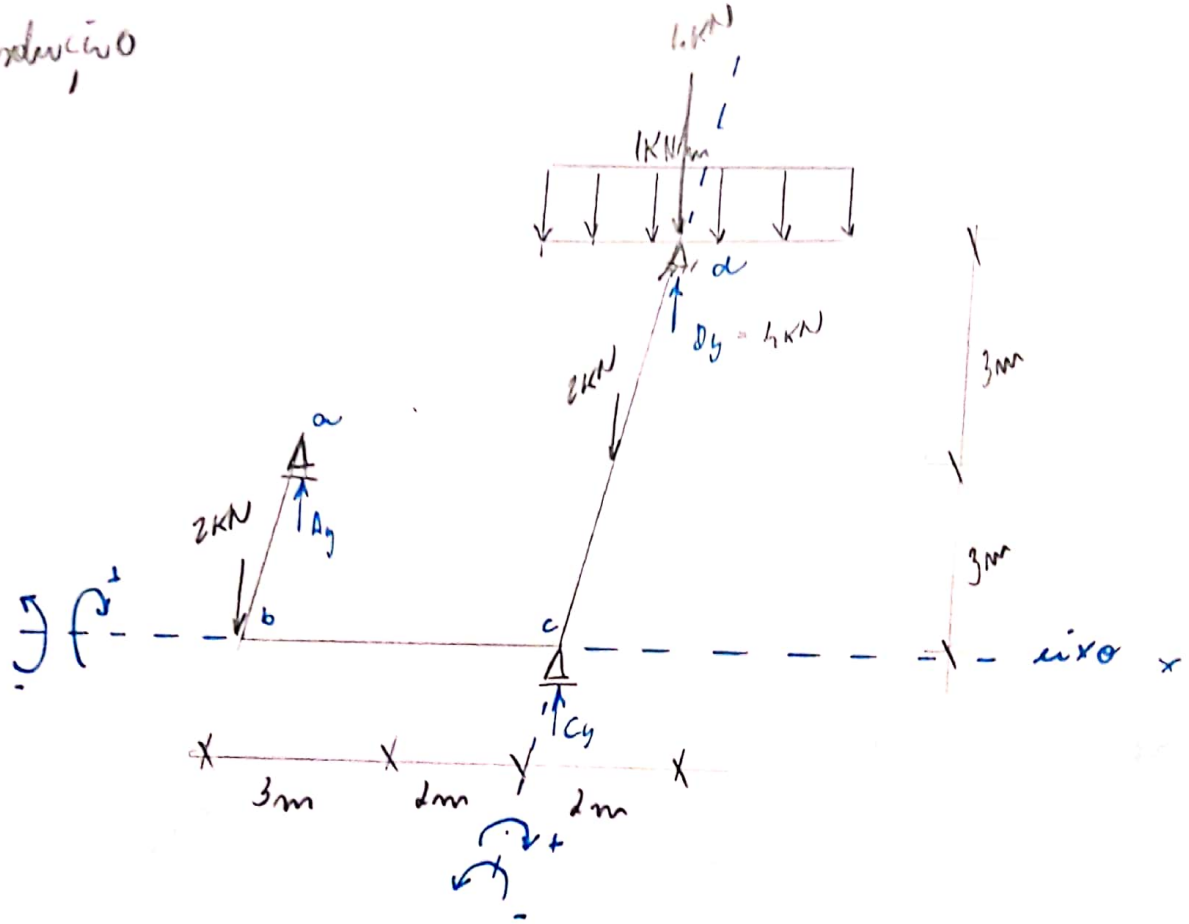
Diagrama de Esforços. Grelhas planas.

Resolução

II.

a)



Cálculos:

