

3KGT - Oefenblad Goniometrie

$$\text{SOS} = \sin(\dots^\circ) = \frac{\text{Overstaande zijde}}{\text{Schuine zijde}}$$

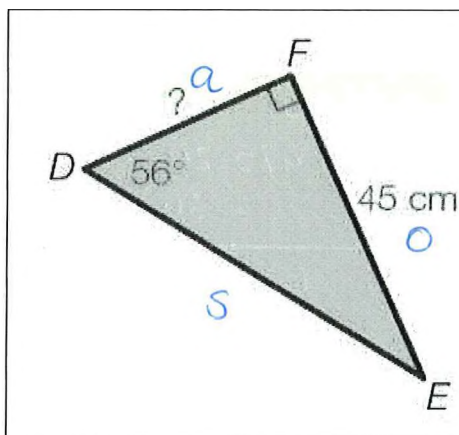
Hoe vind je de schuine, aanliggende en overstaande zijde?

- Kies een hoek vanuit je kijkt. De zijde tegenover die hoek is de **Overstaande zijde**.
- Blijf bij dezelfde hoek staan en kijk welke van de 2 overgebleven zijden het langst is. Dit is de **schuine zijde**.
- De **aanliggende zijde** blijft automatisch over.

$$\text{CAS} = \cos(\dots^\circ) = \frac{\text{Aanliggende zijde}}{\text{Schuine zijde}}$$

$$\text{TOA} = \tan(\dots^\circ) = \frac{\text{Overstaande zijde}}{\text{Aanliggende zijde}}$$

Regel: Je kijkt nooit vanuit de hoek van 90 graden.



① Kijk vanuit $\angle D$
a wil je weten o bekend dus ToA

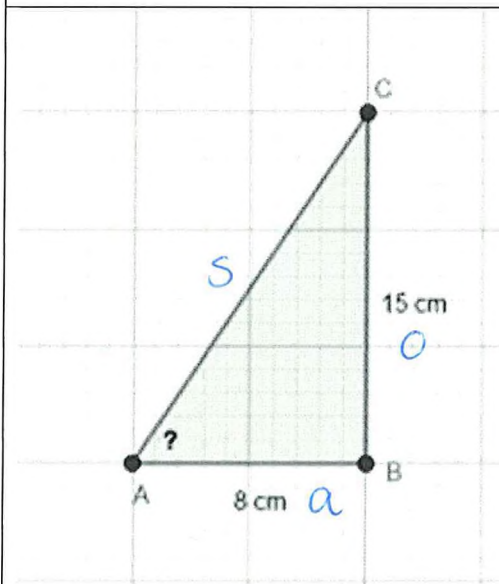
$$\textcircled{2} \tan(\) = \frac{o}{a}$$

$$\tan(56) = \frac{45}{?}$$

$$\textcircled{3} 45 : \tan(56) = 30,352 \dots$$

$$\textcircled{4} \text{ Dus } DF = 30,4 \text{ cm.}$$

$$\left\{ 3 = \frac{6}{2} \right\} \text{ hulpsom}$$



① Kijk vanuit $\angle A$
o en a bekend, graden wil je te weten komen.

$$\textcircled{2} \tan(\) = \frac{o}{a}$$

$$\tan(?) = \frac{15}{8}$$

④ Geen graden bekend?
Dan $\sin^{-1} / \cos^{-1} / \tan^{-1}$

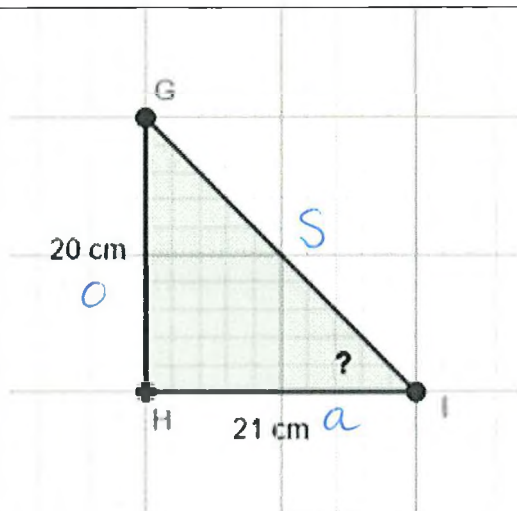
$$\tan^{-1}(15 : 8) = 61,927 \dots$$

$$\text{dus } \angle A = 62^\circ$$

↳ Graden altijd afronden op helen.

Stappenplan.

