

# Diagnostische toets

bladzijde 72

- 1** a  $x$  berekenen m.b.v.

$$\begin{array}{c|c} 7 & 11 \\ \hline 2 & x \end{array}$$

$$x = \frac{2 \times 11}{7} \approx 3,1$$

- $y$  berekenen m.b.v.

$$\begin{array}{c|c} 7 & 3 \\ \hline 2 & y \end{array}$$

$$y = \frac{2 \times 3}{7} \approx 0,9$$

- b  $4(x - 1) = 5(2x + 3)$

$$4x - 4 = 10x + 15$$

$$4x - 10x = 15 + 4$$

$$-6x = 19$$

$$x = \frac{19}{-6} \approx -3,2$$

- 2** a  $\triangle ABC \sim \triangle EBD$

b

$\triangle ABC$	$AB$	$BC$	$AC$
$\triangle EBD$	$EB$	$BD$	$ED$

Invullen geeft

10	8	6
6,5	$BD$	$ED$

Eerst  $AB$  met de stelling van Pythagoras berekenen:

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

$$AB^2 = 6^2 + 8^2$$

$$AB^2 = 100$$

$$AB = \sqrt{100} = 10$$

$$BD = \frac{6,5 \times 8}{10} = 5,2$$

$$DE = \frac{6,5 \times 6}{10} = 3,9$$

**3**  $AE = 127 \text{ cm} = 1,27 \text{ m}$ .

De lengte van Coen is  $DE$ . Bereken  $DE$ .

$$\left. \begin{array}{l} \angle B = \angle E \\ \angle A \text{ (in } \triangle ABC) = \angle A \text{ (in } \triangle AED) \end{array} \right\} \triangle ABC \sim \triangle AED$$

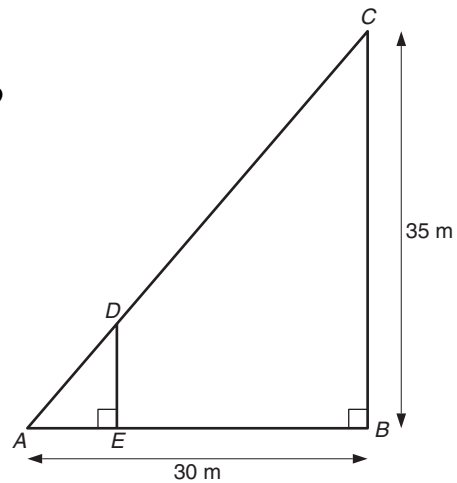
$\triangle ABC$	$AB$	$BC$	$AC$
$\triangle AED$	$AE$	$ED$	$AD$

Invullen geeft

30	35
1,27	$ED$

$$ED = \frac{1,27 \times 35}{30} \approx 1,48$$

Dus de lengte van Coen is 1,48 m.



**4** Snavelfiguur ( $\triangle PDQ \sim \triangle PAB$ )

$PD$	$DQ$	geeft	1,5	$DQ$
$PA$	$AB$		5,5	6

$$DQ = \frac{1,5 \times 6}{5,5} \approx 1,6$$

**5** zandloperfiguur ( $\triangle BPQ \sim \triangle CDQ$ )

$BP$	$BQ$	geeft	$BP$	1,2
$CD$	$CQ$		7,3	3,4

$$BP = \frac{7,3 \times 1,2}{3,4} \approx 2,6$$

**6** a Stel  $BE = x$ .

Dan is  $BC = x + 4,8$ .

