

Diagnostische toets

bladzijde 148

1 hellingsgetal = $\frac{\text{verticale verplaatsing}}{\text{horizontale verplaatsing}} = \frac{26}{19} \approx 1,37$

hellingsgetal = $\frac{\text{verticale verplaatsing}}{\text{horizontale verplaatsing}}$, dus

0,81	verticale verplaatsing
1	24,1

Je krijgt: verticale verplaatsing = $\frac{0,81 \times 24,1}{1} \approx 19,5$

hellingsgetal = $\frac{\text{verticale verplaatsing}}{\text{horizontale verplaatsing}}$, dus

0,18	70
1	horizontale verplaatsing

Je krijgt: horizontale verplaatsing = $\frac{1 \times 70}{0,18} \approx 388,9$

2 a 3,03

b 1,85

3 a In $\triangle ABC$: $\tan \angle A = \frac{\text{verticaal}}{20}$, dus

$\tan 65^\circ$	BC
1	20

Kruislings vermenigvuldigen:

$$BC = 20 \cdot \tan 65^\circ \approx 42,9$$

De kabel BC is op hoogte 42,9 m aan de zendmast bevestigd.

b Stelling van Pythagoras:

$$AC^2 = AB^2 + BC^2$$

$$AC^2 = 20^2 + 42,9^2$$

$$AC^2 = 2240,41$$

$$AC = \sqrt{2240,41} \approx 47,3 \text{ m}$$

4 In $\triangle ASD$: $\tan \angle A_1 = \frac{DS}{AS}$

$$AS = \frac{1}{2} \cdot AC = 2,5 \text{ en } BS = \frac{1}{2} \cdot BD = 2$$

$$\tan \angle A_1 = \frac{2}{2,5}$$

$$\text{dus } \angle A_1 = \tan^{-1}\left(\frac{2}{2,5}\right) \approx 38,7^\circ$$

$$\angle A_1 = \angle A_2 \approx 38,7^\circ$$

$$\angle B_1 = 180^\circ - 90^\circ - \angle A_2 \approx 180^\circ - 90^\circ - 38,7^\circ = 51,3^\circ$$

5 a In $\triangle ADC$: $\tan \angle A = \frac{CD}{AD}$

$$\begin{array}{c|c} \tan 70^\circ & 3 \\ \hline 1 & AD \end{array}$$

$$AD = \frac{1 \cdot 3}{\tan 70^\circ} \approx 1,1 \text{ cm}$$

b In $\triangle BCD$: $\tan \angle B = \frac{CD}{BD}$

$$\tan \angle B = \frac{3}{5}$$

$$\text{dus } \angle B = \tan^{-1}\left(\frac{3}{5}\right) \approx 31,0^\circ$$

c Nee, want $\angle A + \angle B \approx 101^\circ$, dus $\angle C \approx 79^\circ$.

6 a $\sin \angle A = \frac{BD}{AB}$

b $\cos \angle C = \frac{CD}{BC}$

c $\tan \angle ABD = \frac{AD}{BD}$

d $\sin \angle CBD = \frac{CD}{BC}$

e $\cos \angle A = \frac{AD}{AB}$

f $\tan \angle DBC = \frac{CD}{BD}$

bladzijde 149

7 a $\cos \angle B = \frac{AB}{BC}$

$$\cos \angle B = \frac{2}{5}$$

$$\text{dus } \angle B = \cos^{-1}\left(\frac{2}{5}\right) \approx 66,4^\circ$$

b $\tan \angle R = \frac{PQ}{PR}$

$$\tan \angle R = \frac{3}{5}$$

$$\text{dus } \angle R = \tan^{-1}\left(\frac{3}{5}\right) \approx 31,0^\circ$$

c $\cos \angle D = \frac{DF}{DE}$

$$\cos \angle D = \frac{5}{6}$$

$$\text{dus } \angle D = \cos^{-1}\left(\frac{5}{6}\right) \approx 33,6^\circ$$

d In $\triangle DEF$:

$$\sin \angle E = \frac{DF}{DE}$$

$$\sin \angle E = \frac{5}{6}$$

$$\text{dus } \angle E = \sin^{-1}\left(\frac{5}{6}\right) \approx 56,4^\circ$$

$$DF^2 + EF^2 = DE^2$$

$$5^2 + EF^2 = 6^2$$

$$25 + EF^2 = 36$$

$$EF^2 = 11$$

$$EF = \sqrt{11}$$

In $\triangle EFG$:

$$\cos \angle E = \frac{EF}{EG}$$

$$\cos \angle E = \frac{\sqrt{11}}{3,5}$$

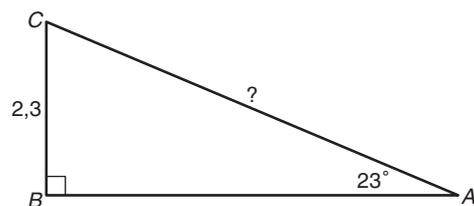
$$\text{dus } \angle E \approx \cos^{-1}\left(\frac{\sqrt{11}}{3,5}\right) \approx 18,6^\circ$$

