

Scienza delle Costruzioni - Ingegneria Civile

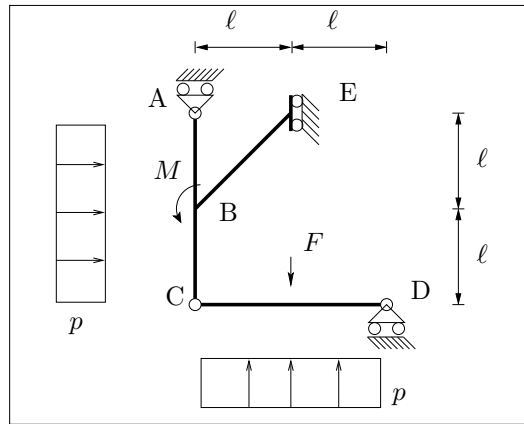
Prof. Angelo Luongo - 11/09/2009

SdC 9CFU: ES. 1, 2, 3; DURATA: 4 H

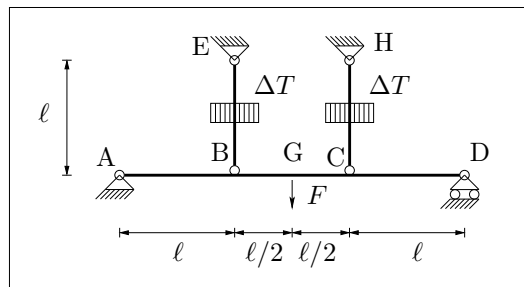
SdC I 6CFU: ES. 1, 2; DURATA: 3 H

SdC II 6CFU: ES. 3; DURATA: 2 H

Esercizio 1: Scrivere e diagrammare le leggi di variazione delle caratteristiche di sollecitazione per la struttura in figura, nel caso in cui siano $\ell = 4$ m, $p = 20 \frac{\text{KN}}{\text{m}}$, $F = 40$ KN, $M = 20$ KNm. {Calcolare la rotazione della sezione in A, essendo $EI = 64000$ KNm² }¹.



Esercizio 2: Diagrammare le caratteristiche di sollecitazione per la struttura in figura nel caso in cui sia $\ell = 4$ m, $F = 40$ KN, $EI = 6.4 \times 10^4$ KNm², $EA_{BE} = EA_{CH} = 3.0 \times 10^4$ KN, altrove $EA \rightarrow +\infty$, $\Delta T = 20^\circ\text{C}$, $\alpha = 10^{-5} \text{C}^{-1}$.



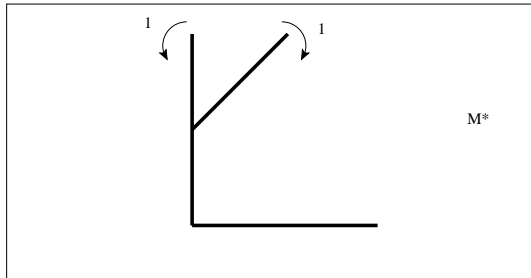
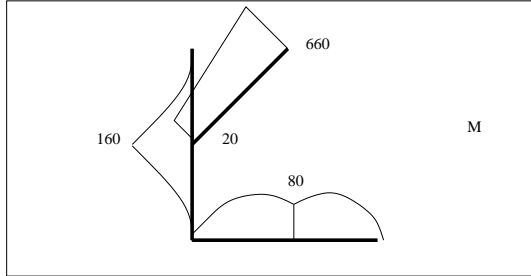
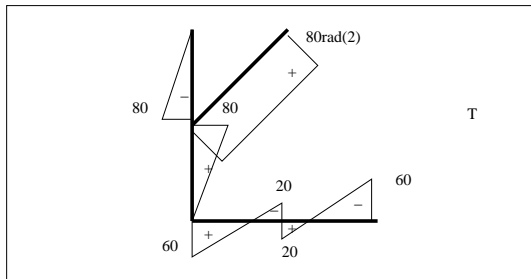
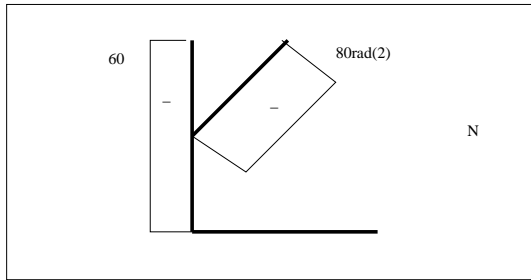
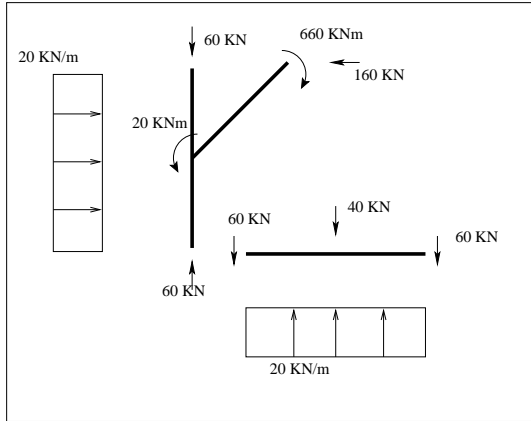
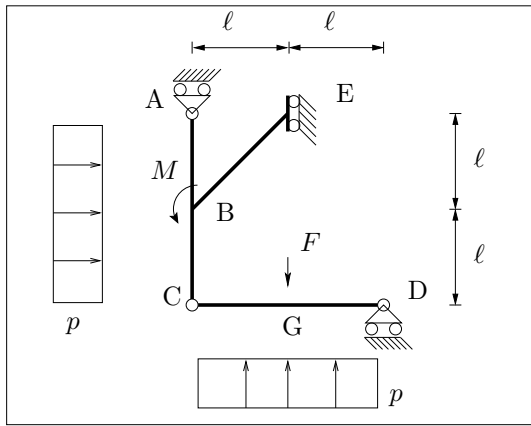
Esercizio 3: Verrà aggiunto in seguito.