- ① Bepaal vanuit welke hoek je kijkt en welke zijden de overstaande, schuine en aanliggende is.
- ② Bepaal of je SOS CAS of ToA gaat toepassen en schrijf deze stap op.
vul daaronder de getallen in die je weet.
- ③ Bepaal de som die je gaat uitrekenen en schrijf de berekening op.
- ④ Herhaal het antwoord met de zijde erbij.



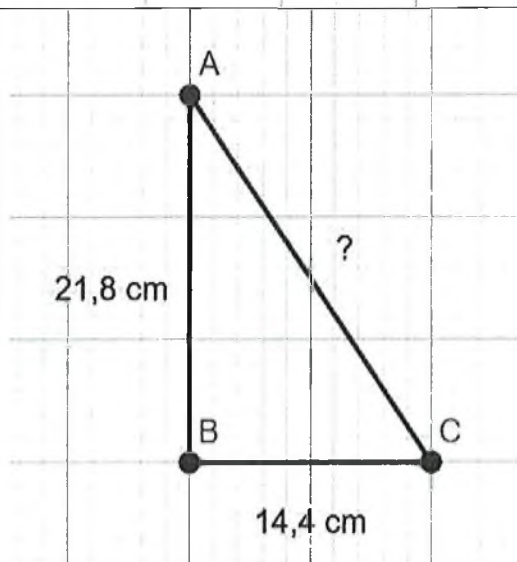
① $\angle I \rightarrow 0$ en a

② $\tan(\) = \frac{0}{a}$

$\tan(\) = \frac{20}{21}$

③ $\tan^{-1}(20:21) = 43,602\dots$

④ Dus $\angle I = 44^\circ$



Geen graden? Alleen
zyden bekend? Gebruik
dan **pythagoras**

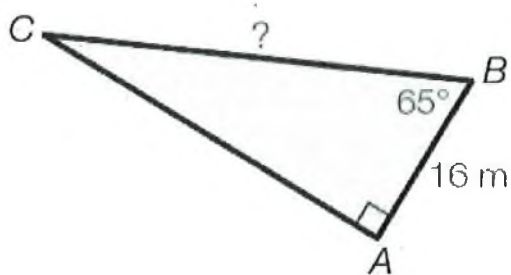
RH2 $21,8^2 = 475,24$

RH2 $14,4^2 = 207,36$

S2 $\frac{475,24 + 207,36}{2} = 682,6$

$\sqrt{682,6} = 26,1266$

dus $AC = 26,1$ cm.



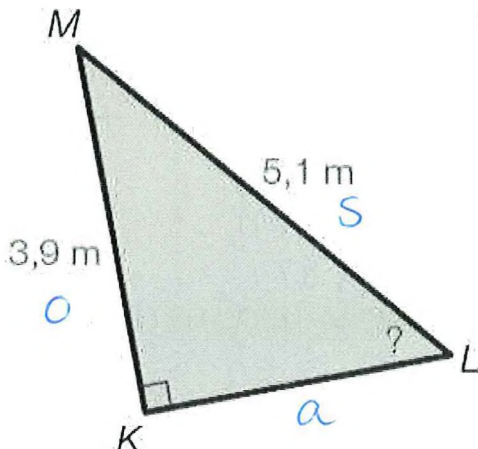
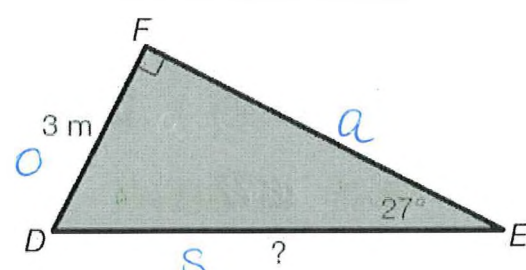
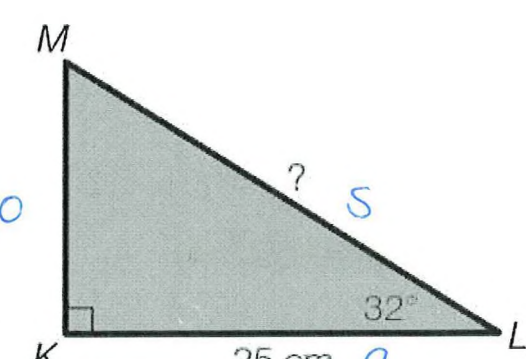
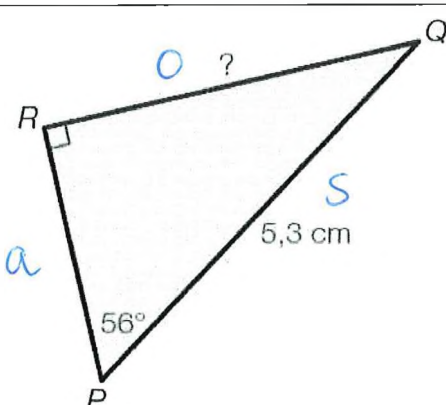
① $\angle B \rightarrow a$ en s dus CAS

