}{2} - b \\ b &= \frac{S}{a} & b &= \frac{O}{2} - a & b &= \sqrt{u^2 - a^2} \end{aligned}$$

Rovnoběžník

$$\begin{aligned} u_1 &= \sqrt{2(a^2 + b^2) - u_2^2} & V_a &= \frac{S}{a} & O &= 2(a+b) \\ u_2 &= \sqrt{2(a^2 + b^2) - u_1^2} & V_b &= \frac{S}{b} & a &= \frac{O}{2} - b \\ a &= \sqrt{\frac{u_1^2 + u_2^2}{2} - b^2} & S &= V_b \times b & b &= \frac{O}{2} - a \\ b &= \sqrt{\frac{u_1^2 + u_2^2}{2} - a^2} & S &= V_a \times a & a &= \frac{S}{V_a} \\ b &= \frac{S}{V_b} \end{aligned}$$

Pravidelný mnohoúhelník

$$\begin{aligned} R &= \sqrt{\frac{a^2}{4} + r^2} & r &= \frac{S}{\frac{1}{2}na} & S &= \frac{Or}{2} & a &= \frac{O}{n} \\ n &= \frac{S}{\frac{1}{2}ar} & a &= 2\sqrt{R^2 - r^2} & a &= \frac{S}{\frac{1}{2}nr} & n &= \frac{O}{a} \\ O &= na \end{aligned}$$

Trojúhelník

$$\begin{aligned} O &= \frac{S}{\frac{1}{2}r} & a &= \frac{4SR}{bc} & a &= \frac{2S}{V} & a &= O - b - c \\ c &= O - b - a & R &= \frac{abc}{4S} & c &= \frac{4SR}{ba} & S &= \frac{abc}{4R} \\ r &= \frac{S}{\frac{1}{2}O} & V &= \frac{S}{\frac{1}{2}a} & S &= \frac{aV}{2} & b &= \frac{4SR}{ac} \\ O &= a + b + c & b &= O - a - c \end{aligned}$$

a,b,c,d - strany (mimo kruhu - d=průměr) R=poloměr kružnice opsané V=výška S=obsah O=obvod

r - poloměr (prav.mnohoúhelník, trojúhelník r=poloměr kružnice vepsané) u=úhlopříčka

Va=výška na stranu a Vb=výška na stranu b u1=úhlopříčka - AC u2=úhlopříčka - BD

r

$$D=2(a+b)$$

$$=O-b-c$$