

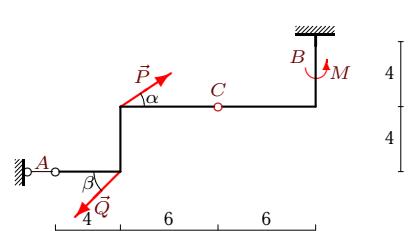
## Расчет составной конструкции

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

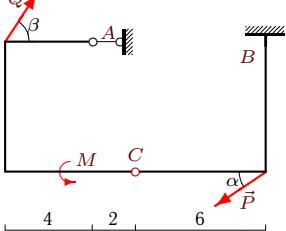
C8.



$$P = 30 \text{ кН}, Q = 40 \text{ кН}, \alpha = 30^\circ, \beta = 45^\circ, \rho = 5 \text{ кН/м}, M = 50 \text{ кНм}.$$

### Вариант 2

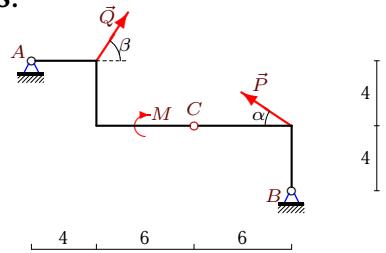
C8.



$$P = 10 \text{ кН}, Q = 20 \text{ кН}, \alpha = 30^\circ, \beta = 60^\circ, \rho = 5 \text{ кН/м}, M = 100 \text{ кНм}.$$

### Вариант 3

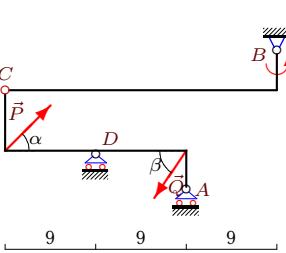
C8.



$$P = 10 \text{ кН}, Q = 20 \text{ кН}, \alpha = 30^\circ, \beta = 60^\circ, \rho = 1 \text{ кН/м}, M = 90 \text{ кНм}.$$

### Вариант 4

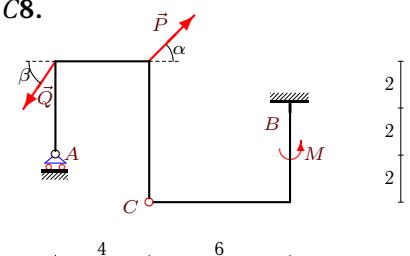
C8.



$$P = 60 \text{ кН}, Q = 70 \text{ кН}, \alpha = 45^\circ, \beta = 60^\circ, \rho = 3 \text{ кН/м}, M = 20 \text{ кНм}.$$

### Вариант 5

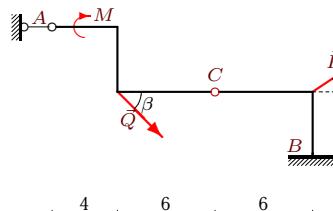
C8.



$$P = 60 \text{ кН}, Q = 70 \text{ кН}, \alpha = 45^\circ, \beta = 60^\circ, \rho = 5 \text{ кН/м}, M = 120 \text{ кНм}.$$

### Вариант 6

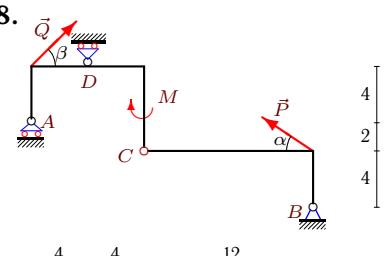
C8.



$$P = 30 \text{ кН}, Q = 40 \text{ кН}, \alpha = 30^\circ, \beta = 45^\circ, \rho = 5 \text{ кН/м}, M = 80 \text{ кНм}.$$

### Вариант 7

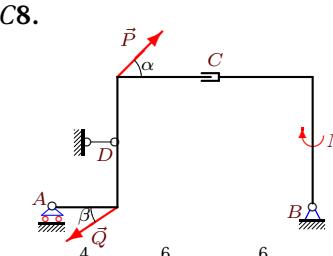
C8.



$$P = 30 \text{ кН}, Q = 40 \text{ кН}, \alpha = 30^\circ, \beta = 45^\circ, \rho = 3 \text{ кН/м}, M = 140 \text{ кНм}.$$

### Вариант 8

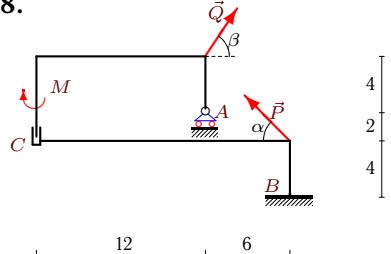
C8.



