

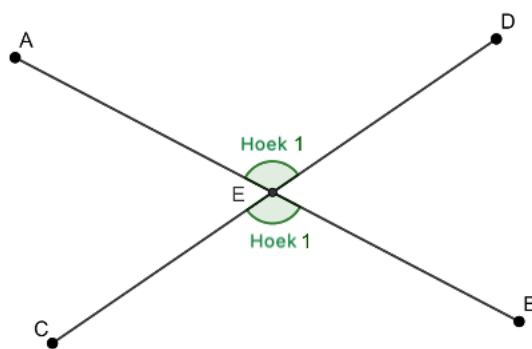
# SHARP

## Werkkaart 12: Meetkunde van reguit lyne - Memo

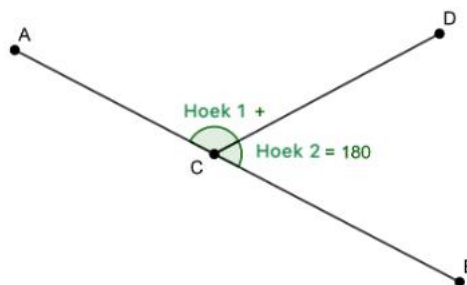
### Graad 9 Wiskunde

1. Gegee 'n beskrywing van hoe elk van hierdie hoek verwantskappe werk:

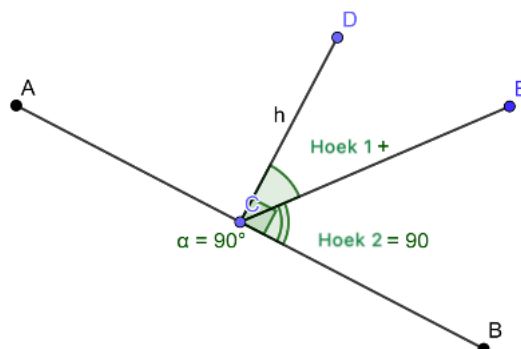
- a) Regoorstaande hoeke - wanneer twee lyne mekaar kruis, is die regoorstaande hoeke in die kruis gelyk aan mekaar.



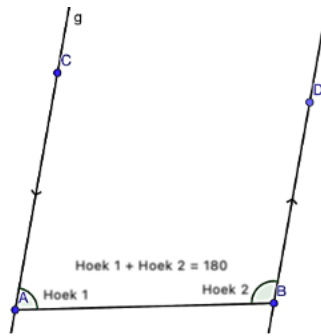
- b) Supplementêre hoeke - is hoeke wat optel tot  $180^\circ$ , hulle word op 'n reguit lyn gevind.



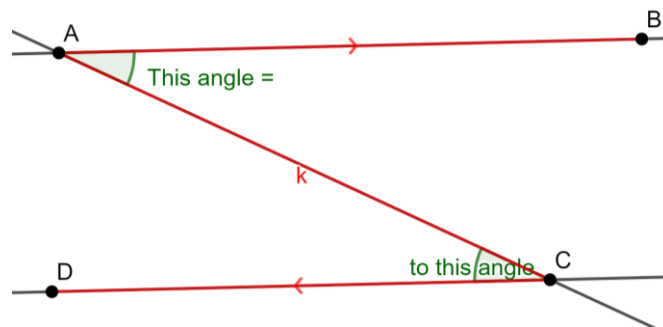
- c) komplementêre hoeke - is hoeke wat optel tot  $90^\circ$ , hulle word in regte hoeke gevind.



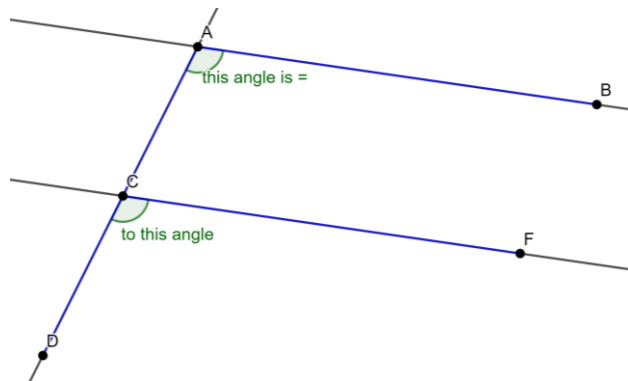
- d) ko-binne hoeke - is hoeke wat optel tot  $180^\circ$ . Hulle is tussen twee ewewydige lyne en vorm 'n U-vorm.



