

ETC 1



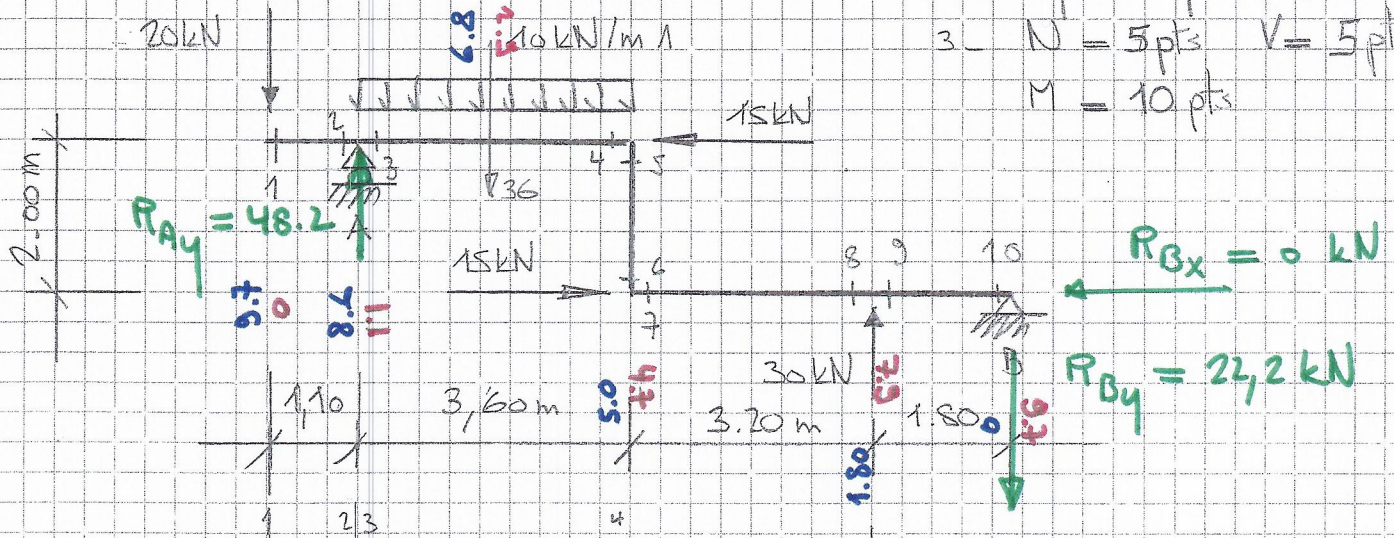
Nom :



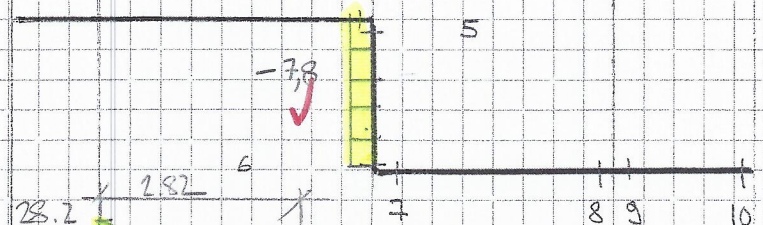
(four diagramme sur la feuille)

1 Déterminez les efforts intérieurs du système ci-dessous et indiquez où sont les moments min/max.

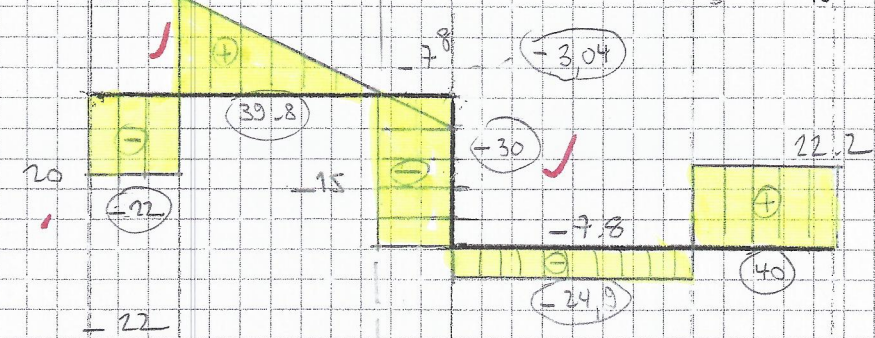
- 1. R_A/A_B 15 pts
- 2. Coupes 15 pts
- 3. $N = 5$ pts $V = 5$ pts $M = 10$ pts



