

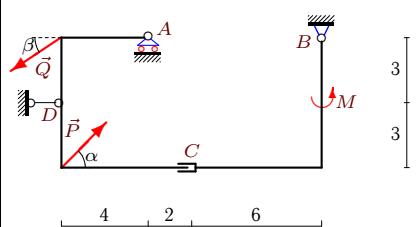
## Расчет составной конструкции

Рама состоит из двух частей, соединенных шарниром или скользящей заделкой. Дан погонный вес рамы  $\rho$ , размеры в метрах и нагрузки. Найти реакции опор.

Кирсанов М.Н. Решебник. Теоретическая механика с. 54.

### Вариант 1

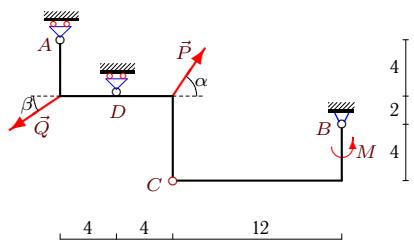
C8.



$$P = 50 \text{ кН}, Q = 60 \text{ кН}, \alpha = 45^\circ, \beta = 30^\circ, \rho = 4 \text{ кН/м}, M = 80 \text{ кНм}.$$

### Вариант 2

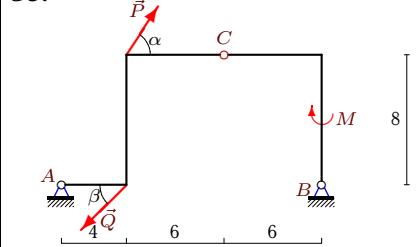
C8.



$$P = 20 \text{ кН}, Q = 30 \text{ кН}, \alpha = 60^\circ, \beta = 30^\circ, \rho = 3 \text{ кН/м}, M = 110 \text{ кНм}.$$

### Вариант 3

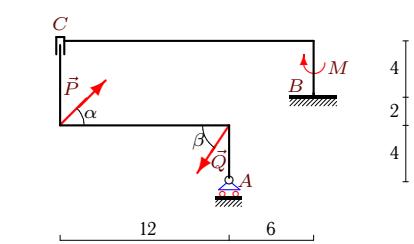
C8.



$$P = 40 \text{ кН}, Q = 50 \text{ кН}, \alpha = 60^\circ, \beta = 45^\circ, \rho = 1 \text{ кН/м}, M = 50 \text{ кНм}.$$

### Вариант 4

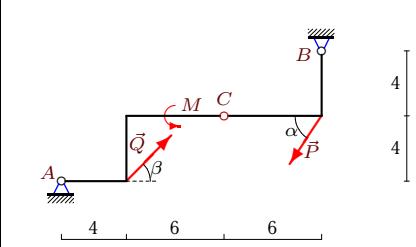
C8.



$$P = 60 \text{ кН}, Q = 70 \text{ кН}, \alpha = 45^\circ, \beta = 60^\circ, \rho = 6 \text{ кН/м}, M = 20 \text{ кНм}.$$

### Вариант 5

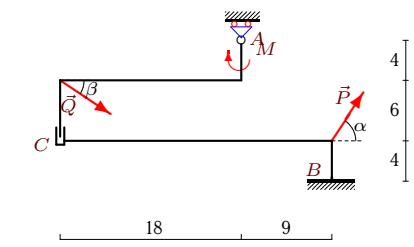
C8.



$$P = 40 \text{ кН}, Q = 50 \text{ кН}, \alpha = 60^\circ, \beta = 45^\circ, \rho = 1 \text{ кН/м}, M = 70 \text{ кНм}.$$

### Вариант 6

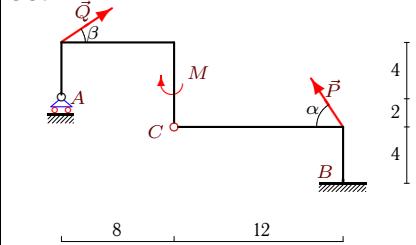
C8.



$$P = 20 \text{ кН}, Q = 30 \text{ кН}, \alpha = 60^\circ, \beta = 30^\circ, \rho = 6 \text{ кН/м}, M = 100 \text{ кНм}.$$