- e) verwisselende hoeke - is hoeke wat geskep word deur 2 ewewydige lyne en 'n derde lyn wat 'n Z- of N-vorm skep. Hierdie hoeke is gelyk aan mekaar.



- f) ooreenkomstige hoeke - is hoeke wat geskep word deur 2 ewewydige lyne en 'n derde lyn wat 'n F-vorm skep. Hierdie hoeke is gelyk aan mekaar.



2. Gee die spesiale hoek verwantskappe wat uit die volgende tipes lyne kan voortspuit:
- loodregte lyne - ooreenkomstige en supplementêre hoeke
  - ewewydige lyne - Ko-binne, verwisselende en ooreenkomstige hoeke
  - snylyne – regoorstaande hoeke en supplementêre hoeke.

3. a)

$$C\hat{G}E = D\hat{F}G$$

ooreenkomstige  $\angle$ 's =,  $DF \parallel CG$

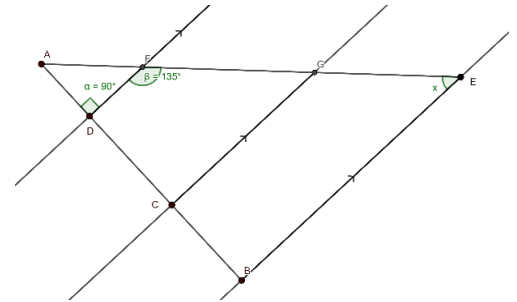
$$\therefore C\hat{G}E = 135^\circ$$

$$C\hat{G}E + x = 180^\circ$$

ko-binne hoeke som tot  $180^\circ$ ,  $BE \parallel CG$

$$\therefore x = 180^\circ - 135^\circ$$

$$\therefore x = 45^\circ$$



b)

$$A\hat{D}C = E\hat{A}D$$

verwisselende hoeke gelyk,  $EA \parallel DC$

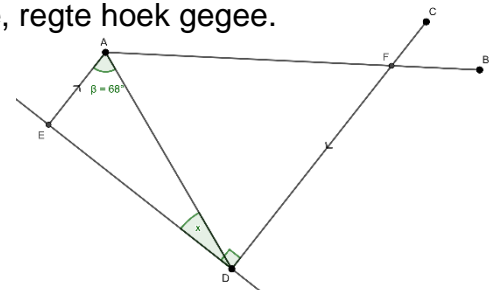
$$\therefore A\hat{D}C = 68^\circ$$

$$A\hat{D}C + x = 90^\circ$$

komplementêre hoeke, regte hoek gegee.

$$\therefore x = 90^\circ - 68^\circ$$

$$\therefore x = 22^\circ$$



c)

$$B\hat{G}D + 104^\circ = 180^\circ$$

supplementêre hoeke tel op tot  $180^\circ$

$$\therefore B\hat{G}D = 180^\circ - 104^\circ$$

$$\therefore B\hat{G}D = 76^\circ$$

$$B\hat{G}D = C\hat{A}G$$

ooreenkomstige hoeke is gelyk,  $EF \parallel AC$

$$\therefore C\hat{A}G = 76^\circ$$

$$\text{Nou } A\hat{E}C = E\hat{A}G + B\hat{A}C$$

$$\therefore A\hat{E}C = 33^\circ + 76^\circ = 109^\circ$$

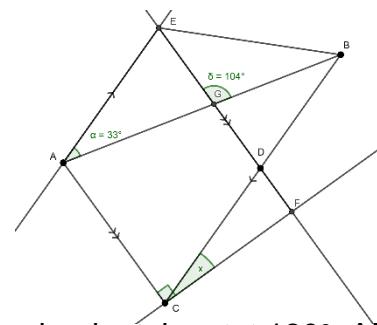
$$\text{Dan } A\hat{E}C + A\hat{C}D = 180^\circ$$

ko-binne hoeke tel op tot  $180^\circ$ ,  $AE \parallel CB$

$$\therefore 109^\circ + A\hat{C}D = 180^\circ$$

$$\therefore A\hat{C}D = 180^\circ - 109^\circ$$

$$\therefore A\hat{C}D = 71^\circ$$



$$\hat{A}CD + x = 90^\circ$$

$$\therefore x = 90^\circ - 71^\circ$$

$$\therefore x = 19^\circ$$

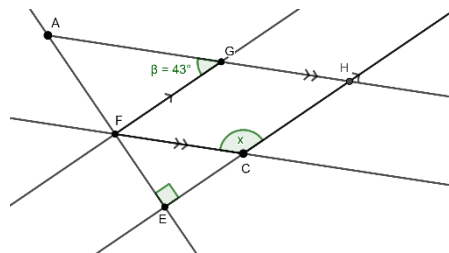
d)  $\hat{A}GF = \hat{G}HC$  ooreenkomstige hoeke is gelyk,  $FG \parallel EH$