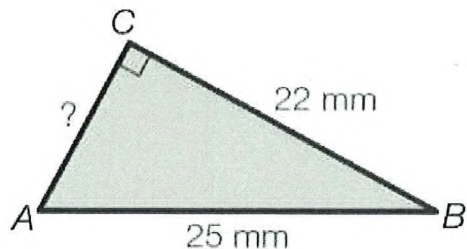
② $\cos(\) = \frac{a}{s}$

$\cos(65) = \frac{16}{?}$

③ $16: \cos(65) = 37,859\dots \cdot 3 = \frac{6}{2}$

④ dus $BC = 37,9$ m.

	① $\angle L \rightarrow$ o en s dus SOS ② $\sin(\) = \frac{o}{s}$ $\sin(\) = \frac{3,9}{5,1}$ geen graden? 300 versie. ③ $\sin^{-1}(3,9 : 5,1) =$ $49,880 \dots$ ④ dus $\angle L = 50^\circ$
	① $\angle E \Rightarrow$ o en s dus SOS ② $\sin(\) = \frac{o}{s}$ $\sin(27) = \frac{3}{?}$ $3 = \frac{6}{2}$ ③ $3 : \sin(27) =$ $6,608 \dots$ ④ Dus $DE = 6,6 \text{ m.}$
	① $\angle L \rightarrow$ a en s CAS ② $\cos(\) = \frac{a}{s}$ $\cos(32) = \frac{25}{?}$ $3 = \frac{6}{2}$ ③ $25 : \cos(32) =$ $29,479 \dots$ ④ dus $LM = 29,5 \text{ cm.}$
	① $\angle p \rightarrow$ o en s dus SOS ② $\sin(\) = \frac{o}{s}$ $\sin(56) = \frac{?}{5,3}$ $3 = \frac{6}{2}$ ③ $5,3 \times \sin(56) =$ $4,393 \dots$ ④ dus $QR = 4,4 \text{ cm.}$



① Geen hoek met graden $\rightarrow$ Pythagoras.

$$\text{RHZ } 22^2 = 484$$

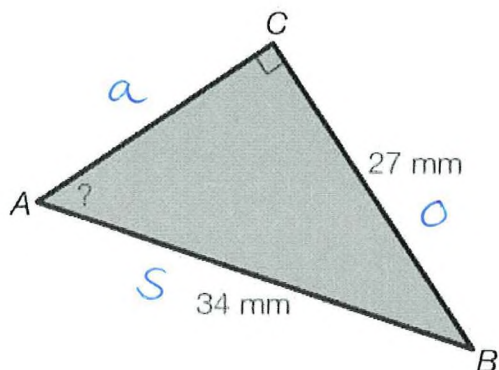
RHZ

$$\frac{25^2 = 625}{+}$$

$$625 - 484 = 141$$

$$\sqrt{141} = 11,874 \dots$$

$$\text{dus } AC = 11,9 \text{ mm.}$$



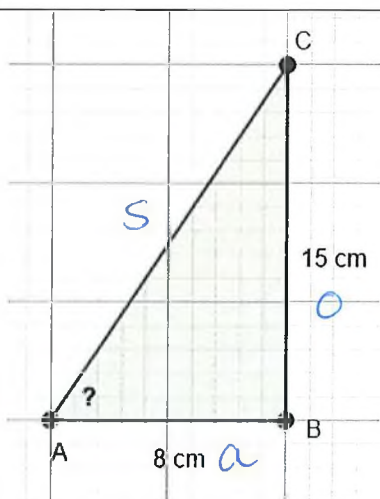
① $\angle A \rightarrow$ o en s bekend. SOS

