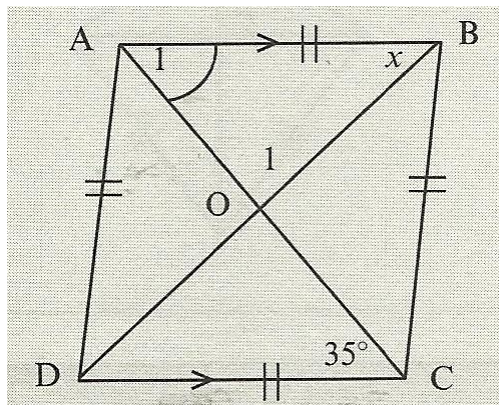# Vierhoeke
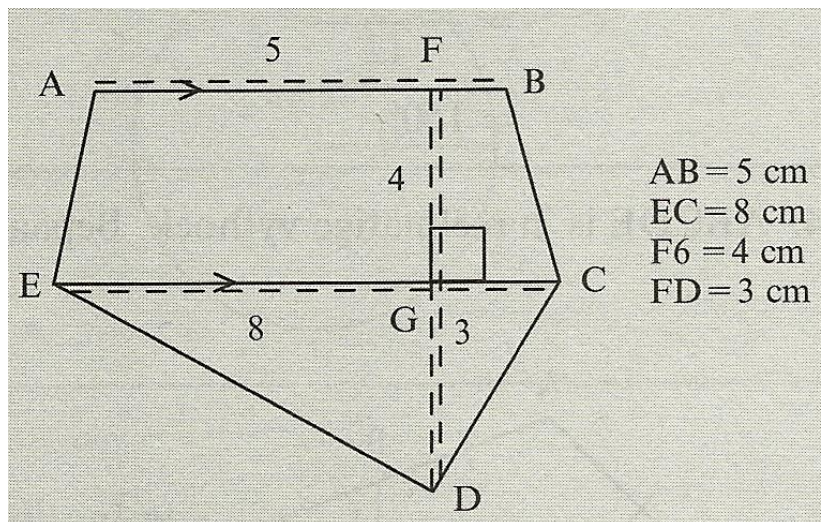
Vraag 1: Bepaal x.
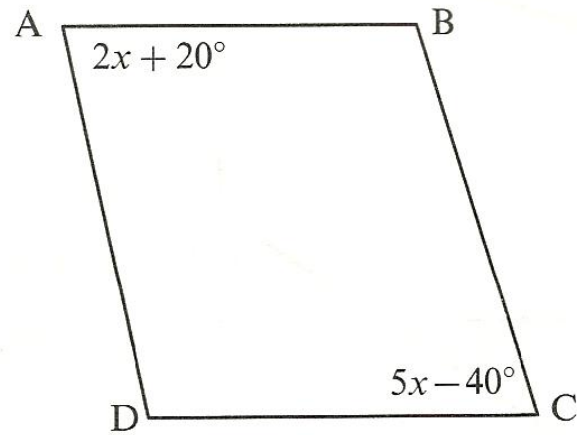

Vraag 2: Bereken die oppervlakte van die figuur.
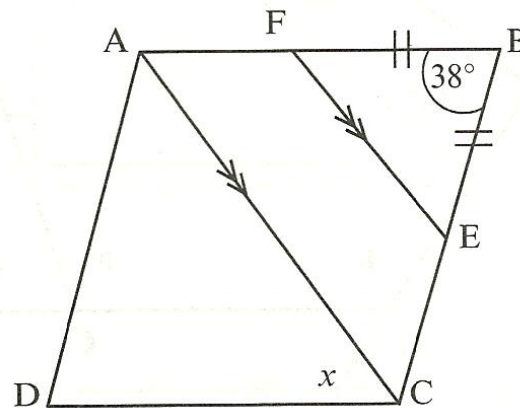