$$\Sigma F_y = A_y + C_y + D_y - 2 - 4 - 2 = 0$$

$$A_y + C_y + D_y = 10\,KN \quad \rightsquigarrow \quad C_y = 4\,KN$$

$$\Sigma M_{B-C} = +A_y(3) + D_y(6) - 2(3) - 4(6) = 0$$

$$3A_y + 6D_y = 30$$

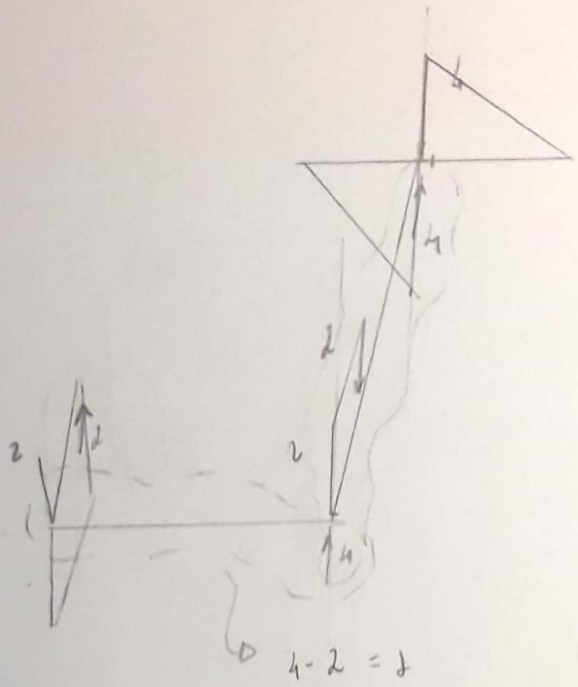
$$A_y + 2D_y = 10\,KN \quad \rightsquigarrow \quad 2D_y = 10 - 2$$

$$D_y = 4\,KN$$

$$\Sigma M_{c-d} = -2(5) + A_y(5) = 0$$

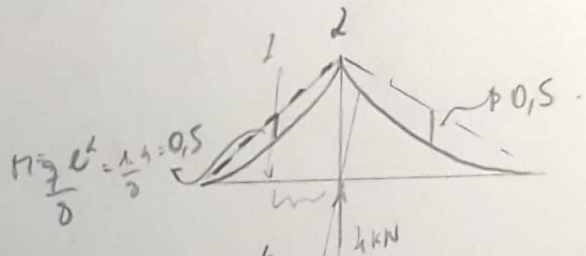
$$A_y = 2\,KN$$

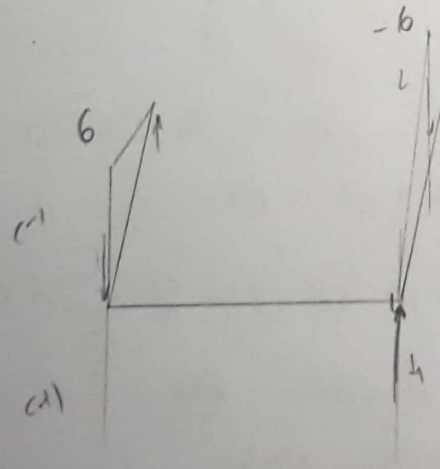
D.Q



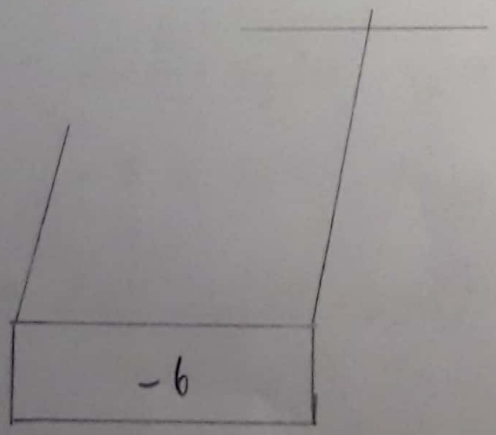
de fora p/ dentro
da esq. p/ direita.