### Вариант 7

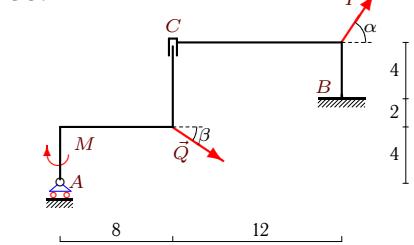
C8.



$$P = 20 \text{ кН}, Q = 30 \text{ кН}, \alpha = 60^\circ, \beta = 30^\circ, \rho = 5 \text{ кН/м}, M = 140 \text{ кНм}.$$

### Вариант 8

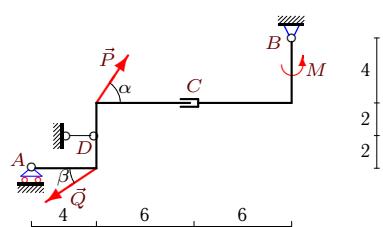
C8.



$$P = 20 \text{ кН}, Q = 30 \text{ кН}, \alpha = 60^\circ, \beta = 30^\circ, \rho = 6 \text{ кН/м}, M = 50 \text{ кНм}.$$

**Вариант 9**

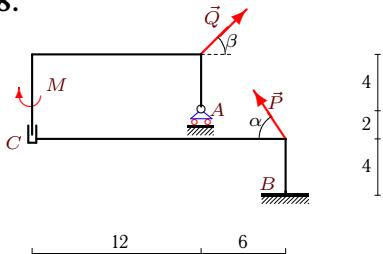
C8.



$P = 20 \text{ kH}$ ,  $Q = 30 \text{ kH}$ ,  $\alpha = 60^\circ$ ,  
 $\beta = 30^\circ$ ,  $\rho = 4 \text{ kH/m}$ ,  $M = 50 \text{ kNm}$ .

**Вариант 10**

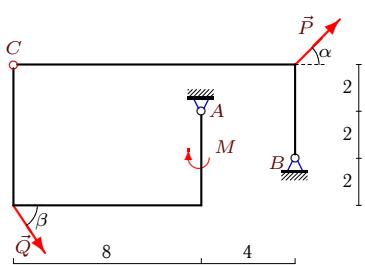
C8.



$P = 40 \text{ kH}$ ,  $Q = 50 \text{ kH}$ ,  $\alpha = 60^\circ$ ,  
 $\beta = 45^\circ$ ,  $\rho = 6 \text{ kH/m}$ ,  $M = 120 \text{ kNm}$ .

**Вариант 11**

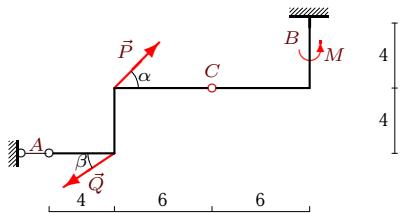
C8.



$P = 60 \text{ kH}$ ,  $Q = 70 \text{ kH}$ ,  $\alpha = 45^\circ$ ,  
 $\beta = 60^\circ$ ,  $\rho = 1 \text{ kH/m}$ ,  $M = 20 \text{ kNm}$ .

**Вариант 12**

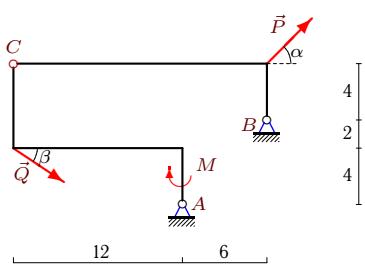
C8.



$P = 50 \text{ kH}$ ,  $Q = 60 \text{ kH}$ ,  $\alpha = 45^\circ$ ,  
 $\beta = 30^\circ$ ,  $\rho = 5 \text{ kH/m}$ ,  $M = 50 \text{ kNm}$ .

**Вариант 13**

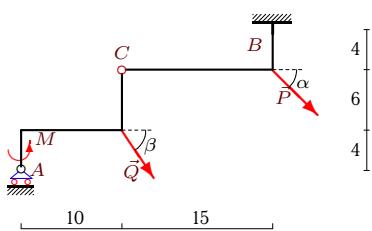
C8.



