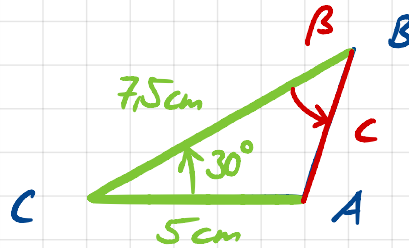


3 — Berechne die in Klammern angegebenen Größen des Dreiecks ABC.

- a) $a = 7,5 \text{ cm}$; $b = 5 \text{ cm}$; $\gamma = 30^\circ$ (A; c; β)
 b) $c = 6 \text{ cm}$; $a = 4 \text{ cm}$; $\beta = 58,21^\circ$ (A; b; α)
 c) $A = 12 \text{ cm}^2$; $c = 6 \text{ cm}$; $\beta = 48,59^\circ$ (a; b; α)
 d) $A = 20 \text{ cm}^2$; $a = 7,5 \text{ cm}$; $\beta = 80^\circ$ (b; c; α ; h_c)

a) Skizze:



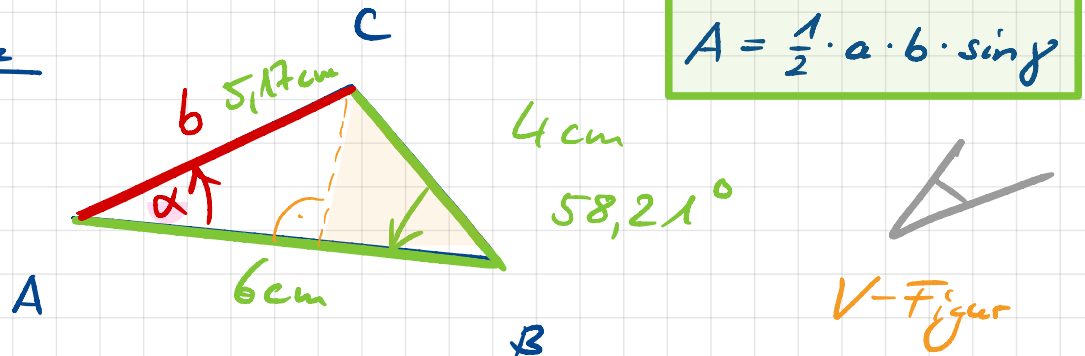
- $A = \frac{1}{2} \cdot a \cdot b \cdot \sin \gamma = \frac{1}{2} \cdot 7,5 \text{ cm} \cdot 5 \text{ cm} \cdot \sin 30^\circ$
 $= \underline{\underline{9,38 \text{ cm}^2}}$
- $c = \sqrt{7,5^2 + 5^2 - 2 \cdot 7,5 \cdot 5 \cdot \cos 30^\circ} \text{ cm} = \underline{\underline{4,04 \text{ cm}}}$
- $(5 \text{ cm})^2 = (4,04 \text{ cm})^2 + (7,5 \text{ cm})^2 - 2 \cdot 4,04 \text{ cm} \cdot 7,5 \text{ cm} \cdot \cos \beta$

$$\beta = \cos^{-1} \left(\frac{5^2 - 4,04^2 - 7,5^2}{-2 \cdot 4,04 \cdot 7,5} \right) = \underline{\underline{\quad}}$$

3) Berechne die in Klammern angegebenen Größen des Dreiecks ABC.

- a) $a = 7,5 \text{ cm}$; $b = 5 \text{ cm}$; $\gamma = 30^\circ$ (A; c; β)
 b) $c = 6 \text{ cm}$; $a = 4 \text{ cm}$; $\beta = 58,21^\circ$ (A; b; α)
 c) $A = 12 \text{ cm}^2$; $c = 6 \text{ cm}$; $\beta = 48,59^\circ$ (a; b; α)
 d) $A = 20 \text{ cm}^2$; $a = 7,5 \text{ cm}$; $\beta = 80^\circ$ (b; c; α ; h_c)

b) Skizze



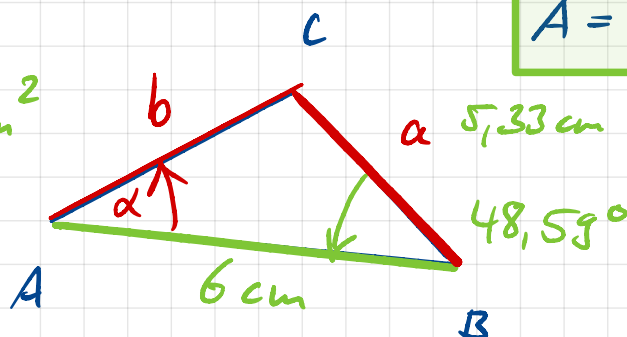
- $A = \frac{1}{2} \cdot 6 \text{ cm} \cdot 4 \text{ cm} \cdot \sin 58,21^\circ = \underline{\underline{10,2 \text{ cm}^2}}$
- $b = \sqrt{(4 \text{ cm})^2 + (6 \text{ cm})^2 - 2 \cdot 4 \text{ cm} \cdot 6 \text{ cm} \cdot \cos 58,21^\circ}$
 $b = \sqrt{4^2 + 6^2 - 2 \cdot 4 \cdot 6 \cdot \cos 58,21^\circ} \text{ cm} = \underline{\underline{5,17 \text{ cm}}}$
- $\frac{\sin \alpha}{4 \text{ cm}} = \frac{\sin 58,21^\circ}{5,17 \text{ cm}}$ "eindeutig nach SSW-Satz"
 $\alpha = \sin^{-1} \left(\frac{\sin 58,21^\circ}{5,17 \text{ cm}} \cdot 4 \text{ cm} \right) = \underline{\underline{41,12^\circ}}$

3. Berechne die in Klammern angegebenen Größen des Dreiecks ABC.

- a) $a = 7,5 \text{ cm}$; $b = 5 \text{ cm}$; $\gamma = 30^\circ$ (A; c; β)
 b) $c = 6 \text{ cm}$; $a = 4 \text{ cm}$; $\beta = 58,21^\circ$ (A; b; α)
 c) $A = 12 \text{ cm}^2$; $c = 6 \text{ cm}$; $\beta = 48,59^\circ$ (a; b; α)
 d) $A = 20 \text{ cm}^2$; $a = 7,5 \text{ cm}$; $\beta = 80^\circ$ (b; c; α ; h_c)

c) Skizze

$A = 12 \text{ cm}^2$



$$A = \frac{1}{2} \cdot a \cdot b \cdot \sin \gamma$$

• $12 \text{ cm}^2 = \frac{1}{2} \cdot 6 \text{ cm} \cdot a \cdot \sin 48,59^\circ$

$a = \frac{12 \text{ cm}^2}{\left(\frac{1}{2} \cdot 6 \text{ cm} \cdot \sin 48,59^\circ \right)} = \underline{\underline{5,33 \text{ cm}}}$
 $12 \text{ cm}^2 : \frac{1}{2} : 6 \text{ cm} : \sin 48,59^\circ$

• $b = \sqrt{5,33^2 + 6^2 - 2 \cdot 5,33 \cdot 6 \cdot \cos 48,59^\circ} \text{ cm} = \underline{\underline{4,7 \text{ cm}}}$

• $\alpha = \cos^{-1} \left(\frac{5,33^2 - 4,7^2 - 6^2}{-2 \cdot 4,7 \cdot 6} \right) = \underline{\underline{58,25^\circ}}$