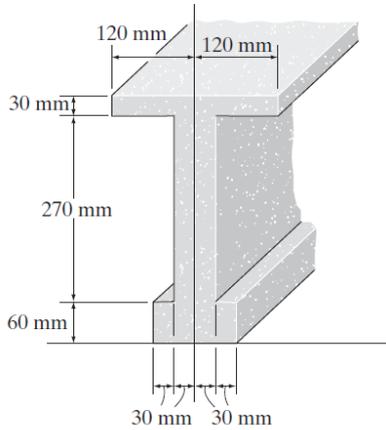




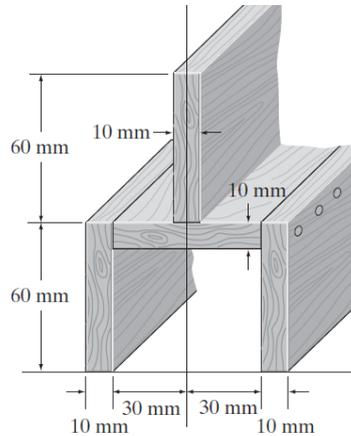
Determine o centroide das seções transversais a seguir:

1) Hibbeler 9.52



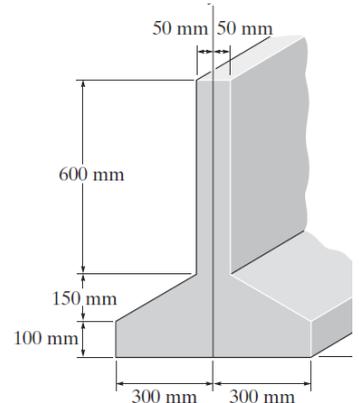
Resposta: $y = 191 \text{ mm}$

2) Hibbeler 9.53



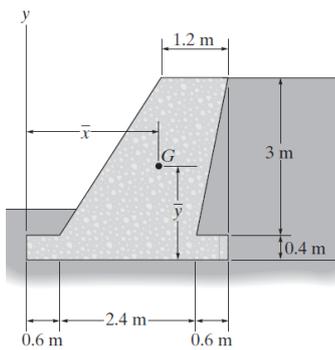
Resposta: $y = 51,25 \text{ mm}$

3) Hibbeler 9.55



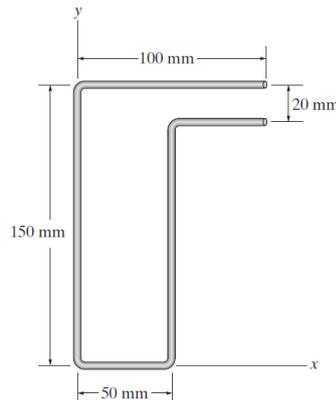
Resposta: $y = 257 \text{ mm}$

4) Hibbeler 9.52 – Determine a posição do centro de massa do muro de gravidade abaixo.



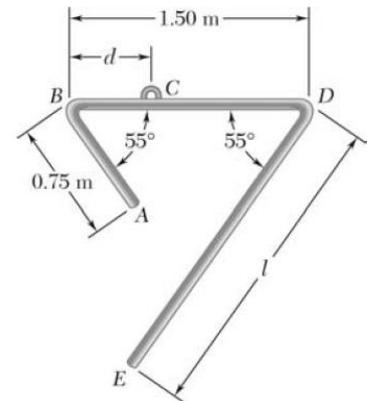
Resposta: $x = 2,22 \text{ m}$ e $y = 1,41 \text{ m}$

5) Hibbeler 9.44 – Determine o centroide do arame homogêneo dobrado na forma indicada na figura.



Resposta: $x = 34,4 \text{ mm}$ e $y = 85,8 \text{ mm}$

6) Beer 5.29 – Determine o valor de d para que o arame dobrado fique com o trecho BCD horizontal. Dado $l = 2 \text{ m}$.

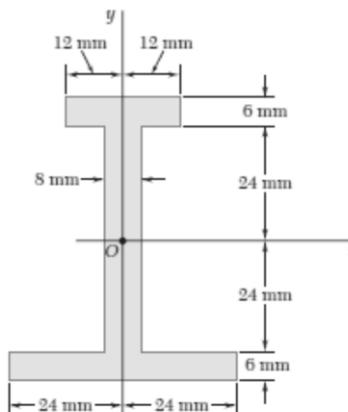


Resposta: $d = 0,739 \text{ m}$

7) Calcule o momento estático da área superior ao eixo centroidal horizontal das questões 1,2 e 3.

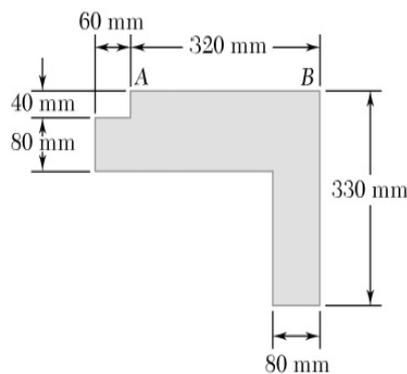
Determine o momento de inércia em relação ao eixo centroidal horizontal e o respectivo raio de giração das seções transversais a seguir:

8) Beer 9.31



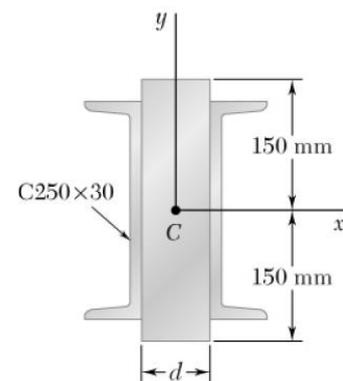
Resposta: $I_x = 390.000 \text{ mm}^4$
 $i_x = 21,9 \text{ mm}$

9) Beer 9.44



Resposta: $I_x = 432.589.600 \text{ mm}^4$
 $i_x = 84,9 \text{ mm}$

10) Beer 9.52 adaptada: $d = 20 \text{ mm}$



Dados: C250x30: $A = 37,8 \text{ cm}^2$ $I_x = 3.260 \text{ cm}^4$
 Resposta: $I_x = 432.589.600 \text{ mm}^4$
 $i_x = 84,9 \text{ mm}$