

## Составная конструкция

Определить реакции опор конструкции (в кН), состоящей из двух тел.

Кирсанов М.Н. **Решебник. Теоретическая механика**/Под ред. А. И. Кириллова.- М.:ФИЗМАТЛИТ, 2002.- 384 с. (с.67.)

**Задача 7.1.** 8

$P = 9 \text{ кН}, Q = 8 \text{ кН}, \alpha = 60^\circ, \beta = 75^\circ,$   
 $AB = 3 \text{ м}, BC = 6 \text{ м}, CD = 10 \text{ м},$   
 $DE = 6 \text{ м}, CN = 3 \text{ м}, CK = 2 \text{ м}.$

**Задача 7.2.** 8

$P = 7 \text{ кН}, Q = 3 \text{ кН}, \alpha = 60^\circ, \beta = 60^\circ,$   
 $AB = 6 \text{ м}, BC = 4 \text{ м}, CD = 11 \text{ м},$   
 $DE = 6 \text{ м}, CN = 2 \text{ м}, CK = 2 \text{ м}, LD = 2 \text{ м}$

**Задача 7.3.** 8

$P = 7 \text{ кН}, Q = 7 \text{ кН}, \alpha = 60^\circ, \beta = 75^\circ,$   
 $AB = 4 \text{ м}, BC = 13 \text{ м}, CD = 6 \text{ м},$   
 $DE = 5 \text{ м}, CN = 3 \text{ м}, BK = 3 \text{ м}.$

**Задача 7.4.** 8

$P = 6 \text{ кН}, Q = 5 \text{ кН}, \alpha = 60^\circ, \beta = 30^\circ,$   
 $AB = 5 \text{ м}, BC = 4 \text{ м}, CD = 6 \text{ м},$   
 $DE = 6 \text{ м}, CN = 2 \text{ м}, CK = 3 \text{ м}.$

**Задача 7.5.** 8

$P = 5 \text{ кН}, Q = 4 \text{ кН}, \alpha = 60^\circ, \beta = 45^\circ,$   
 $AB = 3 \text{ м}, BC = 4 \text{ м}, CD = 8 \text{ м},$   
 $DE = 7 \text{ м}, CN = 2 \text{ м}, CK = 2 \text{ м}.$

**Задача 7.6.** 8

$P = 6 \text{ кН}, Q = 8 \text{ кН}, \alpha = 60^\circ, \beta = 30^\circ,$   
 $AB = 4 \text{ м}, BC = 9 \text{ м}, CD = 6 \text{ м},$   
 $DE = 4 \text{ м}, CN = 3 \text{ м}, BK = 2 \text{ м}.$

**Задача 7.7.** 8

$P = 6 \text{ кН}, Q = 5 \text{ кН}, \alpha = 60^\circ, \beta = 60^\circ,$   
 $AB = 4 \text{ м}, BC = 8 \text{ м}, CD = 4 \text{ м},$   
 $DE = 4 \text{ м}, CN = 2 \text{ м}, BK = 2 \text{ м}.$

**Задача 7.8.** 8

$P = 6 \text{ кН}, Q = 2 \text{ кН}, \alpha = 60^\circ, \beta = 30^\circ,$   
 $AB = 6 \text{ м}, BC = 9 \text{ м}, CD = 6 \text{ м},$   
 $DE = 4 \text{ м}, CN = 3 \text{ м}, BK = 2 \text{ м}.$

**Задача 7.9.** 8

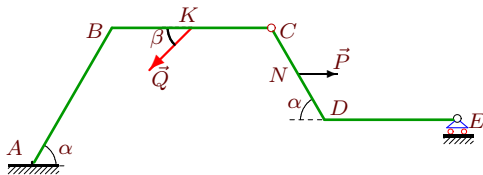
$P = 7 \text{ кН}, Q = 7 \text{ кН}, \alpha = 60^\circ, \beta = 60^\circ,$   
 $AB = 6 \text{ м}, BC = 10 \text{ м}, CD = 6 \text{ м},$   
 $DE = 3 \text{ м}, CN = 3 \text{ м}, BK = 2 \text{ м}, LC = 2 \text{ м}.$

**Задача 7.10.** 8

$P = 6 \text{ кН}, Q = 3 \text{ кН}, \alpha = 60^\circ, \beta = 60^\circ,$   
 $AB = 6 \text{ м}, BC = 8 \text{ м}, CD = 4 \text{ м},$   
 $DE = 3 \text{ м}, CN = 2 \text{ м}, BK = 2 \text{ м}.$

**Задача 7.11.**

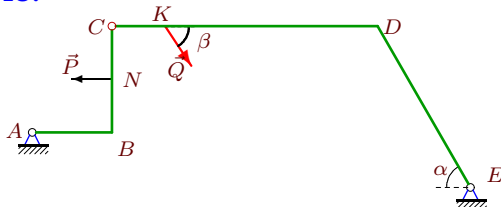
8



$P = 7 \text{ кН}, Q = 4 \text{ кН}, \alpha = 60^\circ, \beta = 45^\circ,$   
 $AB = 6 \text{ м}, BC = 6 \text{ м}, CD = 4 \text{ м},$   
 $DE = 5 \text{ м}, CN = 2 \text{ м}, BK = 3 \text{ м}.$