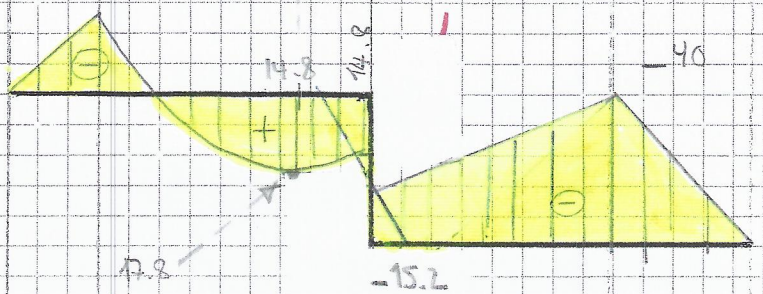
N



V



M



$$\sum M_A = (20 \cdot 1,1) - (36 \cdot 1,8) + (15 \cdot 2,0) + (30 \cdot 6,8) + (R_{By} \cdot 8,6)$$

$$R_{By} = \frac{-22 + 64,8 - 30 - 204}{8,6} = \frac{-191,2}{8,6} = -22,23 \text{ kN}$$

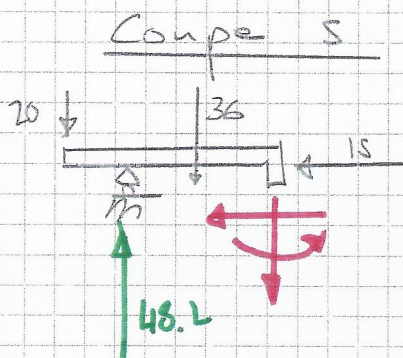
$$\sum M_B = (20 \cdot 9,7) + (36 \cdot 6,8) + (15 \cdot 2) - (30 \cdot 1,8) - (R_{Ay} \cdot 8,6)$$

$$- R_{Ay} = \frac{-194 - 244,8 - 30 + 54}{8,6} = \frac{-414,8}{8,6} = -48,2$$

Controle:

$$\sum F_y = 0 \quad +20 + 36 - 30 - 48,2 + 22,2 = 0$$

$$R_{Bx} = 0$$



$$\sum F_N = 0 \quad 20 + 36 - 48,2 + N = 0$$

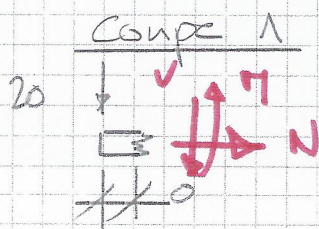
$$N = -7,8$$

$$\sum F_V = 0 \quad 15 + V = 0 \quad V = -15 \text{ kN}$$

$$\sum M_S = (20 \cdot 4,7) - (48,2 \cdot 3,6) + (36 \cdot 1,8)$$

$$+ M = 0$$

$$M = -94 + 173,5 - 64,8 = +14,7$$



$$\sum F_N = 0 \quad N = 0$$

$$\sum F_V = 0 \quad 20 + V = 0$$

$$V = -20$$

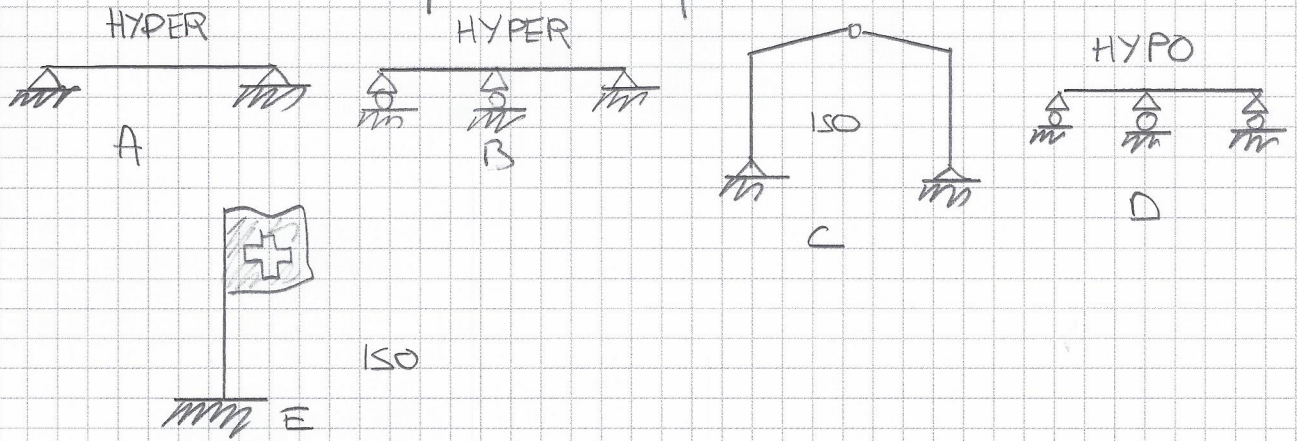
$$M = 0$$

ETC 1-3

7.12.21

2

2 - 5pts
 Déterminez si les structures ci-dessous sont iso-hyp ou hyperstatiques



3 - 15pts
 Déterminez les réactions d'appuis du système ci-dessous.