$$\therefore \hat{G}HC = 43^\circ$$

$\hat{G}HC + x = 180^\circ$  ko-binnehoeke tel op tot  $180^\circ$ ,  $FC \parallel GH$

$$\therefore x = 180^\circ - 43^\circ$$

$$\therefore x = 137^\circ$$



4. a)  $a = b = 45^\circ$

verwisselende hoeke,  $AB \parallel CD$

$$\hat{A}EC + c = 180^\circ$$

supplementêre hoeke tel op tot  $180^\circ$

$$\therefore c = 180^\circ - 74^\circ$$

$$\therefore c = 106^\circ$$

$$\hat{A}EB = c = 106^\circ$$

regoorstaande hoeke is gelyk.

$$a + \hat{A}EB + d = 180^\circ$$

som van hoeke in  $\Delta = 180^\circ$

$$\therefore d = 180^\circ - 45^\circ - 106^\circ$$

$$\therefore d = 29^\circ$$

$$\hat{B}ED = \hat{A}EC = 74^\circ$$

regoorstaande hoeke is gelyk

$$\hat{B}ED + \hat{E}DB + e = 180^\circ$$

som van hoeke in  $\Delta = 180^\circ$

$$\therefore e = 180^\circ - 74^\circ - 68^\circ$$

$$\therefore e = 38^\circ$$

$$d = f = 29^\circ$$

verwisselende hoeke,  $AB \parallel CD$

- b)  $a + g = 180^\circ$  ko-binne hoeke tel op tot  $180^\circ$ ,  $FE \parallel DG$   
 $\therefore g = 180^\circ - 51^\circ$   
 $\therefore g = 129^\circ$   
 $h + g = 180^\circ$  ko-binne hoeke tel op tot  $180^\circ$ ,  $ED \parallel CF$   
 $h = 180^\circ - 129^\circ$   
 $h = 51^\circ$   
 $h = i = 51^\circ$  verwisselende hoeke gelyk,  $EF \parallel DG$   
 $i = j = 51^\circ$  regoorstaande hoeke is gelyk.  
 $H\hat{D}C + j + k = 180^\circ$  som van hoeke in  $\Delta = 180^\circ$   
 $k = 180^\circ - 77^\circ - 51^\circ$   
 $k = 52^\circ$
- c)  $\beta = m = 37^\circ$  ooreenkomstige hoeke is gelyk,  $BC \parallel DE$   
 $90^\circ + m + n = 180^\circ$  som van hoeke in  $\Delta = 180^\circ$   
 $n = 180^\circ - 90^\circ - 37^\circ$   
 $n = 53^\circ$   
 $n + p = 180^\circ$  supplementêre hoeke is  $180^\circ$   
 $\therefore p = 180^\circ - 53^\circ$   
 $\therefore p = 127^\circ$   
 $n = q = 53^\circ$  ooreenkomstige hoeke is gelyk,  $BC \parallel DE$
- d)  $r + 90^\circ + 60^\circ = 180^\circ$  som van hoeke in  $\Delta = 180^\circ$   
 $r = 180^\circ - 90^\circ - 60^\circ$   
 $r = 30^\circ$   
 $r = s = 30^\circ$  verwisselende hoeke gelyk,  $AC \parallel DE$

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

$$t = 60^\circ$$

$$\beta + t + u = 180^\circ$$

som van hoeke in  $\Delta = 180^\circ$

$$\therefore u = 180^\circ - 60^\circ - 60^\circ$$

$$\therefore u = 60^\circ$$

$$u + v = 180^\circ$$

supplementêre hoeke is 180°

$$\therefore v = 180^\circ - 60^\circ$$

$$\therefore v = 120^\circ$$

$$v + w + s = 180^\circ$$

som van hoeke in  $\Delta = 180^\circ$

$$w = 180^\circ - 120^\circ - 30^\circ$$

$$\therefore w = 30^\circ$$

e)  $a = x = 63^\circ$

ooreenkomstige hoeke gelyk, AB || DI

$$a = y = 63^\circ$$

verwisselende hoeke gelyk, EH || AF

$$y + z + \delta = 180^\circ$$

supplementêre hoeke is 180°

$$\therefore z = 180^\circ - 63^\circ - 40^\circ$$

$$\therefore z = 77^\circ$$