D.M

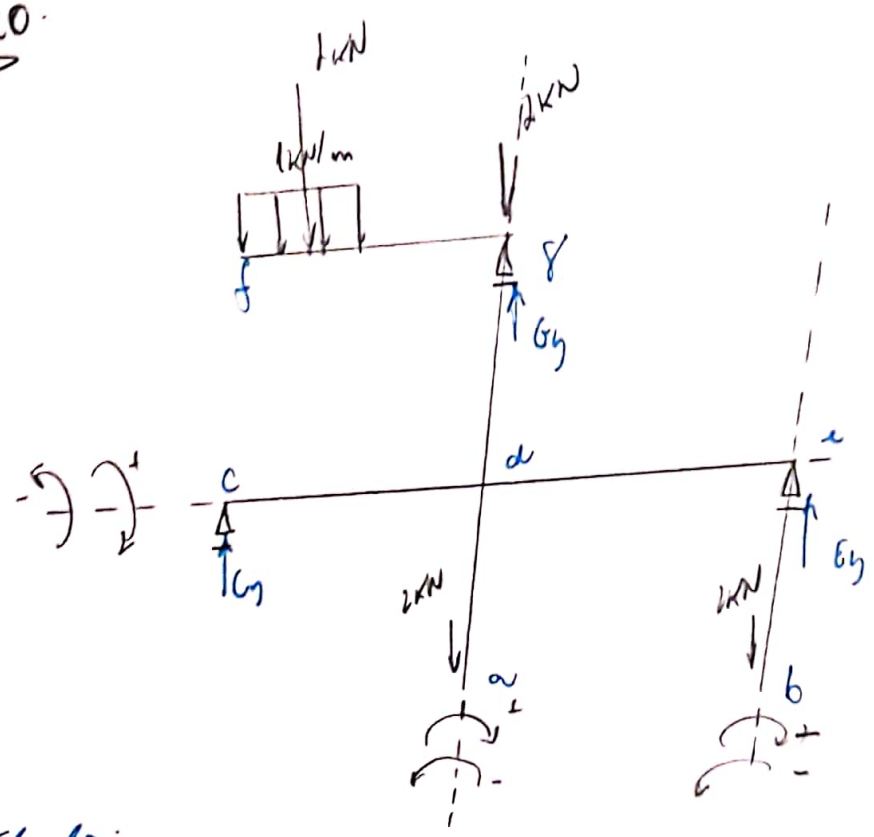




D.T



Resolução:



Cálculo:

$\Sigma F_y = 0 \rightarrow C_y + E_y + G_y - 2 - 2 - 2 = 0$

$C_y + E_y + G_y = 6 \rightarrow C_y + E_y = 8$

$C_y = 8 - E_y$

$C_y = 8 - 4,25$

$= 3,75$

$\Sigma M_{a-g} = 0 \rightarrow + C_y(4) - E_y(4) + 2(4) - 2(3) = 0$

$4C_y - 4E_y + 2 = 0$

$2C_y - 2E_y = -1$

$2(8 - E_y) - 2E_y = -1$

$16 - 2E_y - 2E_y = -1$

$-4E_y = -17$

$E_y = \frac{17}{4}$

$E_y = 4,25$

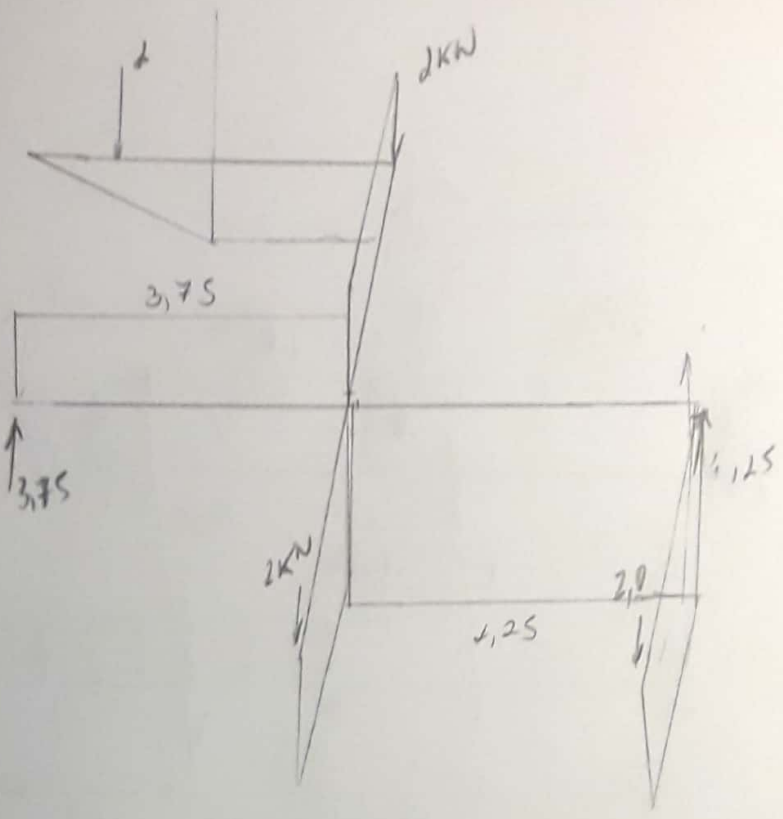
$\Sigma M_{b-e} = 0 \rightarrow -2(4) + G_y(4) - 2(7) + C_y(8) = 0$

