

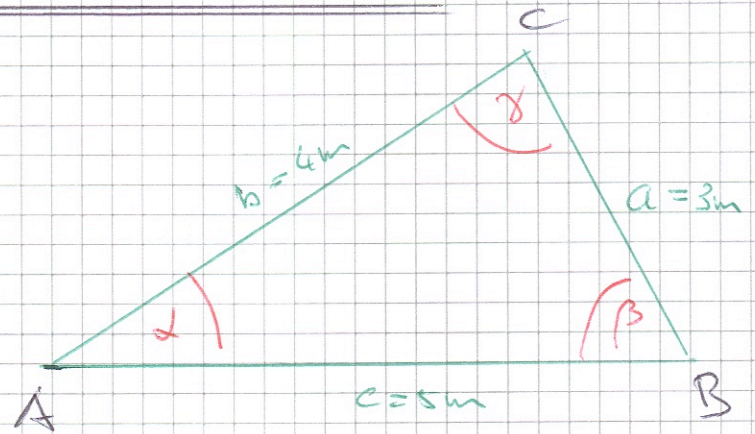
Gest BM 8M, 31.1.14

①

Seiten sind 3, 4, 5

$$\Rightarrow \gamma = 90^\circ!$$

$$(3^2 + 4^2 = 5^2)$$



$$c^2 = a^2 + b^2 - 2ab \cdot \cos \gamma$$

$$c^2 - a^2 - b^2 = -2ab \cdot \cos \gamma$$

$$- \frac{c^2 - a^2 - b^2}{2ab} = \cos \gamma$$

$$- \frac{5^2 - 3^2 - 4^2}{2 \cdot 3 \cdot 4} = 0 = \cos \gamma \quad / \text{ arccos}$$

$$\text{arccos}(0) = 90^\circ = \gamma$$

$$\sin \alpha = \frac{GK}{4} = \frac{a}{c}$$

$$\alpha = \text{arcsin}\left(\frac{a}{c}\right) =$$

$$\alpha = \text{arcsin}\left(\frac{3}{5}\right) = \underline{\underline{36.87^\circ}}$$

$$\cos \beta = \frac{AK}{4} = \frac{3}{5}$$

$$\beta = \text{arccos}\left(\frac{3}{5}\right) = \underline{\underline{53.13^\circ}}$$

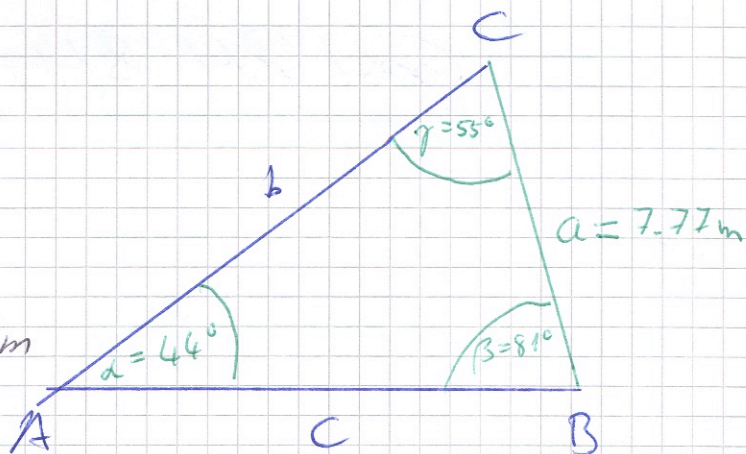
2

$$\frac{a}{\sin \alpha} = \frac{b}{\sin \beta} \quad | \cdot \sin \beta$$

$$\frac{a \cdot \sin \beta}{\sin \alpha} = b = 11.0476 \text{ m}$$

$$b \approx 11.05 \text{ m}$$

$$\approx \underline{\underline{11.1 \text{ m}}}$$



$$\frac{a}{\sin \alpha} = \frac{c}{\sin \gamma} \quad | \cdot \sin \gamma$$

$$\frac{a \cdot \sin \gamma}{\sin \alpha} = c = 9.16251 \text{ m}$$

$$\approx \underline{\underline{9.163 \text{ m} \approx 9.16 \text{ m} \approx 9.2 \text{ m}}}$$