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

**Вариант 9**

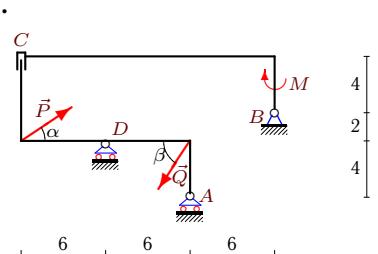
C8.



$$P = 60 \text{ kH}, Q = 70 \text{ kH}, \alpha = 45^\circ, \beta = 60^\circ, \rho = 6 \text{ kH/m}, M = 120 \text{ kNm}.$$

**Вариант 10**

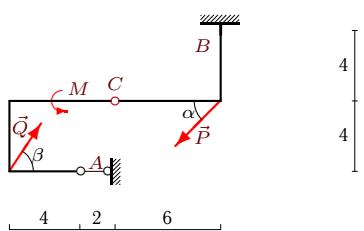
C8.



$$P = 10 \text{ kH}, Q = 20 \text{ kH}, \alpha = 30^\circ, \beta = 60^\circ, \rho = 4 \text{ kH/m}, M = 20 \text{ kNm}.$$

**Вариант 11**

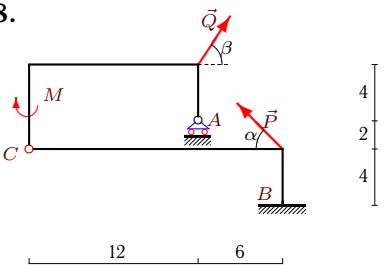
C8.



$$P = 60 \text{ kH}, Q = 70 \text{ kH}, \alpha = 45^\circ, \beta = 60^\circ, \rho = 5 \text{ kH/m}, M = 80 \text{ kNm}.$$

**Вариант 12**

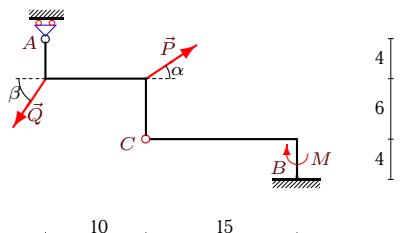
C8.



$$P = 60 \text{ kH}, Q = 70 \text{ kH}, \alpha = 45^\circ, \beta = 60^\circ, \rho = 5 \text{ kH/m}, M = 120 \text{ kNm}.$$

**Вариант 13**

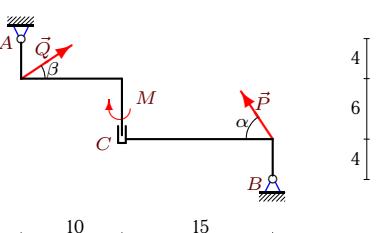
C8.



$$P = 10 \text{ kH}, Q = 20 \text{ kH}, \alpha = 30^\circ, \beta = 60^\circ, \rho = 5 \text{ kH/m}, M = 110 \text{ kNm}.$$

**Вариант 14**

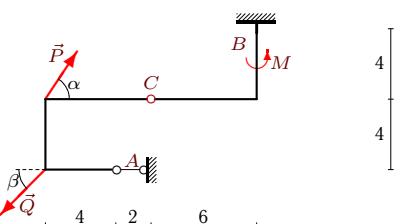
C8.



$$P = 20 \text{ kH}, Q = 30 \text{ kH}, \alpha = 60^\circ, \beta = 30^\circ, \rho = 2 \text{ kH/m}, M = 130 \text{ kNm}.$$

**Вариант 15**

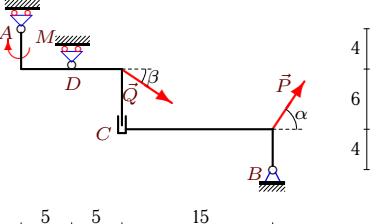
C8.



$$P = 40 \text{ kH}, Q = 50 \text{ kH}, \alpha = 60^\circ, \beta = 45^\circ, \rho = 5 \text{ kH/m}, M = 60 \text{ kNm}.$$

**Вариант 16**

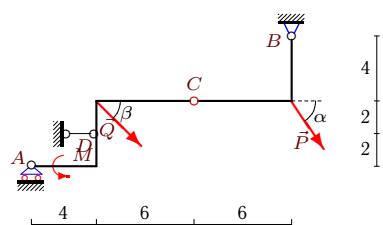
C8.



$$P = 20 \text{ kH}, Q = 30 \text{ kH}, \alpha = 60^\circ, \beta = 30^\circ, \rho = 4 \text{ kH/m}, M = 120 \text{ kNm}.$$

**Вариант 17**

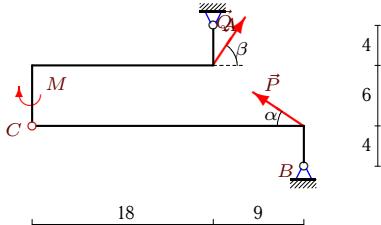
C8.