$$\textcircled{2} \sin(\quad) = \frac{o}{s}$$

$$\sin(\quad) = \frac{27}{34}$$

$$\textcircled{3} \sin^{-1}(27:34) = 52,571$$

$$\textcircled{4} \text{ dus } \angle A = 53^\circ$$



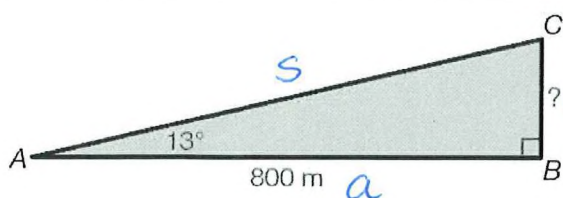
① $\angle A \rightarrow$ o en a TOA

$$\textcircled{2} \tan(\quad) = \frac{o}{a}$$

$$\tan(\quad) = \frac{15}{8}$$

$$\textcircled{3} \tan^{-1}(15:8) = 61,927 \dots$$

$$\textcircled{4} \text{ dus } \angle A = 62^\circ$$



① $\angle A \rightarrow$ o en a TOA

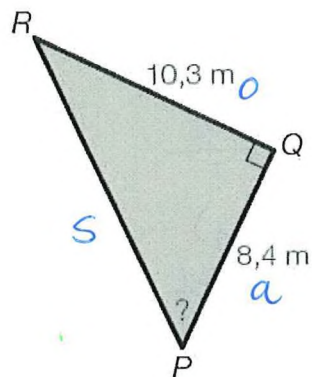
$$\textcircled{2} \tan(\quad) = \frac{o}{a}$$

$$\tan(13) = \frac{?}{800}$$

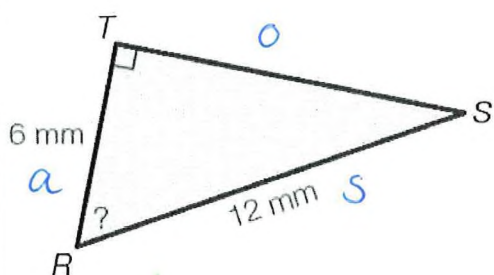
$$3 = \frac{6}{2}$$

$$\textcircled{3} 800 \times \tan(13) = 184,694 \dots$$

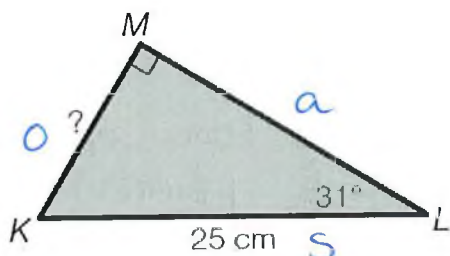
$$\textcircled{4} \text{ Dus } BC = 184,7 \text{ m.}$$



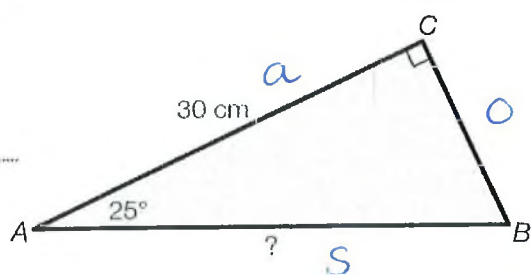
- ① $\angle P \rightarrow o \text{ en } a$ TOA
- ② $\tan(\angle) = \frac{o}{a}$
 $\tan(\angle) = \frac{10,3}{8,4}$
- ③ $\tan^{-1}(10,3 : 8,4) =$
 $50,8015\dots$
- ④ Dus $\angle P = 51^\circ$



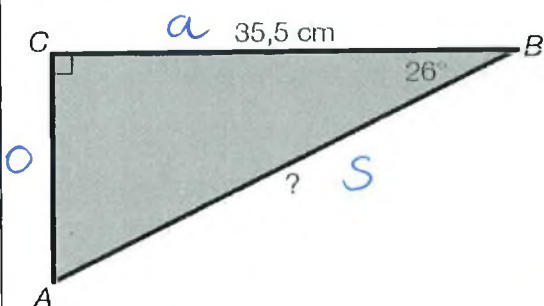
- ① $\angle R \rightarrow a \text{ en } s$ CAS
- ② $\cos(\angle) = \frac{a}{s}$
 $\cos(\angle) = \frac{6}{12}$
- ③ $\cos^{-1}(6 : 12) = 60$
- ④ dus $\angle R = 60^\circ$