$$\text{Dus } \angle DEG \approx 56,4^\circ + 18,6^\circ \approx 75,1^\circ$$

8 a $\sin \angle A = \frac{BC}{AC}$

$$\begin{array}{c|c} \sin 23^\circ & 2,3 \\ \hline 1 & AC \end{array}$$

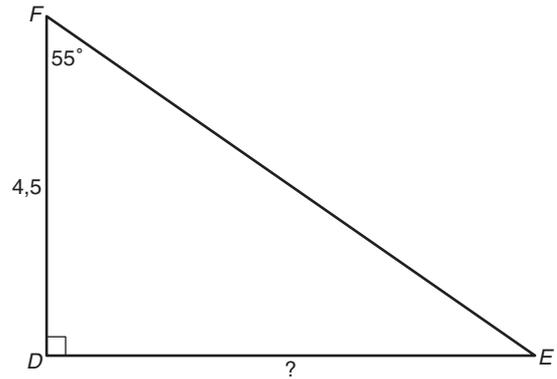
$$AC = \frac{1 \times 2,3}{\sin 23^\circ} \approx 5,89$$



$$b \quad \tan \angle F = \frac{DE}{DF}$$

$\tan 55^\circ$	$\frac{DE}{4,5}$
1	4,5

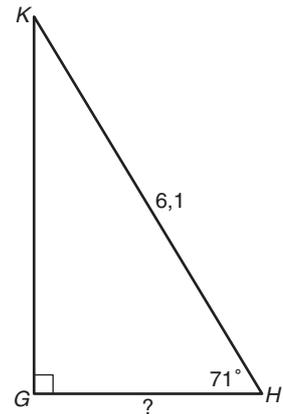
$$DE = 4,5 \cdot \tan 55^\circ \approx 6,43$$



$$c \quad \cos \angle H = \frac{GH}{KH}$$

$\cos 71^\circ$	$\frac{GH}{6,1}$
1	6,1

$$GH = 6,1 \cdot \cos 71^\circ \approx 1,99$$

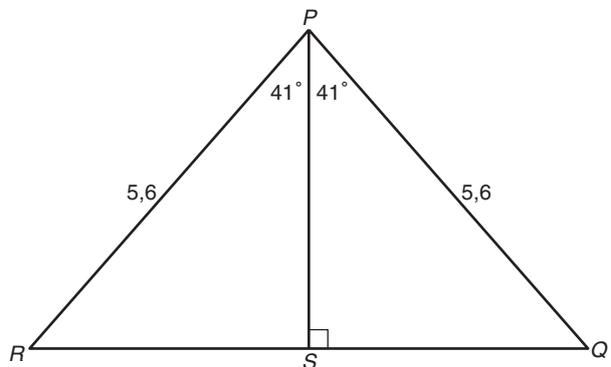


$$9 \quad \sin \angle SPQ = \frac{QS}{PQ}$$

$\sin 41^\circ$	$\frac{QS}{5,6}$
1	5,6

$$QS = 5,6 \cdot \sin 41^\circ \approx 3,67 \dots$$

$$QR = 2 \cdot QS = 2 \cdot 3,67 \dots \approx 7,35$$



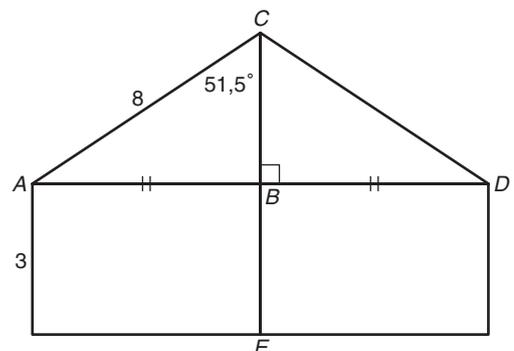
$$10 \quad a \quad \sin \angle ACB = \frac{AB}{AC}$$

$\sin 51,5^\circ$	$\frac{AB}{8}$
1	8

$$AB = 8 \cdot \sin 51,5^\circ \approx 6,26 \dots$$

De breedte van de hal is

$$2 \cdot AB = 2 \cdot 6,26 \dots \approx 12,5 \text{ m.}$$



$$\text{b } \cos \angle ACB = \frac{BC}{AC}$$

$\cos 51,5^\circ$	BC
1	8

$$BC = 8 \cdot \cos 51,5^\circ \approx 4,98 \dots$$

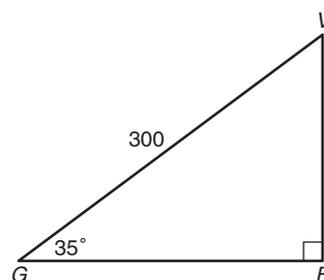
De hoogte van de hal is $BC + BE = 4,98 \dots + 3 \approx 8,0$ m.

$$\text{11 a } \sin \angle G = \frac{BV}{GV}$$

$\sin 35^\circ$	BV
1	300

$$BV = 300 \cdot \sin 35^\circ \approx 172,07 \dots$$

De vlieger staat ongeveer 172 meter hoog.



b Het vliegertouw blijft even lang, dus GP is 300 m.

$$\sin \angle G = \frac{SP}{GP}$$

$$\sin \angle G = \frac{240}{300}$$

$$\text{dus } \angle G = \sin^{-1}\left(\frac{240}{300}\right) \approx 53,1^\circ$$