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

**Вариант 18**

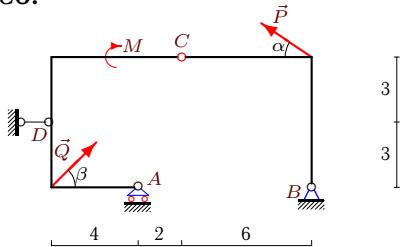
C8.



$P = 10 \text{ kH}$ ,  $Q = 20 \text{ kH}$ ,  $\alpha = 30^\circ$ ,  
 $\beta = 60^\circ$ ,  $\rho = 1 \text{ kH/m}$ ,  $M = 110 \text{ kNm}$ .

**Вариант 19**

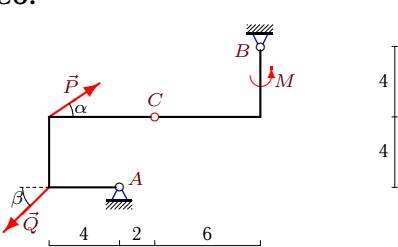
C8.



$P = 30 \text{ kH}$ ,  $Q = 40 \text{ kH}$ ,  $\alpha = 30^\circ$ ,  
 $\beta = 45^\circ$ ,  $\rho = 3 \text{ kH/m}$ ,  $M = 80 \text{ kNm}$ .

**Вариант 20**

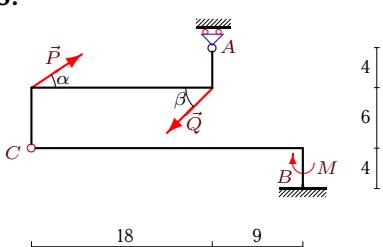
C8.



$P = 30 \text{ kH}$ ,  $Q = 40 \text{ kH}$ ,  $\alpha = 30^\circ$ ,  
 $\beta = 45^\circ$ ,  $\rho = 1 \text{ kH/m}$ ,  $M = 60 \text{ kNm}$ .

**Вариант 21**

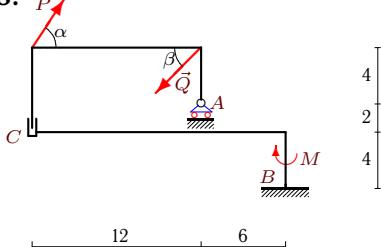
C8.



$P = 30 \text{ kH}$ ,  $Q = 40 \text{ kH}$ ,  $\alpha = 30^\circ$ ,  
 $\beta = 45^\circ$ ,  $\rho = 5 \text{ kH/m}$ ,  $M = 90 \text{ kNm}$ .

**Вариант 22**

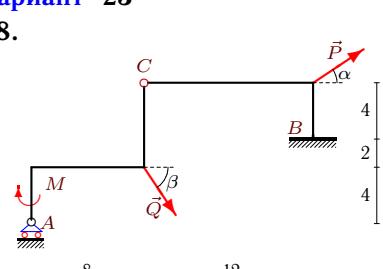
C8.



$P = 40 \text{ kH}$ ,  $Q = 50 \text{ kH}$ ,  $\alpha = 60^\circ$ ,  
 $\beta = 45^\circ$ ,  $\rho = 6 \text{ kH/m}$ ,  $M = 100 \text{ kNm}$ .

**Вариант 23**

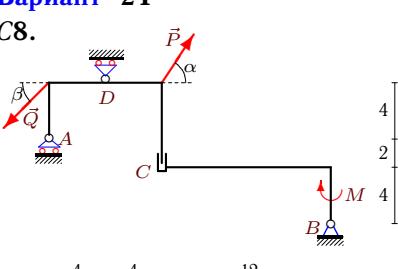
C8.



$P = 10 \text{ kH}$ ,  $Q = 20 \text{ kH}$ ,  $\alpha = 30^\circ$ ,  
 $\beta = 60^\circ$ ,  $\rho = 5 \text{ kH/m}$ ,  $M = 50 \text{ kNm}$ .

**Вариант 24**

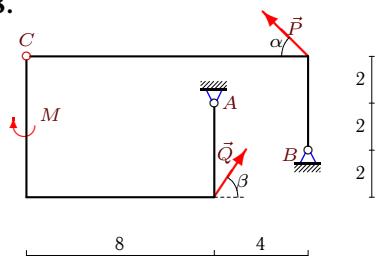
C8.



$P = 40 \text{ kH}$ ,  $Q = 50 \text{ kH}$ ,  $\alpha = 60^\circ$ ,  
 $\beta = 45^\circ$ ,  $\rho = 4 \text{ kH/m}$ ,  $M = 120 \text{ kNm}$ .