$-8 + 4G_y - 14 + 8C_y = 0$

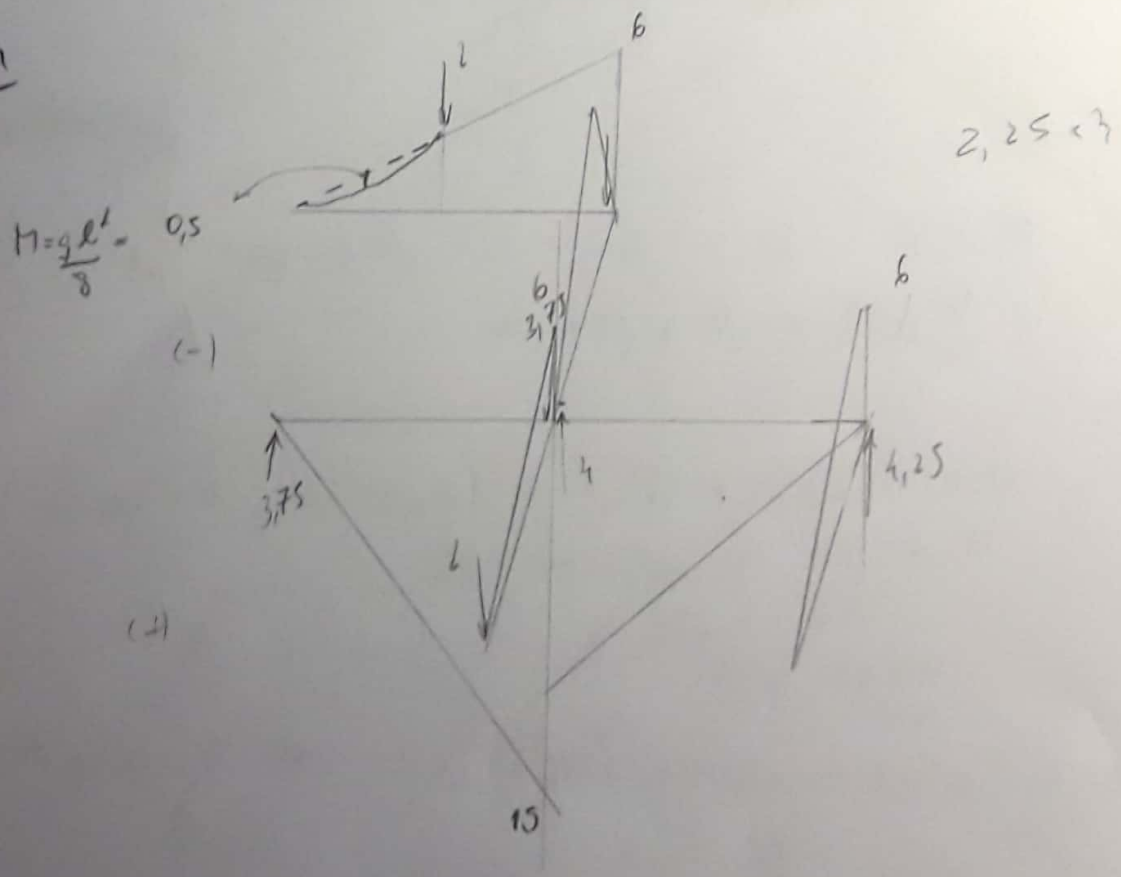
$\Sigma M_{c-e} = 0 \rightarrow 3G_y - 2(3) + 2(3) + 2(3) = 0$