¹Domanda riservata agli studenti SdC I 6cfu

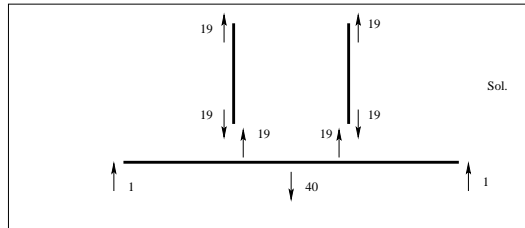
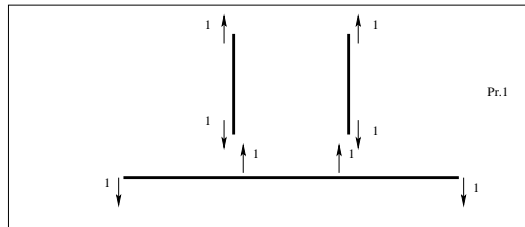
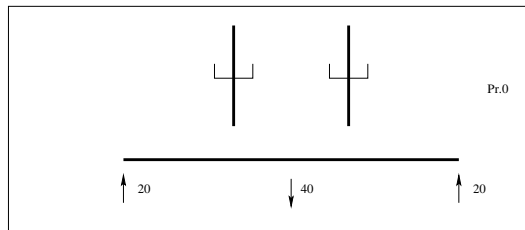
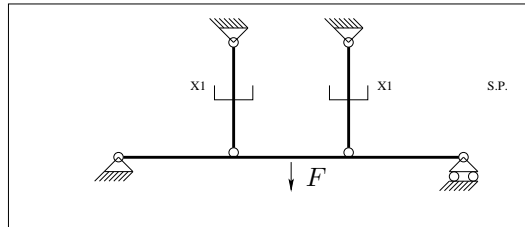
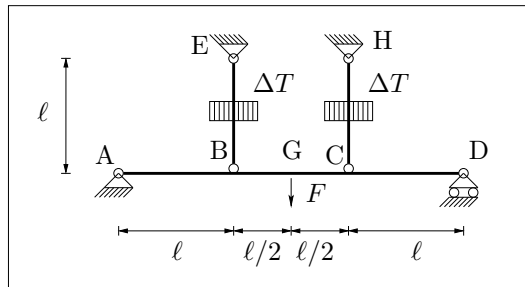
Esercizio 1:

	N	T	M	M*
AB	-60	-20x	10x ²	-1
CB	-60	20x	-10x ²	0
EB	-80√2	80√2	660 - 80√2x	1
CG	0	60 - 20x	-60x + 10x ²	0
DG	0	-60 + 20x	60x - 10x ²	0

$$1\varphi_A = \frac{1}{EI} \int_{\mathcal{D}} MM^* dx = 0.027 \text{ rad}$$



Esercizio 2:



	M_0	M'_1	N'_1
AB	$20x$	$-x$	0
BG	$80 + 20x$	-4	0
BE	0	0	1

$$\eta_{11} = \frac{29}{30000}$$

$$\eta_{10} = -\frac{23}{1200}$$

$$\bar{\eta}_1 = 8 \times 10^{-4}$$

$$\chi_1 = 19\text{KN}$$