3

$$\frac{c}{\sin \gamma} = \frac{b}{\sin \beta} \quad | \cdot \frac{1}{c}$$

$$\frac{\sin \gamma}{c} = \frac{\sin \beta}{b}$$

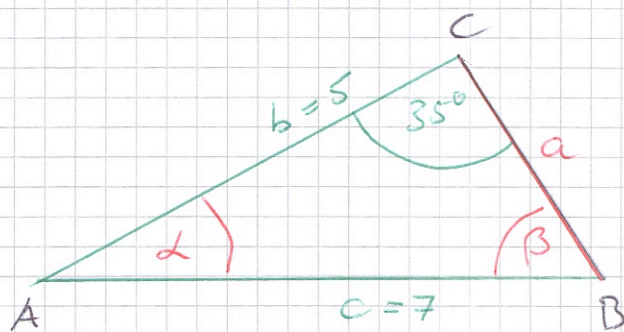
$$\frac{b \cdot \sin \gamma}{c} = \sin \beta$$

$$\arcsin\left(\frac{b \cdot \sin \gamma}{c}\right) = \beta = 24.1858^\circ$$

$$\approx 24.19^\circ$$

$$\approx \underline{\underline{24.2^\circ}}$$

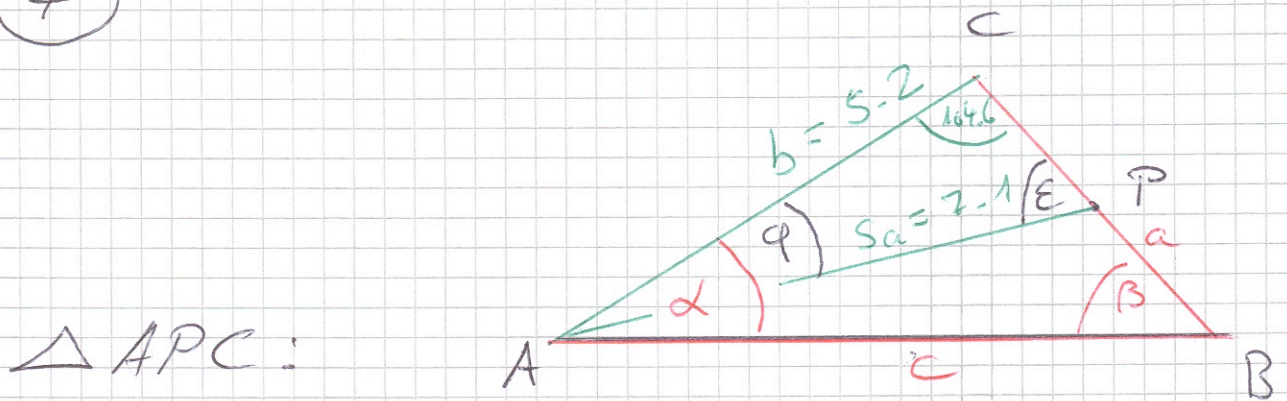
$$\underline{\underline{\alpha = 120.814^\circ}}$$



$$\frac{a}{\sin \alpha} = \frac{b}{\sin \beta}$$

$$a = \frac{b \cdot \sin \alpha}{\sin \beta} \approx 10.4813 \approx \underline{\underline{10.48 \text{ m}}}$$

4



$\triangle APC$:

$$\frac{\sin \varepsilon}{b} = \frac{\sin \gamma}{S_a}$$

$$\sin \varepsilon = \frac{b \cdot \sin \gamma}{S_a}$$

$$\varepsilon = \arcsin(\quad) = 45.13^\circ$$

\overline{CP} berechnen: ($\overline{CP} = \frac{1}{2} \cdot a$)

$$\varphi = 180^\circ - 104.6^\circ - \varepsilon = \underline{\underline{30.267^\circ}}$$

$$\frac{\overline{CP}}{\sin \varphi} = \frac{S_a}{\sin \gamma}$$

$$\overline{CP} = \frac{S_a \cdot \sin \varphi}{\sin \gamma} = 3.698 \text{ m}$$

$$2 \overline{CP} = \underline{\underline{a \approx 7.396 \text{ m}}}$$

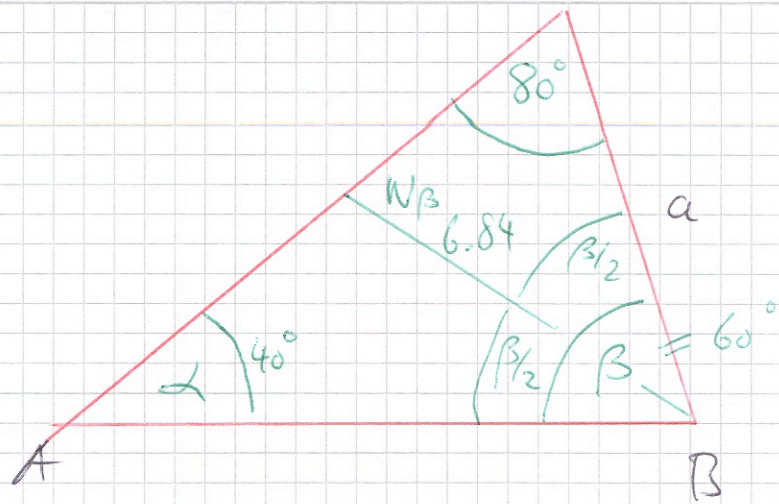
$$c = \sqrt{a^2 + b^2 - 2ab \cdot \cos \gamma} \approx \underline{\underline{10.056 \text{ m}}}$$

