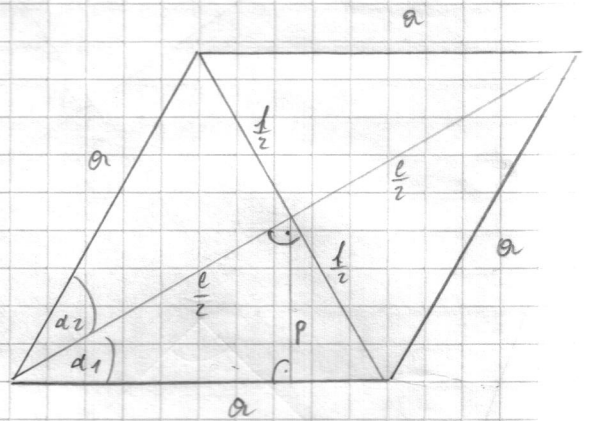


14. Hausübung

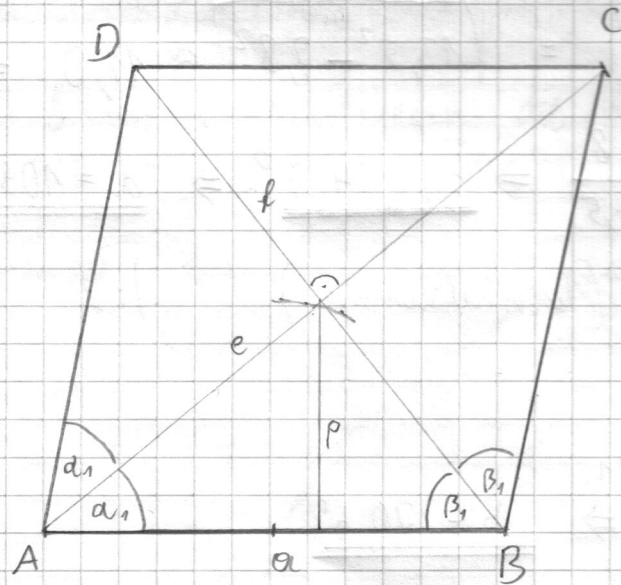
5.24 c) Rhombus $a = 12,2$ $e = 19,2$

Ges.: α, β, f, p



Konstruktion: M 1:2

$$\frac{e}{2} = 9,6$$



$$\frac{f}{2} = \sqrt{a^2 - \left(\frac{e}{2}\right)^2} = \sqrt{12,2^2 - 9,6^2} \approx 7,5$$

$$\Rightarrow \underline{\underline{f = 15}}$$

$$\cos \alpha_1 = \frac{\frac{e}{2}}{a} = \frac{9,6}{12,2} \Rightarrow \underline{\underline{\alpha_1 \approx 38,1^\circ}}$$

$$\sin \beta_1 = \frac{\frac{e}{2}}{a} = \frac{9,6}{12,2} \Rightarrow \underline{\underline{\beta_1 \approx 51,9^\circ}} \quad (\text{od. Winkelsumme})$$

$$\alpha = 2 \cdot \alpha_1 \Rightarrow \underline{\underline{\alpha = 76,2^\circ}}$$

$$\beta = 2 \cdot \beta_1 \Rightarrow \underline{\underline{\beta = 103,8^\circ}}$$

$$\sin \alpha_1 = \frac{p}{\frac{e}{2}}$$

$$\sin 38,1^\circ = \frac{p}{9,6} \quad | \cdot 9,6$$

$$9,6 \cdot \sin 38,1^\circ = p \Rightarrow \underline{\underline{p \approx 5,9}}$$

e) $a = 6,5 \quad f = 9,2$

Ges.: α, β, e, p

Skizze: s. oben

Konstruktion: nächste Seite

$$\frac{f}{2} = 4,6$$

$$\frac{e}{2} = \sqrt{a^2 - \left(\frac{f}{2}\right)^2} = \sqrt{6,5^2 - 4,6^2} \approx 4,6$$

$$\Rightarrow \underline{\underline{e = 9,2}} \quad (\text{Hier könnte man schon erkennen, dass es sich um ein Quadrat handelt, da } e = f)$$