$3G_y = -6$

$G_y = -2$

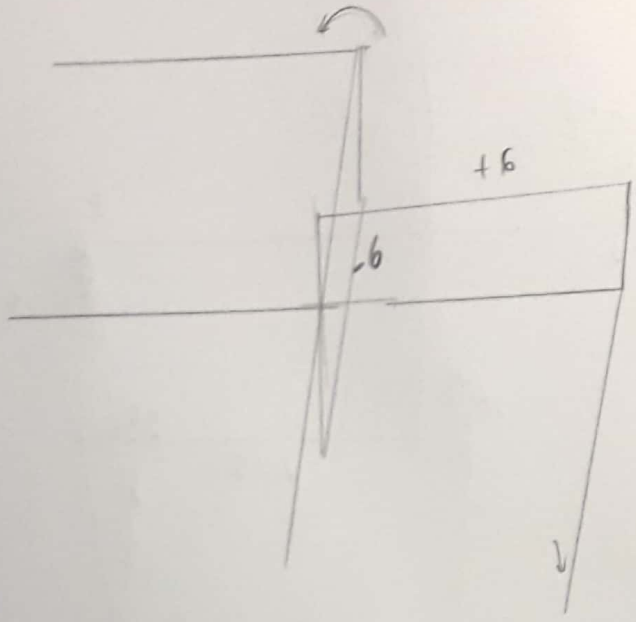


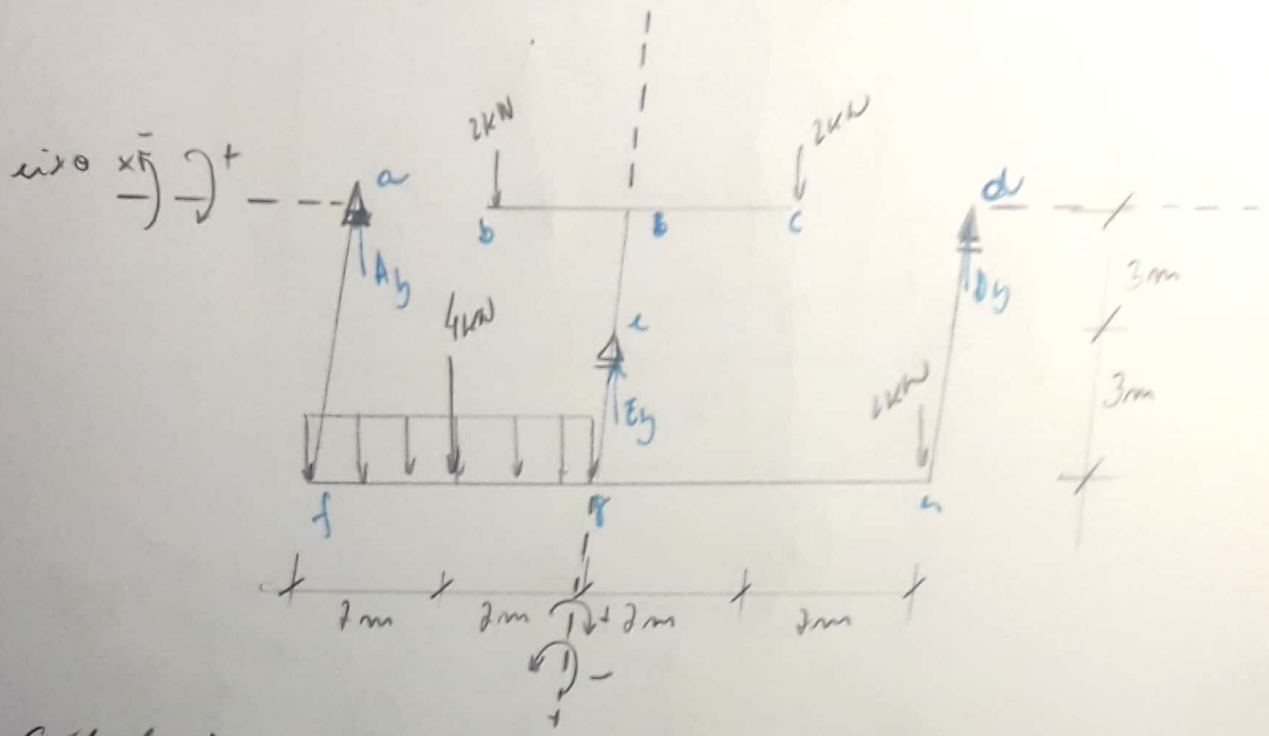
D.M



2,25 < 3

D.+





Cálculos:

$$\Sigma F_y = A_y + E_y + D_y - 2 - 2 - 2 - 4 = 0$$

$$A_y + E_y + D_y = 10\,kN$$

$$\Sigma M_{a-d} = 0 \curvearrowright +4\times(6) - E_y(3) + 2(6) = 0$$

$$24 - 3E_y + 12 = 0$$

$$3E_y = 36$$

$$E_y = 12\,kN$$

$$\Sigma M_{g-e} = 0 \curvearrowright -2(3) + 2(2) + A_y(4) - D_y(4) - 4(2) + 2(4) = 0$$