**Вариант 25**

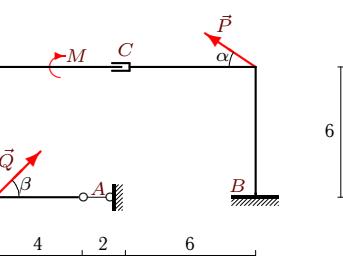
C8.



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

**Вариант 26**

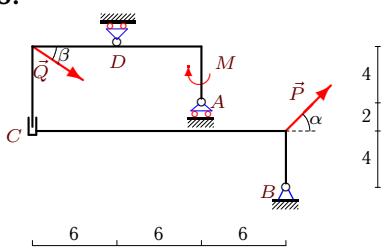
C8.



$$P = 30 \text{ kH}, Q = 40 \text{ kH}, \alpha = 30^\circ, \beta = 45^\circ, \rho = 6 \text{ kH/m}, M = 80 \text{ kNm}.$$

**Вариант 27**

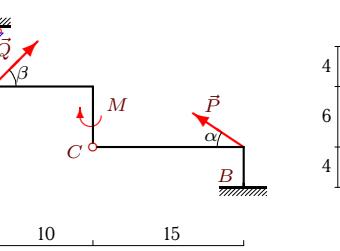
C8.



$$P = 50 \text{ kH}, Q = 60 \text{ kH}, \alpha = 45^\circ, \beta = 30^\circ, \rho = 4 \text{ kH/m}, M = 110 \text{ kNm}.$$

**Вариант 28**

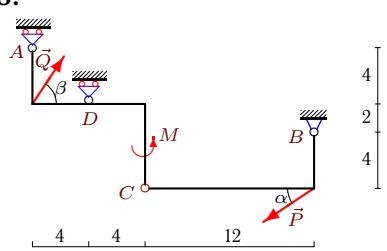
C8.



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

**Вариант 29**

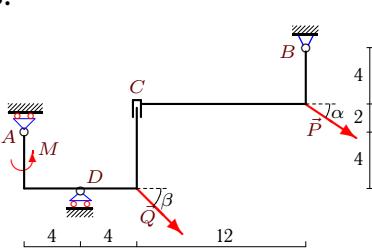
C8.



$$P = 10 \text{ kH}, Q = 20 \text{ kH}, \alpha = 30^\circ, \beta = 60^\circ, \rho = 3 \text{ kH/m}, M = 130 \text{ kNm}.$$

**Вариант 30**

C8.



$$P = 30 \text{ kH}, Q = 40 \text{ kH}, \alpha = 30^\circ, \beta = 45^\circ, \rho = 4 \text{ kH/m}, M = 40 \text{ kNm}.$$

Ответы

	$X_A$	$Y_A$	$X_B$	$Y_B$	$X_D$	$Y_D$	$M_B$
1	-84.14	—	86.45	133.28	—	—	-293.92
2	47.68	—	-49.02	127.68	—	—	-760.2
3	55.42	-38.16	-56.76	39.84	—	—	—
4	—	49.76	-7.43	50.66	—	94.78	—
5	—	79.48	-7.43	58.71	—	—	-291.98
6	114.93	—	-169.2	133.28	—	—	-2.94
7	—	-128.94	-2.3	15.77	—	171.9	—
8	—	27.03	0	95.62	16.6	—	—
9	—	71.38	7.43	89.57	—	—	-1535.7
10	—	-89.9	1.34	88	—	190.22	—
11	-36.57	—	44	101.8	—	—	29.7
12	—	16.88	7.43	100.07	—	—	-1424.7
13	—	63.12	1.34	144.2	—	—	-1195.8
14	-24.63	25	8.65	20.68	—	—	—
15	-38.22	—	53.57	120.71	—	—	-360
16	—	-16.96	-35.98	58.68	—	111.96	—
17	—	17.77	102.89	124.23	-158.24	—	—
18	26.8	20.01	-28.14	16.67	—	—	—
19	—	41.85	13.13	-1.13	-15.44	—	—
20	19.85	51.98	-17.54	-14.7	—	—	—
21	—	92.52	2.3	215.77	—	—	-3382.45
22	—	132.71	15.36	132	—	—	-1473.86
23	—	41.25	-18.66	141.07	—	—	-1078.2
24	—	142.38	15.36	64	—	-69.67	—
25	491.7	-198.05	-484.28	129	—	—	—
26	-28.28	—	25.98	124.72	—	—	-840.47
27	—	-17.5	-87.32	52.64	—	135.5	—
28	—	-13.25	-2.3	164.97	—	—	-1827.84
29	—	-24.27	-1.34	34.55	—	79.4	—
30	—	142.4	-54.27	79	—	-42.12	—