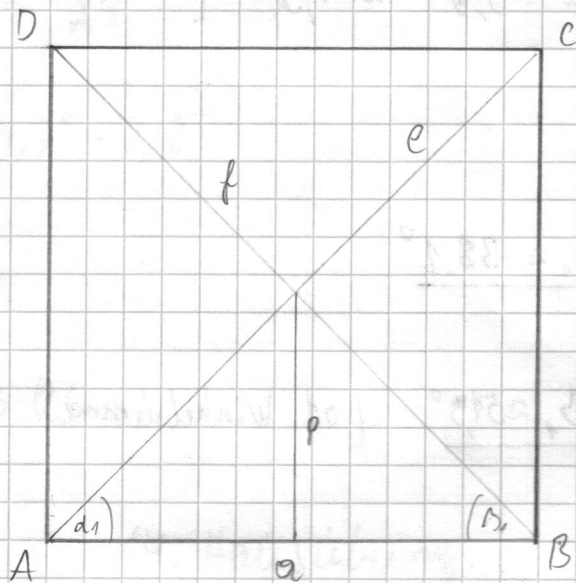
$$\sin \alpha_1 = \frac{\frac{f}{2}}{a} = \frac{4,6}{6,5} \Rightarrow \underline{\underline{\alpha_1 \approx 45^\circ}} \quad \cos \beta_1 = \frac{\frac{f}{2}}{a} = \frac{4,6}{6,5} \Rightarrow \underline{\underline{\beta_1 \approx 45^\circ}}$$

$$\alpha = 2 \cdot \alpha_1 \Rightarrow \underline{\underline{\alpha = 90^\circ}} \quad \beta = 2 \cdot \beta_1 \Rightarrow \underline{\underline{\beta = 90^\circ}}$$

$$p = 4,6 \cdot \sin 45^\circ$$

$$\underline{\underline{p \approx 3,3}}$$

Konstruktion:



15. Hausübung

5.26 a) Deltoïd:

$$b = 76,3 \quad f = 120,6 \quad \alpha = 57,7^\circ$$

Ges.: $a, e, \beta, \gamma, \delta$

$$\cos \beta_1 = \frac{\frac{f}{2}}{a} = \frac{60,3}{57,7}$$

$$\cos \beta_2 = \frac{\frac{f}{2}}{b} = \frac{60,3}{76,3} \Rightarrow \underline{\beta_2 \approx 37,8^\circ}$$

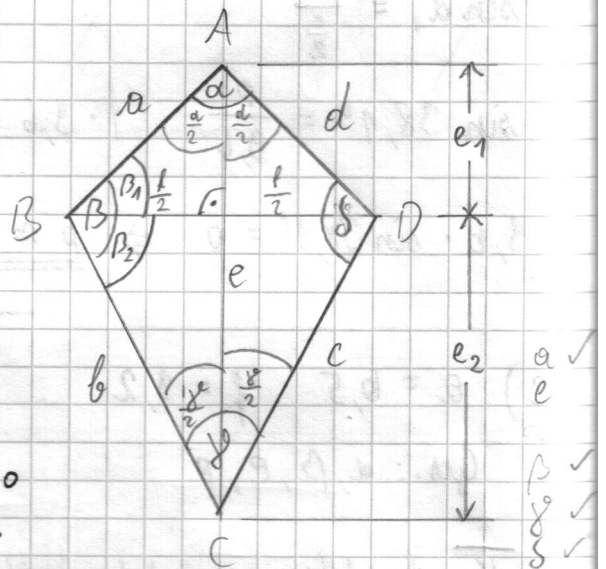
$$\frac{\gamma}{2} = 90^\circ - 37,8^\circ = 52,2^\circ \Rightarrow \underline{\underline{\gamma = 104,4^\circ}}$$

$$\beta_1 = 90^\circ - \frac{\alpha}{2} = 90^\circ - 28,85^\circ = \underline{\underline{61,15^\circ}}$$

$$\beta = 61,15^\circ + 37,8^\circ = \underline{\underline{98,95^\circ}} = \delta$$

$$\sin \frac{\alpha}{2} = \frac{\frac{f}{2}}{a}$$

$$\sin 28,85^\circ = \frac{60,3}{a} \quad | \cdot a$$



$$a \cdot \sin 28,85^\circ = 60,3 \quad | : \sin 28,85^\circ$$

$$a = \frac{60,3}{\sin 28,85^\circ} \approx \underline{\underline{125,0}}$$

$$e_1 = \sqrt{a^2 - \left(\frac{b}{2}\right)^2} = \sqrt{125^2 - 60,3^2} \approx \underline{\underline{109,5}}$$

$$e_2 = \sqrt{b^2 - \left(\frac{b}{2}\right)^2} = \sqrt{76,3^2 - 60,3^2} \approx \underline{\underline{46,8}}$$

$$e = e_1 + e_2 = \underline{\underline{156,3}}$$

Zusammenfassung:

$$a = d = 125,0$$

$$e = 156,3$$

$$\beta = \delta = 98,95^\circ$$

$$\gamma = 104,4^\circ$$