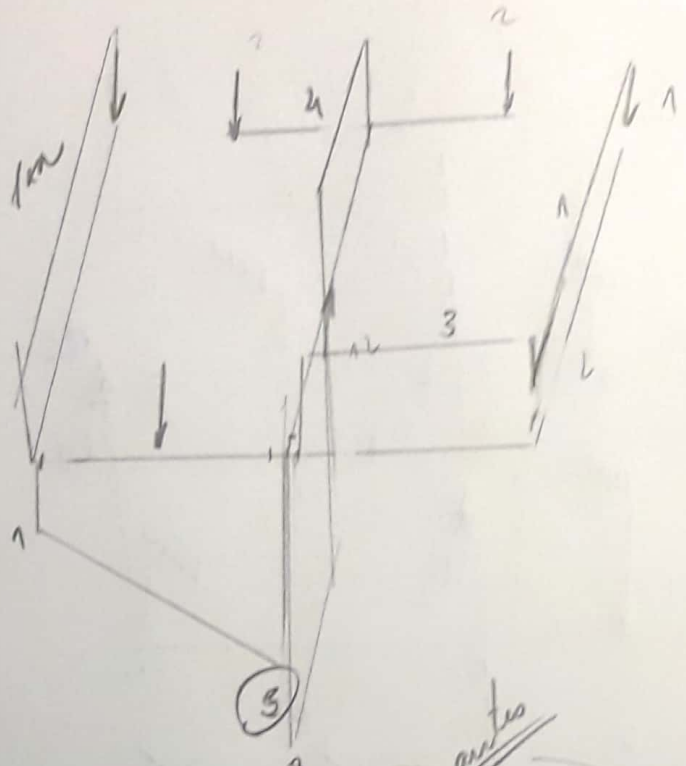
$$A_y = D_y$$

$$2A_y + 12 + A_y = 10\,kN$$

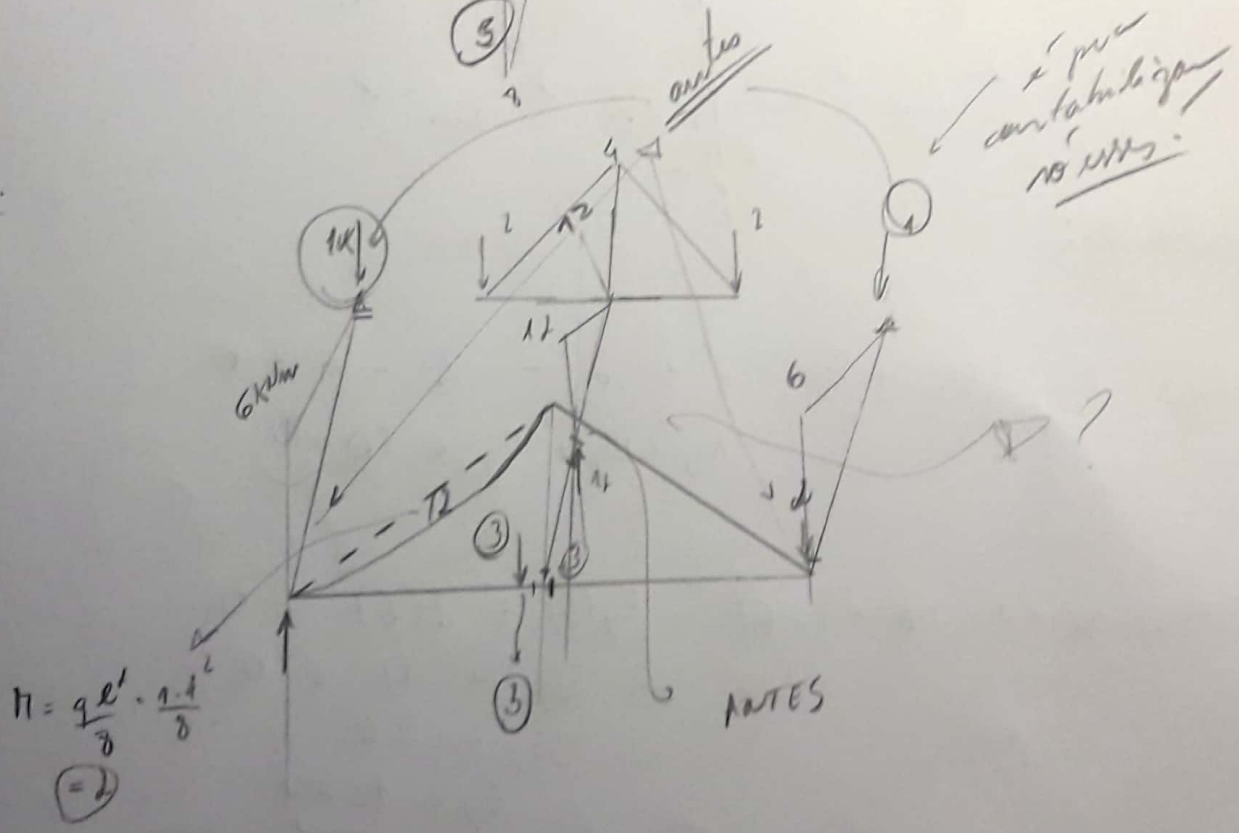
$$2A_y = -2$$

$$A_y = -1\,kN \qquad D_y = -1\,kN$$