$P = 50 \text{ kH}$ ,  $Q = 60 \text{ kH}$ ,  $\alpha = 45^\circ$ ,  
 $\beta = 30^\circ$ ,  $\rho = 1 \text{ kH/m}$ ,  $M = 30 \text{ kNm}$ .

**Вариант 14**

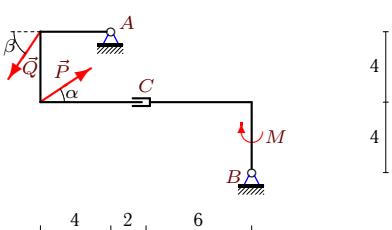
C8.



$P = 60 \text{ kH}$ ,  $Q = 70 \text{ kH}$ ,  $\alpha = 45^\circ$ ,  
 $\beta = 60^\circ$ ,  $\rho = 5 \text{ kH/m}$ ,  $M = 50 \text{ kNm}$ .

**Вариант 15**

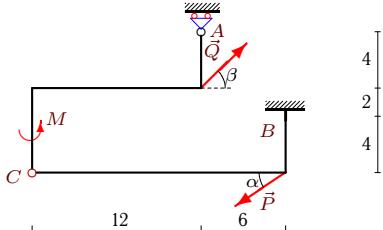
C8.



$P = 10 \text{ kH}$ ,  $Q = 20 \text{ kH}$ ,  $\alpha = 30^\circ$ ,  
 $\beta = 60^\circ$ ,  $\rho = 2 \text{ kH/m}$ ,  $M = 80 \text{ kNm}$ .

**Вариант 16**

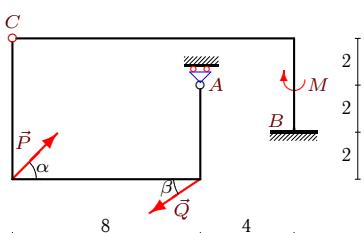
C8.



$P = 30 \text{ kH}$ ,  $Q = 40 \text{ kH}$ ,  $\alpha = 30^\circ$ ,  
 $\beta = 45^\circ$ ,  $\rho = 5 \text{ kH/m}$ ,  $M = 110 \text{ kNm}$ .

**Вариант 17**

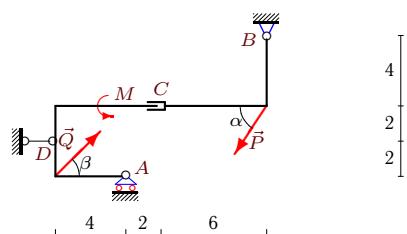
C8.



$$P = 50 \text{ kH}, Q = 60 \text{ kH}, \alpha = 45^\circ, \beta = 30^\circ, \rho = 5 \text{ kH/m}, M = 10 \text{ kNm}.$$

**Вариант 19**

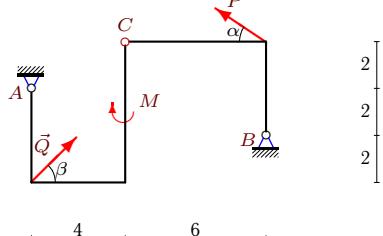
C8.



$$P = 40 \text{ kH}, Q = 50 \text{ kH}, \alpha = 60^\circ, \beta = 45^\circ, \rho = 4 \text{ kH/m}, M = 80 \text{ kNm}.$$

**Вариант 21**

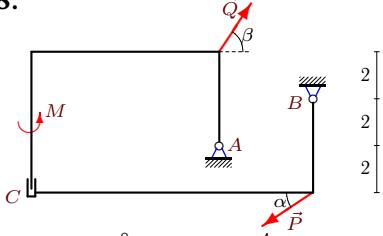
C8.



$$P = 30 \text{ kH}, Q = 40 \text{ kH}, \alpha = 30^\circ, \beta = 45^\circ, \rho = 1 \text{ kH/m}, M = 50 \text{ kNm}.$$

