Berechnen Sie die fehlenden Seiten und Winkel der folgenden gleichschenkligen Dreiecke:

a) $s = 25, \quad g = 14$

b) $s = 9.3, \quad \beta = 70°$

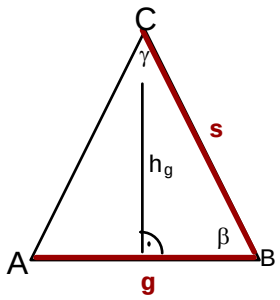
c) $s = 40.3, \quad h_s = 11.5$

d) $h_g = 57.1, \quad \gamma = 57.2°$

e) $h_s = 34.2, \quad \gamma = 51°$

Die folgenden Aufgaben lassen sich auf verschiedene Arten lösen.
Alle Resultate sind gerundet. Ich habe aber für weitere Rechnungen die exakten Werte benutzt, was kleine Abweichungen im Resultat erklären mag.

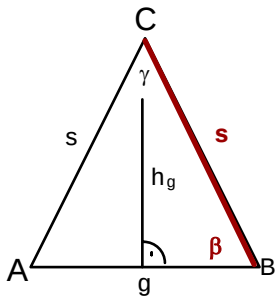
a) $s = 25, \quad g = 14$



$$\cos\alpha = \frac{g/2}{s} \quad \Rightarrow \quad \alpha = 73.74°$$

$$\gamma = 180° - \alpha - \beta = 32.52°$$

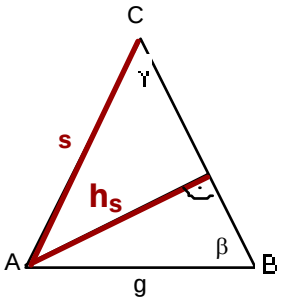
b) $s = 9.3, \quad \beta = 70°$



$$\cos\beta = \frac{g/2}{s} = \frac{g}{2s} \quad \Rightarrow \quad g = 2s\cos\beta = 6.36$$

$$\gamma = 180° - 2\beta = 40°$$

c) $s = 40.3, \quad h_s = 11.5$

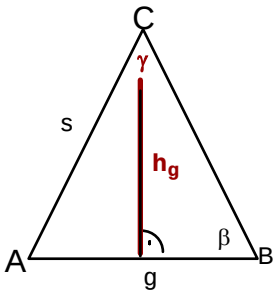


$$\sin\gamma = \frac{h_s}{s} \quad \Rightarrow \quad \gamma = 16.58°$$

$$\beta = \alpha = \frac{180° - \gamma}{2} = 81.71°$$

$$\sin\beta = \frac{h_s}{g} \quad \Rightarrow \quad g = \frac{h_s}{\sin\beta} = 11.62$$

d) $h_g = 57.1, \quad \gamma = 57.2°$

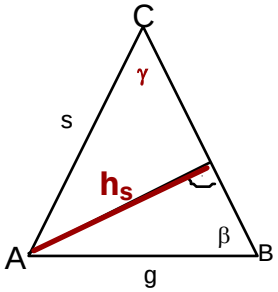


$$\beta = \alpha = \frac{180° - \gamma}{2} = 61.4°$$

$$\sin\beta = \frac{h_g}{s} \quad \Rightarrow \quad s = \frac{h_g}{\sin\alpha} = 65.04°$$

$$\cos\beta = \frac{\frac{g}{2}}{s} = \frac{g}{2s} \quad \Rightarrow \quad g = 2s\cos\alpha = 62.26°$$

e) $h_s = 34.2, \quad \gamma = 51°$



$$\beta = \alpha = \frac{180° - \gamma}{2} = 64.5$$

$$\sin\gamma = \frac{h_s}{s} \quad \Rightarrow \quad s = \frac{h_s}{\sin\gamma} = \mathbf{4}4.01$$

$$\sin\beta = \frac{h_s}{g} \quad \Rightarrow \quad g = \frac{h_s}{\sin\beta} = 37.89°$$