

LÖSUNGEN

$$1) a) \beta = 180^\circ - 29^\circ - 90^\circ = \underline{61^\circ}$$

$$\sin 29^\circ = \frac{a}{5} \quad | \cdot 5$$

$$5 \cdot \sin 29^\circ = a$$

$$\underline{2,42 \text{ cm} = a}$$

$$\cos 29^\circ = \frac{b}{5} \quad | \cdot 5$$

$$5 \cdot \cos 29^\circ = b$$

$$\underline{4,37 \text{ cm} = b}$$

$$b) \sin \gamma = \frac{6}{10} = 0,6$$

$$\Rightarrow \gamma = \sin^{-1}(0,6) = \underline{36,87^\circ}$$

$$\beta = 180^\circ - 90^\circ - 36,87^\circ = \underline{53,13^\circ}$$

c)

$$\sin \alpha = \frac{7}{8}$$

$$\Rightarrow \alpha = \sin^{-1}\left(\frac{7}{8}\right) = \underline{61,04^\circ}$$

$$\beta = 180^\circ - 90^\circ - 61,04^\circ = \underline{28,96^\circ}$$

$$\cos \alpha = \frac{b}{8}$$

$$\cos 61,04^\circ = \frac{b}{8} \quad | \cdot 8$$

$$8 \cdot \cos 61,04^\circ = b$$

$$\underline{3,87 \text{ cm} = b}$$

$$d) \quad \gamma = 180^\circ - 90^\circ - 42^\circ = \underline{48^\circ}$$

$$\sin 42^\circ = \frac{a}{7,8} \quad | \cdot 7,8$$

$$7,8 \cdot \sin 42^\circ = a$$

$$\underline{5,22 \text{ cm} = a}$$

$$e) \quad \tan \alpha = \frac{8}{6}$$

$$\Rightarrow \alpha = \tan^{-1}\left(\frac{8}{6}\right) = \underline{53,13^\circ}$$

$$\beta = 180^\circ - 90^\circ - 53,13^\circ = \underline{36,87^\circ}$$

$$6^2 + 8^2 = c^2$$

$$36 + 64 = c^2$$

$$100 = c^2$$

$$\underline{10 \text{ cm} = c}$$

$$f) \quad \cos 30^\circ = \frac{b}{10} \quad | \cdot 10$$

$$10 \cdot \cos 30^\circ = b$$

$$\underline{8,66 \text{ cm} = b}$$

$$\sin 30^\circ = \frac{c}{10} \quad | \cdot 10$$

$$10 \cdot \sin 30^\circ = c$$

$$\underline{5 \text{ cm} = c}$$

$$\beta = 180^\circ - 90^\circ - 30^\circ$$

$$\underline{\beta = 60^\circ}$$

g) Diese Aufgabe ist nicht lösbar.
Man braucht die Länge von
mindestens einer Seite!

$$h) \quad \cos 39^\circ = \frac{7}{c} \quad | \cdot c$$

$$c \cdot \cos 39^\circ = 7 \quad | : \cos 39^\circ$$

$$c = \frac{7}{\cos 39^\circ}$$

$$\underline{c = 9 \text{ cm}}$$

$$\alpha = 180^\circ - 90^\circ - 39^\circ = \underline{51^\circ}$$

$$\sin 39^\circ = \frac{b}{c}$$

$$\sin 39^\circ = \frac{b}{9} \quad | \cdot 9$$

$$9 \cdot \sin 39^\circ = b$$

$$\underline{5,66 \text{ cm} = b}$$

$$i) \quad 5,4^2 + 7^2 = c^2$$

$$29,16 + 49 = c^2$$

$$78,16 = c^2$$

$$\underline{8,84 \text{ cm} = c}$$

$$\tan \alpha = \frac{7}{5,4}$$

$$\Rightarrow \alpha = \tan^{-1}\left(\frac{7}{5,4}\right) \approx \underline{52,35^\circ}$$