**Вариант 23**

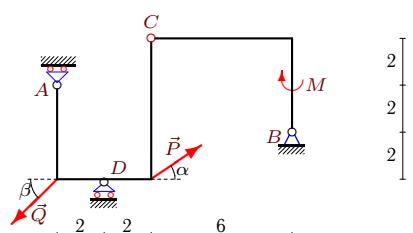
C8.



$$P = 10 \text{ kH}, Q = 20 \text{ kH}, \alpha = 30^\circ, \beta = 60^\circ, \rho = 2 \text{ kH/m}, M = 120 \text{ kNm}.$$

**Вариант 18**

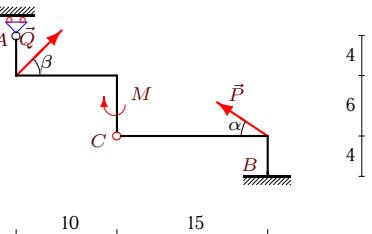
C8.



$$P = 30 \text{ kH}, Q = 40 \text{ kH}, \alpha = 30^\circ, \beta = 45^\circ, \rho = 3 \text{ kH/m}, M = 30 \text{ kNm}.$$

**Вариант 20**

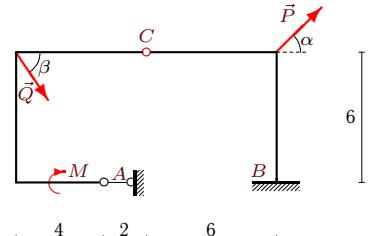
C8.



$$P = 30 \text{ kH}, Q = 40 \text{ kH}, \alpha = 30^\circ, \beta = 45^\circ, \rho = 5 \text{ kH/m}, M = 130 \text{ kNm}.$$

**Вариант 22**

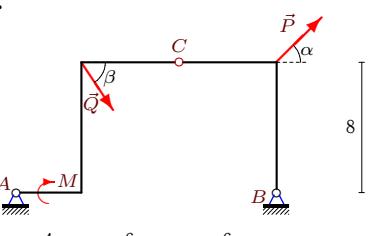
C8.



$$P = 60 \text{ kH}, Q = 70 \text{ kH}, \alpha = 45^\circ, \beta = 60^\circ, \rho = 5 \text{ kH/m}, M = 70 \text{ kNm}.$$

**Вариант 24**

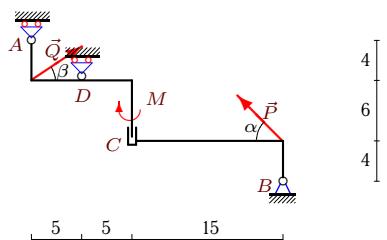
C8.



$$P = 60 \text{ kH}, Q = 70 \text{ kH}, \alpha = 45^\circ, \beta = 60^\circ, \rho = 1 \text{ kH/m}, M = 60 \text{ kNm}.$$

**Вариант 25**

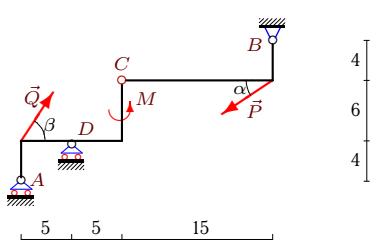
C8.



$P = 50 \text{ kH}$ ,  $Q = 60 \text{ kH}$ ,  $\alpha = 45^\circ$ ,  
 $\beta = 30^\circ$ ,  $\rho = 4 \text{ kH/m}$ ,  $M = 130 \text{ kNm}$ .

**Вариант 26**

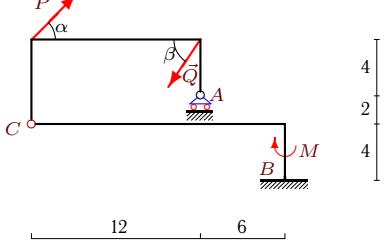
C8.



$P = 10 \text{ kH}$ ,  $Q = 20 \text{ kH}$ ,  $\alpha = 30^\circ$ ,  
 $\beta = 60^\circ$ ,  $\rho = 3 \text{ kH/m}$ ,  $M = 60 \text{ kNm}$ .