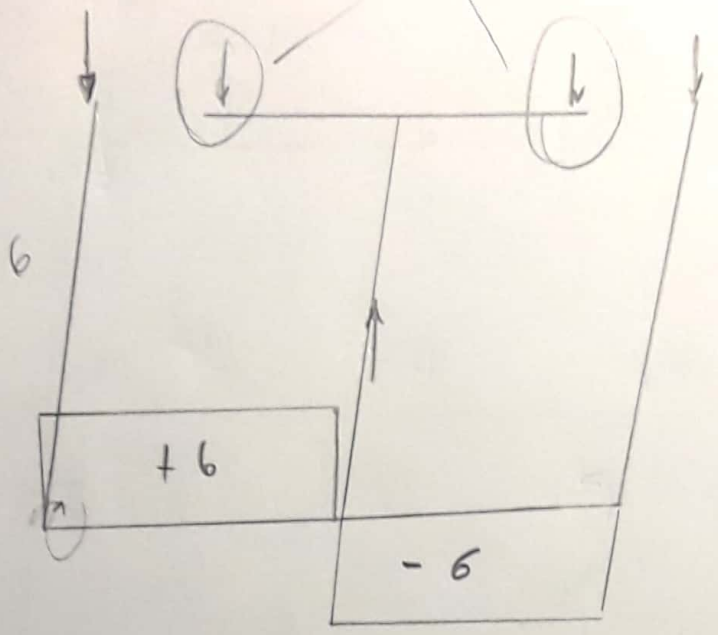
D. G

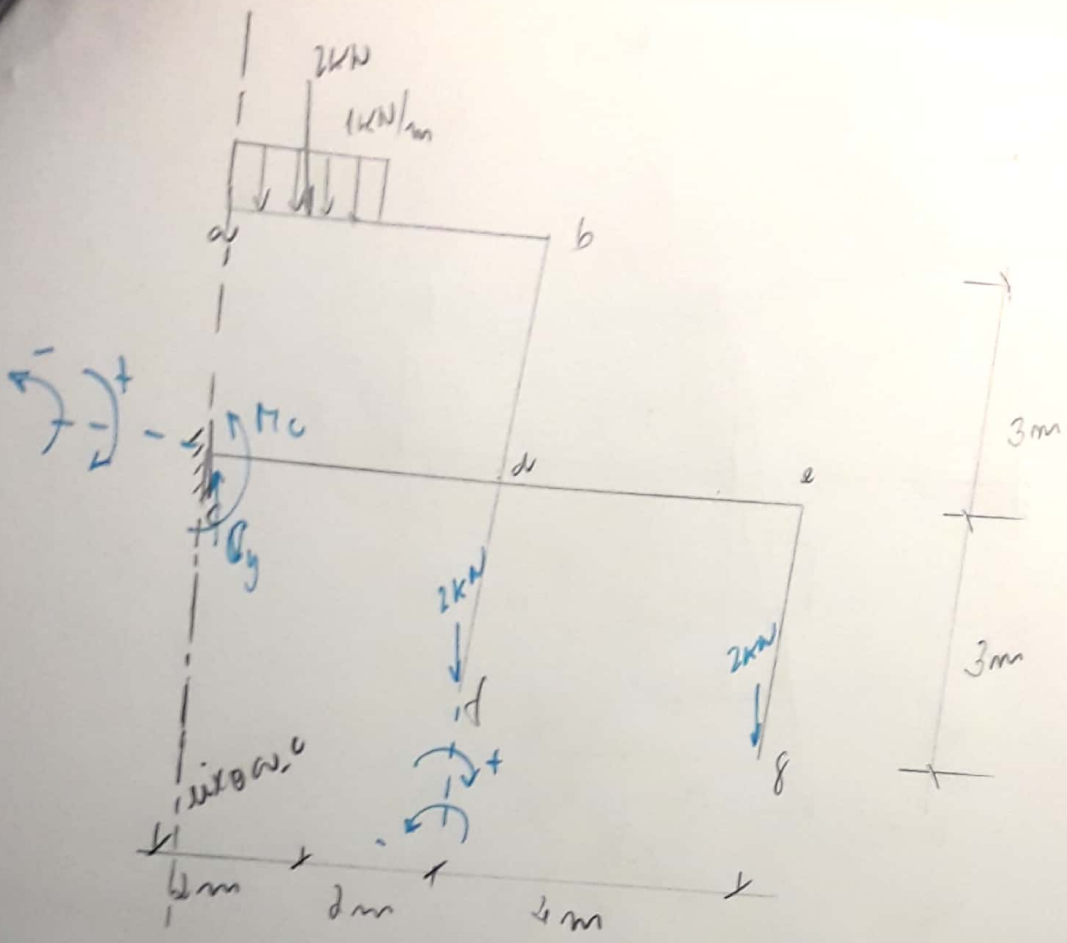


D. M.



não tem binário //





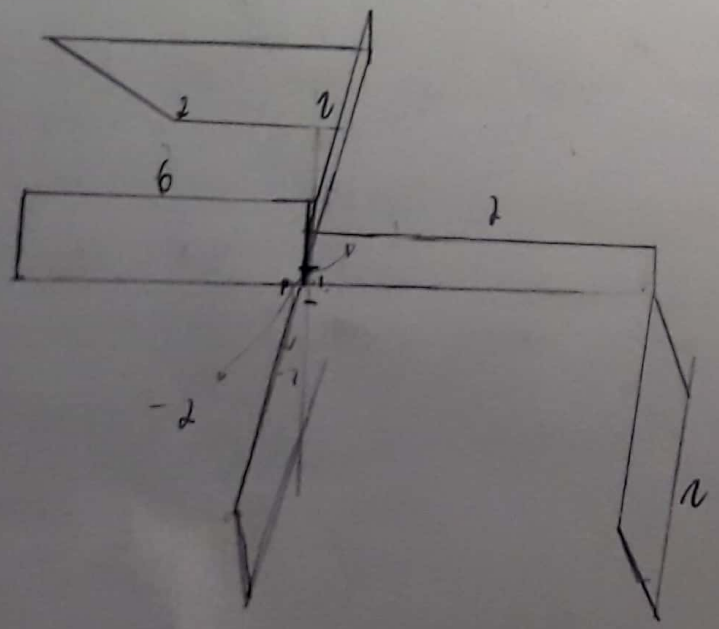
$\Sigma F_y = 0 \curvearrowright C_y - 2 - 2 - 2 = 0$