$$\beta = 180^\circ - 90^\circ - 52,35^\circ$$

$$\underline{\beta = 37,65^\circ}$$

$$j) \sin 28^\circ = \frac{6}{c} \quad | \cdot c$$

$$c \cdot \sin 28^\circ = 6 \quad | : \sin 28^\circ$$

$$c = \frac{6}{\sin 28^\circ}$$

$$\underline{c \approx 12,78 \text{ cm}}$$

$$\tan 28^\circ = \frac{6}{b} \quad | \cdot b$$

$$b \cdot \tan 28^\circ = 6 \quad | : \tan 28^\circ$$

$$b = \frac{6}{\tan 28^\circ}$$

$$\underline{b \approx 11,28 \text{ cm}}$$

$$\beta = 180^\circ - 90^\circ - 28^\circ = \underline{62^\circ}$$

$$b) \cos \beta = \frac{7}{11}$$

$$\Rightarrow \beta = \cos^{-1} \left(\frac{7}{11} \right)$$

$$\underline{\beta = 50,48^\circ}$$

$$7^2 + b^2 = 11^2$$

$$b^2 = 11^2 - 7^2$$

$$b^2 = 121 - 49$$

$$b^2 = 72$$

$$\underline{b \approx 8,49 \text{ cm}}$$

$$\alpha = 180^\circ - 90^\circ - 50,48^\circ$$

$$\underline{\alpha = 39,52^\circ}$$

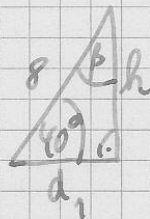
$$1) \quad \beta = 180^\circ - 90^\circ - 31^\circ = \underline{59^\circ}$$

$$\sin 31^\circ = a$$
$$\underline{0,515 \text{ cm} = a}$$

$$\cos 31^\circ = b$$
$$\underline{0,857 \text{ cm} = b}$$

Dreieck mit
Hypotenuse 1!

2) a) Dreieck links:

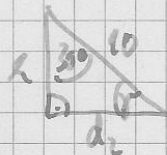


$$\beta = 180^\circ - 40^\circ - 90^\circ = 50^\circ$$

$$\cos 40^\circ = \frac{d_1}{8} \quad | \cdot 8$$

$$8 \cdot \cos 40^\circ = d_1$$
$$6,13 \text{ cm} = d_1$$

Dreieck rechts:



$$\gamma = 180^\circ - 90^\circ - 30^\circ = 60^\circ$$

$$\cos 60^\circ = \frac{d_2}{10} \quad | \cdot 10$$

$$10 \cdot \cos 60^\circ = d_2$$
$$5 \text{ cm} = d_2$$

$$d = d_1 + d_2 = 11,13 \text{ cm}$$

b) Dreieck links:



$$\alpha = 180^\circ - 90^\circ - 20^\circ = 70^\circ$$

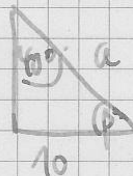
$$\cos 20^\circ = \frac{6}{c} \quad | \cdot c$$

$$c \cdot \cos 20^\circ = 6 \quad | : \cos 20^\circ$$

$$c = \frac{6}{\cos 20^\circ}$$

$$c \approx 6,39 \text{ cm}$$

Dreieck rechts:



$$\beta = 180^\circ - 90^\circ - 40^\circ = 50^\circ$$

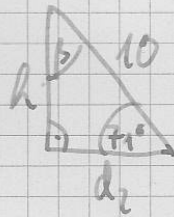
$$\sin 40^\circ = \frac{10}{a} \quad | \cdot a$$

$$a \cdot \sin 40^\circ = 10 \quad | : \sin 40^\circ$$

$$a = \frac{10}{\sin 40^\circ}$$

$$a \approx 15,56 \text{ cm}$$

d) Dreieck rechts:



$$\beta = 180^\circ - 90^\circ - 71^\circ = 19^\circ$$

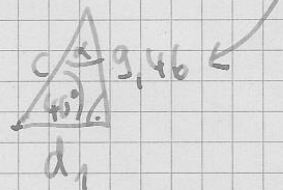
$$\cos 71^\circ = \frac{d_2}{10} \quad | \cdot 10$$

$$10 \cdot \cos 71^\circ = d_2$$
$$3,26 \text{ cm} = d_2$$

$$\sin 71^\circ = \frac{h}{10} \quad | \cdot 10$$

$$10 \cdot \sin 71^\circ = h$$
$$9,46 \text{ cm} = h$$

Dreieck links:



$$\alpha = 180^\circ - 90^\circ - 46^\circ = 44^\circ$$

$$\tan 46^\circ = \frac{9,46}{d_1} \quad | \cdot d_1$$

$$d_1 \cdot \tan 46^\circ = 9,46$$

$$d_1 = \frac{9,46}{\tan 46^\circ}$$

$$d_1 = 9,14 \text{ cm}$$

$$9,14^2 + 9,46^2 = c^2$$

$$173,0312 = c^2$$

$$13,15 \text{ cm} = c$$

$$d = d_1 + d_2$$

$$d = 12,4 \text{ cm}$$