**Вариант 27**

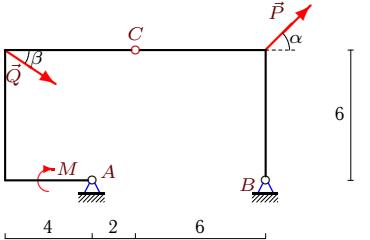
C8.



$P = 60 \text{ kH}$ ,  $Q = 70 \text{ kH}$ ,  $\alpha = 45^\circ$ ,  
 $\beta = 60^\circ$ ,  $\rho = 5 \text{ kH/m}$ ,  $M = 100 \text{ kNm}$ .

**Вариант 28**

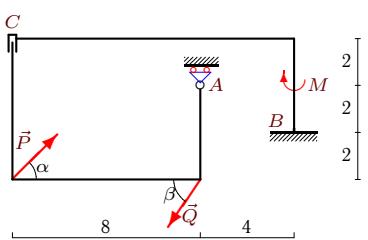
C8.



$P = 50 \text{ kH}$ ,  $Q = 60 \text{ kH}$ ,  $\alpha = 45^\circ$ ,  
 $\beta = 30^\circ$ ,  $\rho = 1 \text{ kH/m}$ ,  $M = 70 \text{ kNm}$ .

**Вариант 29**

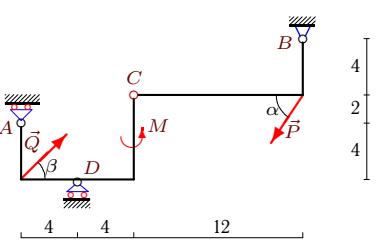
C8.



$P = 60 \text{ kH}$ ,  $Q = 70 \text{ kH}$ ,  $\alpha = 45^\circ$ ,  
 $\beta = 60^\circ$ ,  $\rho = 6 \text{ kH/m}$ ,  $M = 10 \text{ kNm}$ .

**Вариант 30**

C8.



$P = 40 \text{ kH}$ ,  $Q = 50 \text{ kH}$ ,  $\alpha = 60^\circ$ ,  
 $\beta = 45^\circ$ ,  $\rho = 3 \text{ kH/m}$ ,  $M = 50 \text{ kNm}$ .

Ответы

	$X_A$	$Y_A$	$X_B$	$Y_B$	$X_D$	$Y_D$	$M_B$
1	—	126.71	0	-20.07	16.6	—	—
2	—	28.45	15.98	26.16	—	45.07	—
3	24.33	1.41	-8.98	31.3	—	—	—
4	—	150.2	-7.43	132	—	—	-1321.74
5	57.93	30.5	-73.28	-7.21	—	—	—
6	—	183	-35.98	168.68	—	—	-3677.2
7	—	-11.99	-15.98	149.67	—	—	-1339.9
8	—	123	-35.98	78.68	—	—	206.04
9	—	40.89	0	52.8	15.98	—	—
10	—	96.64	-15.36	97.36	—	—	-1442.45
11	894.76	-239.44	-972.18	291.63	—	—	—
12	-32.5	—	49.11	114.64	—	—	-331.42
13	-90.13	61.62	2.8	-22.98	—	—	—
14	—	71	-77.43	227.05	—	—	-2216.53
15	1.34	52.81	0	7.5	—	—	—
16	—	26.7	-2.3	180.02	—	—	-1809.66
17	—	82.45	16.6	82.2	—	—	-442.7
18	—	24.84	2.3	24.46	—	35.98	—
19	—	35.8	20	59.48	-35.36	—	—
20	—	-13.25	-2.3	164.97	—	—	-1827.84
21	-17.54	-1.13	15.24	-18.16	—	—	—
22	-107.29	—	29.86	158.2	—	—	-1112.9
23	-184.68	18.68	183.34	37	—	—	—
24	-28.96	17	-48.46	33.2	—	—	—
25	—	-49.64	-16.6	40.64	—	99.64	—
26	—	-22.18	-1.34	39.14	—	87.71	—
27	—	114.33	-7.43	123.86	—	—	-929.78
28	-32.08	-6.24	-55.24	28.88	—	—	—
29	—	126.2	-7.43	96	—	—	-577.44
30	—	1.06	-15.36	59.52	—	40.7	—