AB = 5 cm
EC = 8 cm
F6 = 4 cm
FD = 3 cm

Vraag 3: Bepaal die waardes van x volledig met redes.
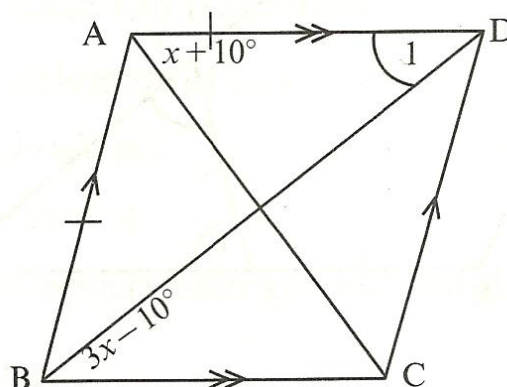
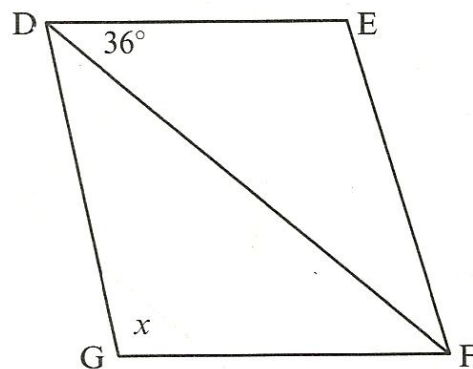## Vraag 4: ABCD is 'n parallelogram. Bereken $\widehat{A}$:
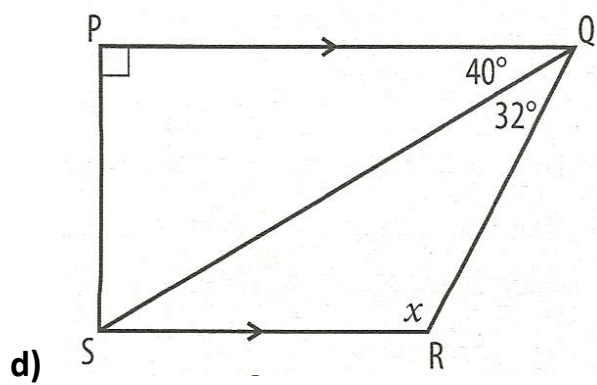
A $2x + 20°$
B
D
C $5x - 40°$

Vraag 5: In die figuur is ABCD 'n parallelogram. $BF = BE$ en $AC \parallel FE$. Bereken x:

F
A
B $38°$
E
D
C x

Vraag 6: DEFG is 'n ruit. Bepaal x.

D $36°$ E
G x F

Vraag 7: Bereken x in elk van die volgende vierhoeke:

a)

b)

c)

d)

e)