$$\frac{\sin \alpha}{a} = \frac{\sin \gamma}{c}$$

$$\sin \alpha = \frac{a \cdot \sin \gamma}{c}$$

$$\alpha = \arcsin\left(\frac{a \cdot \sin \gamma}{c}\right) = \underline{\underline{45.37^\circ}}, \beta = 30.06^\circ$$

5



$$\frac{W_B}{\sin \gamma} = \frac{a}{\sin(180^\circ - \gamma - B/2)}$$
$$a = \frac{W_B \cdot \sin(180^\circ - \gamma - B/2)}{\sin \gamma}$$
$$= \frac{6.84 \cdot \sin(180^\circ - 80^\circ - 30^\circ)}{\sin 80^\circ} = 6.53 \text{ m}$$

oder:

$$\frac{W_B}{\sin \alpha} = \frac{c}{\sin(180^\circ - \alpha - B/2)}$$
$$c = \frac{6.84 \cdot \sin(180^\circ - 40^\circ - 30^\circ)}{\sin 40^\circ} = 9.999$$

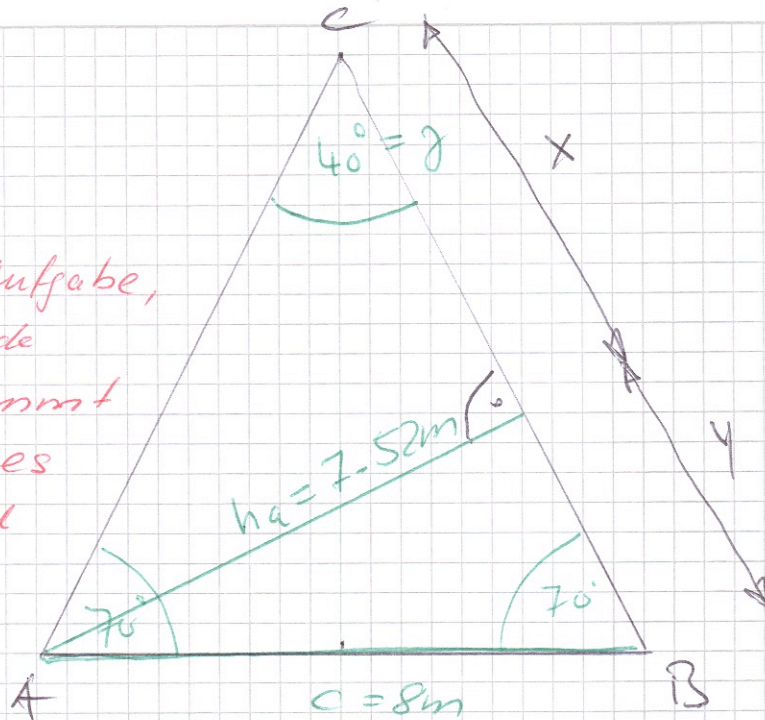
≈ 10 m

$$\frac{b}{\sin 60} = \frac{a}{\sin 40}$$

$$b = \frac{a \cdot \sin 60}{\sin 40} = \underline{\underline{8.79 \text{ m}}}$$

6

Achtung:
Schlechte Aufgabe,
da Dreieck
überbestimmt
ist, d.h. es
ist zu viel
gegeben!



~~sin alpha =~~

$$\tan \alpha = \frac{h_a}{x}$$

$$x = \frac{h_a}{\tan \alpha} = \frac{7.52}{\tan 40^\circ} = 8.96$$

$$\tan \beta = \frac{7.52}{y}$$

$$y = \frac{7.52}{\tan \beta} = \frac{7.52}{\tan 70^\circ} = 2.74$$

$$b = a = x + y = \underline{\underline{11.7m}}$$

$$\sin \beta = \frac{h_a}{c}$$

$$c = \frac{h_a}{\sin \beta} = \frac{7.52}{\sin 70^\circ} = \underline{\underline{8m}}$$

oder: $\sin \alpha = \frac{h_a}{b} \rightarrow b = \frac{h_a}{\sin \alpha} = \frac{7.52}{\sin 40^\circ} = 11.7$