snavelfiguur

$BC$	$AC$	geeft	$x + 4,8$	5,4
$BE$	$DE$		$x$	1,8

Kruislings vermenigvuldigen geeft

$$1,8(x + 4,8) = 5,4x$$

$$1,8x + 8,64 = 5,4x$$

$$1,8x - 5,4x = -8,64$$

$$-3,6x = -8,64$$

$$x = \frac{-8,64}{-3,6} = 2,4, \text{ dus } BE = 2,4.$$

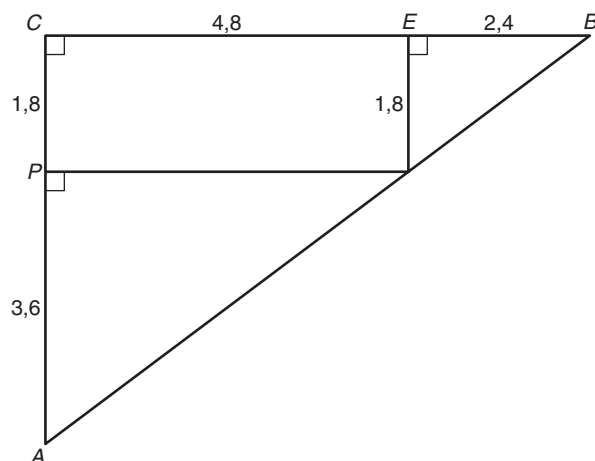
b De stelling van Pythagoras

in  $\triangle ADP$  geeft

$$AD^2 = 3,6^2 + 4,8^2$$

$$AD^2 = 36$$

$$AD = \sqrt{36} = 6$$

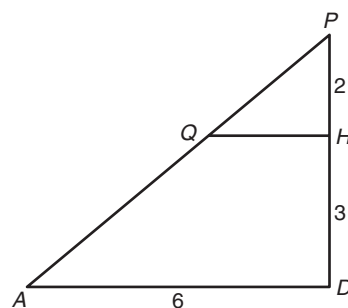


bladzijde 73

**7** a snavelfiguur ( $\triangle PAD \sim \triangle PQH$ )

$PD$	$AD$	geeft	5	6
$PH$	$QH$		2	$QH$

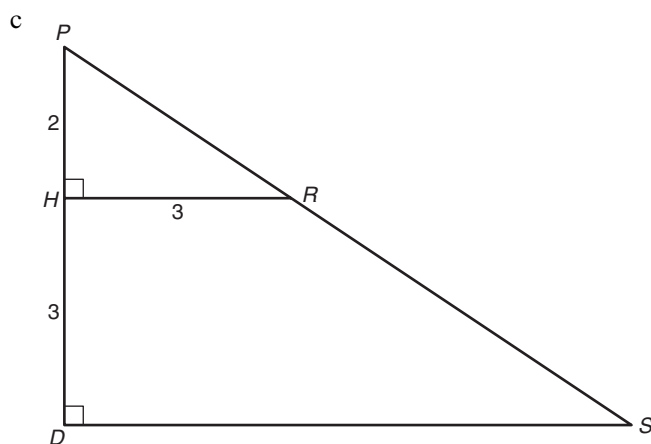
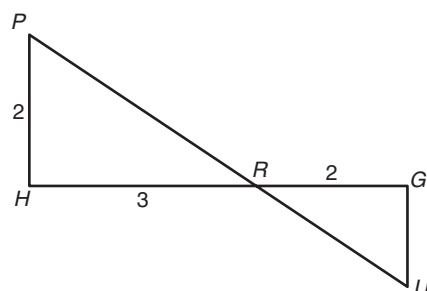
$$QH = \frac{2 \times 6}{5} = 2\frac{2}{5}$$



b zandloperfiguur ( $\triangle PHR \sim \triangle UGR$ )

$PH$	$HR$	geeft	2	3
$UG$	$GR$		$UG$	2

$$UG = \frac{2 \times 2}{3} = 1\frac{1}{3}$$



snavelfiguur ( $\triangle PDS \sim \triangle PHR$ )

$PD$	$DS$	geeft	5	$DS$
$PH$	$HR$		2	3

$$DS = \frac{5 \times 3}{2} = 7,5$$

De stelling van Pythagoras in  $\triangle ADS$  geeft

$$AD^2 + DS^2 = AS^2$$

$$6^2 + 7,5^2 = AS^2$$

$$AS^2 = 92,25$$

$$AS = \sqrt{92,25} \approx 9,6$$

8 a	Situatie	$\angle A$	$\angle M_1$
	I	$18^\circ$	$36^\circ$
	II	$65^\circ$	$130^\circ$
	III	$45^\circ$	$90^\circ$

$\angle M_1$  is het dubbele van  $\angle A$ .

$$\left. \begin{array}{l} \angle A + \angle C + \angle M_2 = 180^\circ \\ \angle M_1 + \angle M_2 = 180^\circ \end{array} \right\} \angle M_1 = \angle A + \angle C$$

$$\left. \begin{array}{l} \angle A = \angle C \text{ want } AM = CM \\ \text{Uit vraag b volgt } \angle M_1 = \angle A + \angle C \end{array} \right\} \angle M_1 = 2 \cdot \angle A$$

9 a  $PK = KQ = 5,6$ , dus  $PQ = 11,2$ .

$QL = LR = 4,2$ , dus  $QR = 8,4$ .

$$PR^2 = PQ^2 + QR^2$$

$$PR^2 = 11,2^2 + 8,4^2$$

$$PR^2 = 196$$

$$PR = \sqrt{196} = 14$$

b  $KM = \frac{1}{2}QR = 4,2$

$$QM^2 = KQ^2 + KM^2$$

$$QM^2 = 5,6^2 + 4,2^2$$

$$QM^2 = 49$$

$$QM = \sqrt{49} = 7$$

$$QZ = \frac{2}{3}QM = \frac{2}{3} \cdot 7 = \frac{14}{3} = 4\frac{2}{3}$$

c Zandloperfiguur ( $\triangle MNZ \sim \triangle QLZ$ )

Dus  $NZ : LZ = MN : QL = 1 : 2$ .

$$\left. \begin{array}{l} NZ : LZ = 1 : 2 \\ LZ : PZ = 1 : 2 \end{array} \right\} NZ : PZ = 1 : 4$$

$$\left. \begin{array}{l} NZ = \frac{1}{4}PZ \\ PZ = \frac{2}{3}PL \end{array} \right\} NZ = \frac{1}{4} \cdot \frac{2}{3}PL = \frac{1}{6}PL$$

$PL$  berekenen m.b.v. Pythagoras in  $\triangle PQL$ :

$$PL^2 = PQ^2 + QL^2$$

$$PL^2 = 11,2^2 + 4,2^2$$

$$PL^2 = 143,08$$

$$PL = \sqrt{143,08}$$

Dus  $NZ = \frac{1}{6}PL = \frac{1}{6}\sqrt{143,08} \approx 2,0$ .