f)
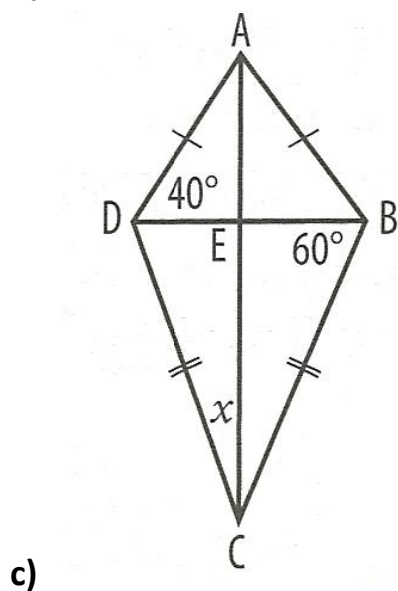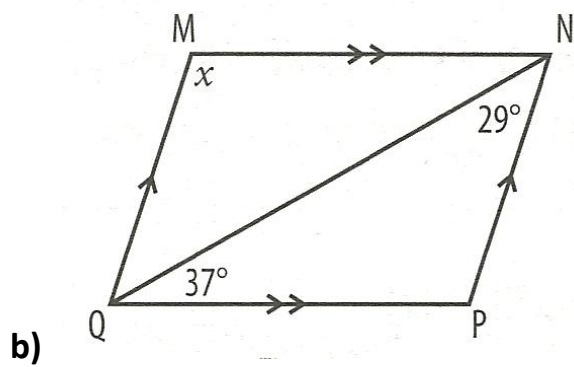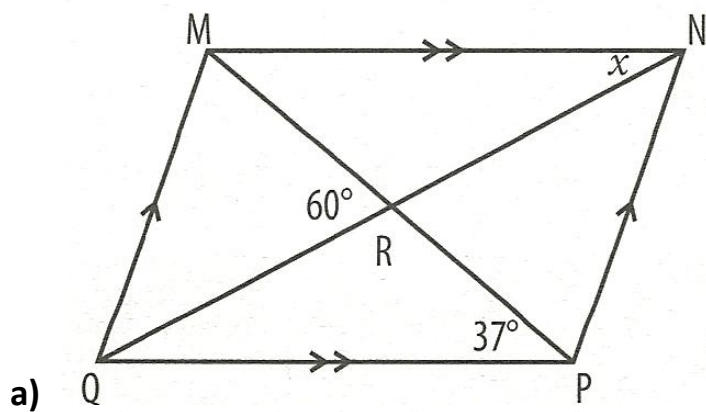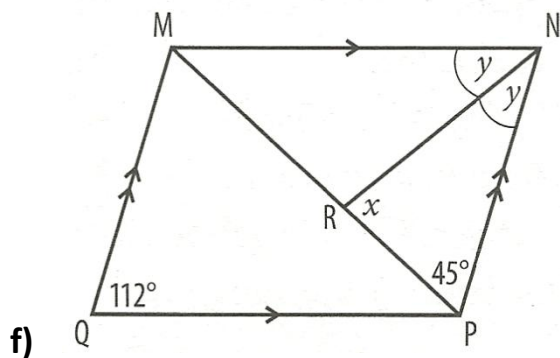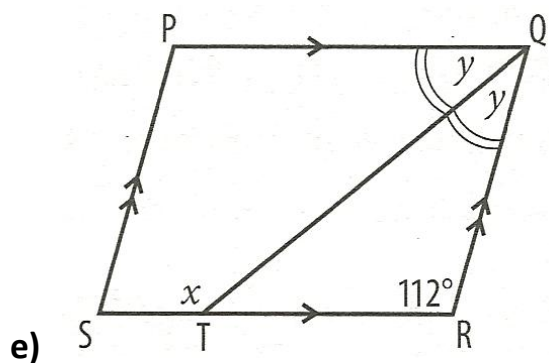
Vraag 8: ABCD is 'n ruit met sye 5cm lank. Hoeklyne AC en BD sny in M, en AB is verleng na E.
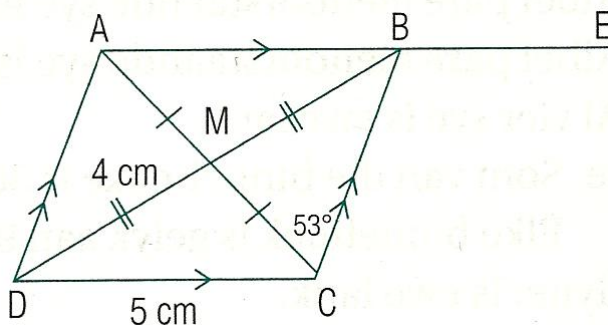
a) As $MD = 4cm$ bepaal, met redes, die lengte van:
   i. MB
   ii. MC

b) As $B\hat{C}A = 53°$, bereken met redes die grootte van:
   i. $B\hat{A}C$
   ii. $C\hat{B}E$
   iii. $A\hat{D}C$

Memo:

Vraag 1:

$ABCD$ is 'n ruit $(AB = AD; AB \parallel DC \text{ en } AD \parallel BC)$

$\therefore \hat{A}_1 = 35°$ $(Verwis. \angle^e, AB \parallel BC)$

$\hat{O}_1 = 90°$ $(hoeklyne \text{ } van \text{ } ruit \text{ } sny \text{ } by \text{ } 90°)$

$\therefore x = 180° - (90 + 35)(3\angle^e van \space \Delta AOB = 180°)$

$= 55°$

Vraag 2:

$Trap. \space ABCE \space se \space Area = \dfrac{h}{2} \space (som \space van \space \parallel -sye)$

$= \dfrac{4}{2}(5 + 8)$

$= 2(13)$

$= 26cm^2$

$Area \space \Delta DEC = \dfrac{1}{2} b.h$

$= \dfrac{1}{2}.8.3$

$= 12cm^2$

$\therefore Area \space van \space figuur: 38cm^2$

Vraag 3:

$ABCD$ is 'n ruit

$\hat{D}_1 = 3x - 10°$ $(verwis. \angle^e; AB \parallel BC)$

$A\hat{O}D = 90°$ $(hoeklyne \perp)$

$\therefore x + 10° + 3x - 10° + 90° = 180°$ $(3 \angle^e van \space \Delta AOD)$