$C_y = 6kN$

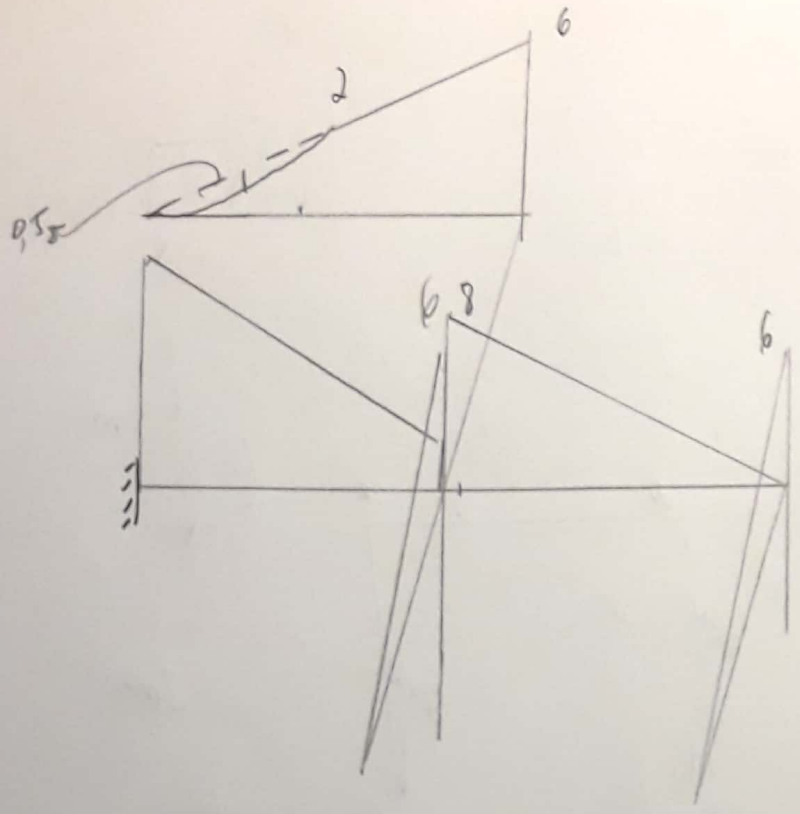
$\Sigma M_{a-c} = 0 \curvearrowright +2(1) + 2(4) + 2(8) - M_c = 0$

$M_c = 26kNm$

D a



D.M



-6 -2 -1

6

D.T