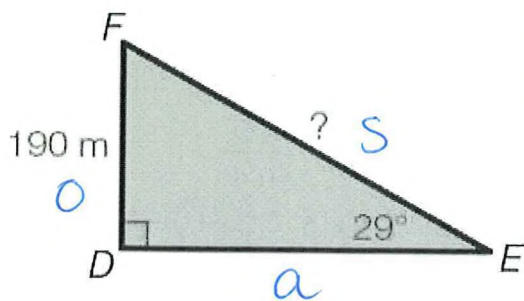
- ① $\angle L \rightarrow o \text{ en } s$ SOH
- ② $\sin(\angle) = \frac{o}{s}$
 $\sin(31) = \frac{?}{25}$ $3 = \frac{6}{2}$
- ③ $25 \times \sin(31) = 12,875\dots$
- ④ dus $KM = 12,9 \text{ cm}$



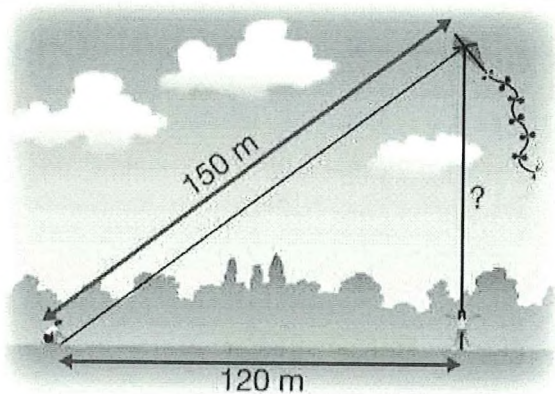
- ① $\angle A \rightarrow a \text{ en } s$ CAS
- ② $\cos(\angle) = \frac{a}{s}$
 $\cos(25) = \frac{30}{?}$ $3 = \frac{6}{2}$
- ③ $30 : \cos(25) = 33,101\dots$
- ④ Dus $AB = 33,1 \text{ cm}$



- ① $\angle B \rightarrow a \text{ en } s$ CAS
- ② $\cos(\angle) = \frac{a}{s}$
 $\cos(26) = \frac{35,5}{?}$ $3 = \frac{6}{2}$
- ③ $35,5 : \cos(26) = 39,497\dots$
- ④ dus $AB = 39,5 \text{ cm}$

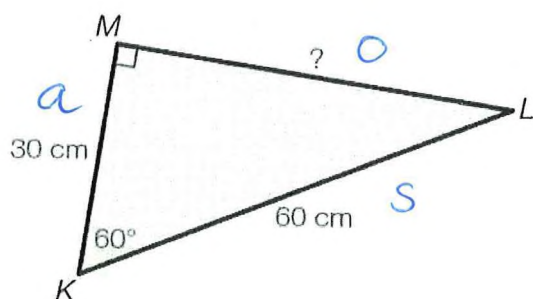


- ① $\angle E \rightarrow$ O en S dus SOS
- ② $\sin(\angle) = \frac{O}{S}$
 $\sin(29^\circ) = \frac{190}{?}$
- ③ $190 : \sin(29^\circ) =$
 $391,906...$
- ④ Dus $EF = 391,9 \text{ m.}$

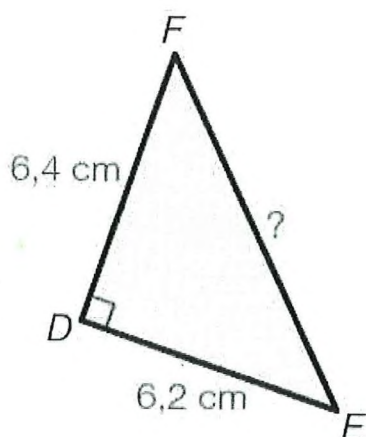


- ① geen hoek/graden $\rightarrow$ pythagoras
- ② RHZ $120^2 = 14400$
RHZ

SZ $150^2 = 22500$ +
 $22500 - 14400 = 8100$
 $\sqrt{8100} = 90$
dus $? = 90 \text{ m.}$



- maak een keuze of je pythagoras of sos cas TOA gebruikt
- $\angle K \rightarrow$ of toa of sos
- | | |
|---------------------------------|---------------------------------|
| $\tan(60^\circ) = \frac{?}{30}$ | $\sin(60^\circ) = \frac{?}{60}$ |
| $30 \times \tan(60^\circ) =$ | $60 \times \sin(60^\circ) =$ |
| $51,961...$ | $51,961$ |
| dus $52,0 \text{ cm}$ | dus $52,0 \text{ cm.}$ |



- ① geen graden $\rightarrow$ pythagoras
- ② RHZ $6,4^2 = 40,96$
RHZ $6,2^2 = 38,44$

SZ $= 79,4$ +
 $\sqrt{79,4} = 8,910...$
dus $EF = 8,9 \text{ cm.}$