$4x = 90°$

$x = 22,5°$

Vraag 4:

$$2x + 20° = 5x - 40° \ (oorst. \angle^e \ van \ \|^m =)$$

$$\therefore 20° + 40° = 5x - 2x$$

$$60° = 3x$$

$$20° = x$$

$$\hat{A} = 2x + 20°$$

$$= 60°$$

Vraag 5:

$$\hat{F}_1 = \frac{180° - 38°}{2} \ (3 \angle^e \ van \ \Delta BEF; BF = BE)$$

$$= 71°$$

$$\hat{A}_1 = 71° \qquad (ooreenkomstige \angle^e; EF \parallel AC)$$

$$x = 71° \qquad (verwis. \angle^e; AB \parallel DC)$$

Vraag 6:

$$\hat{D}_1 = 36° \qquad (Hoeklyne \ van \ ruit \ halveer \ hoeke)$$

$$x = 180° - (36° + 36°) \ (Ko - binne \angle^e; DE \parallel GF)$$

$$x = 108°$$

Vraag 7:

a) $P\hat{M}N = 37° \ (verwisselende \angle^e \ is \ gelyk)$
   $M\hat{R}N = (180 - 60) = 120° \ (\angle^e \ op \ 'n \ reguitlyn = 180°)$
   $x = (180 - 120 - 37) = 23° \ (\angle^e \ in \ 'n \ \Delta = 180°)$

b) $M\hat{Q}N = 29° \ (verwisselende \angle^e \ is \ gelyk)$
   $M\hat{N}Q = 37° \ (verwisselende \angle^e \ is \ gelyk)$
   $x = (180 - 29 - 37) = 114° \ (\angle^e \ in \ 'n \ \Delta = 180°)$

c) $C\hat{D}B = 60° \ (gelykbenige \ \Delta)$
   $D\hat{B}A = 40° \ (gelykbenige \ \Delta)$
   $D\hat{A}E = \frac{(180 - 40 - 40)}{2} = 50° \ (AC \ halveer \ D\hat{A}B)$
   $x = (180 - 50 - 60 - 40) = 30° \ (\angle^e \ in \ 'n \ parallelogram)$

d) $Q\hat{S}R = 40° \ (verwisselende \angle^e \ is \ gelyk)$
   $x = (180 - 32 - 40) = 108° \ (\angle^e \ in \ 'n \ \Delta = 180°)$

e) $y = \frac{(180-112)}{2} = 34° \ (ko - binnehoeke = 180°)$

$Q\hat{T}R = (180 - 34 - 112) = 34° \ (\angle^e \ in \ 'n \ \Delta = 180°)$

$x = (180 - 34) = 146° \ (\angle^e \ op \ 'n \ reguitlyn = 180°)$

f) $2y = 112° \ (teenoorstaande \ \angle^e \ in \ 'n \ parallelogram) \ \therefore y = 56°$

$x = (180 - 56 - 45) = 79° \ (\angle^e \ in \ 'n \ \Delta = 180°)$

Vraag 8:

a) i) $MB = MD = 4cm (hoeklyne \ van \ 'n \ ruit \ halveer \ mekaar)$

ii) $D\hat{M}C = 90° hoeklyne \ van(\ 'n \ ruit \ is \ loodreg \ op \ mekaar)$

$In \ \Delta DMC:$

$MC^2 = DC^2 - DM^2 \left(\hat{M} = 90°; Pythagoras\right)$

$= (5cm)^2 - (4cm)^2$

$= 25cm^2 - 16cm^2 = 9cm^2$

$\therefore MC = \sqrt{9cm^2} = 3cm$

b) i) $In \ \Delta BAC:$

$BA = BC \ (sye \ van \ 'n \ ruit \ is \ ewe \ lank)$

$\therefore B\hat{A}C = B\hat{C}A = 53° \ (basis - \angle^e \ van \ gelykbenige \ \Delta)$

ii) $In \ \Delta ABC:$

$C\hat{B}E = B\hat{A}C + B\hat{C}A \ (buite \ \angle^e \ van \ \Delta)$

$= 53° + 53° \ (reeds \ bewys)$

$= 106°$

iii) $C\hat{B}A + C\hat{B}E = 180° \ (\angle^e \ op \ 'n \ lyn)$

$\therefore C\hat{B}A = 180° - 106° = 74°$

$\therefore A\hat{D}C = 74° \ (teenoorst. \ \angle^e \ van \ 'n \ ruit \ is \ ewe \ groot)$