**Задача 7.13.**

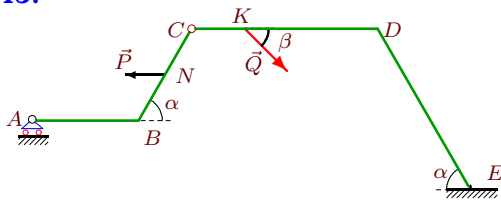
8



$P = 6 \text{ кН}, Q = 9 \text{ кН}, \alpha = 60^\circ, \beta = 60^\circ,$   
 $AB = 3 \text{ м}, BC = 4 \text{ м}, CD = 10 \text{ м},$   
 $DE = 7 \text{ м}, CN = 2 \text{ м}, CK = 2 \text{ м}.$

**Задача 7.15.**

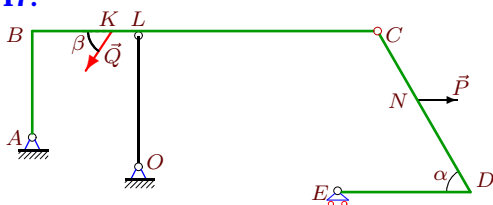
8



$P = 6 \text{ кН}, Q = 3 \text{ кН}, \alpha = 60^\circ, \beta = 30^\circ,$   
 $AB = 4 \text{ м}, BC = 4 \text{ м}, CD = 7 \text{ м},$   
 $DE = 7 \text{ м}, CN = 2 \text{ м}, CK = 2 \text{ м}.$

**Задача 7.17.**

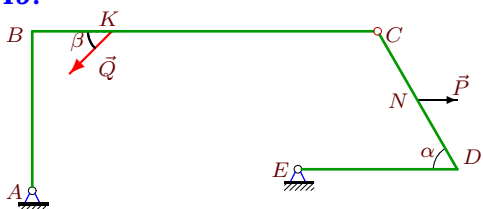
8



$P = 7 \text{ кН}, Q = 7 \text{ кН}, \alpha = 60^\circ, \beta = 60^\circ,$   
 $AB = 4 \text{ м}, BC = 13 \text{ м}, CD = 7 \text{ м},$   
 $DE = 5 \text{ м}, CN = 3 \text{ м}, BK = 3 \text{ м}, LC = 9 \text{ м}.$

**Задача 7.19.**

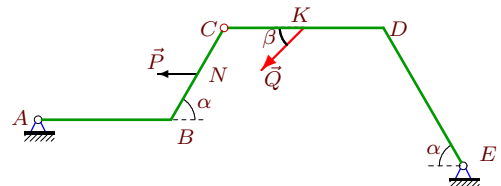
8



$P = 4 \text{ кН}, Q = 9 \text{ кН}, \alpha = 60^\circ, \beta = 30^\circ,$   
 $AB = 6 \text{ м}, BC = 13 \text{ м}, CD = 6 \text{ м},$   
 $DE = 6 \text{ м}, CN = 3 \text{ м}, BK = 3 \text{ м}.$

**Задача 7.12.**

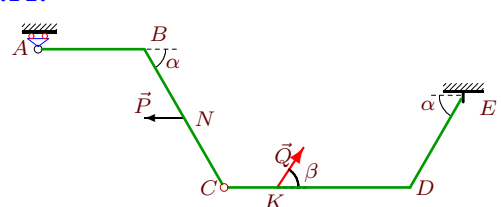
8



$P = 5 \text{ кН}, Q = 6 \text{ кН}, \alpha = 60^\circ, \beta = 45^\circ,$   
 $AB = 5 \text{ м}, BC = 4 \text{ м}, CD = 6 \text{ м},$   
 $DE = 6 \text{ м}, CN = 2 \text{ м}, CK = 3 \text{ м}.$

**Задача 7.14.**

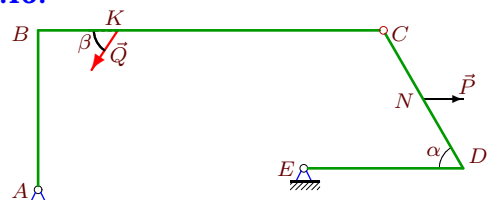
8



$P = 9 \text{ кН}, Q = 3 \text{ кН}, \alpha = 60^\circ, \beta = 75^\circ,$   
 $AB = 4 \text{ м}, BC = 6 \text{ м}, CD = 7 \text{ м},$   
 $DE = 4 \text{ м}, CN = 3 \text{ м}, CK = 2 \text{ м}.$

**Задача 7.16.**

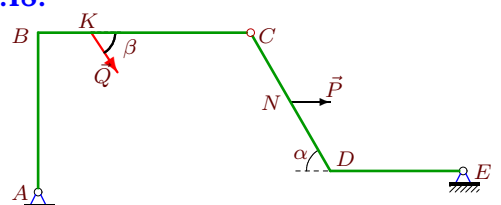
8



$P = 7 \text{ кН}, Q = 7 \text{ кН}, \alpha = 60^\circ, \beta = 75^\circ,$   
 $AB = 6 \text{ м}, BC = 13 \text{ м}, CD = 6 \text{ м},$   
 $DE = 6 \text{ м}, CN = 3 \text{ м}, BK = 3 \text{ м}.$

**Задача 7.18.**

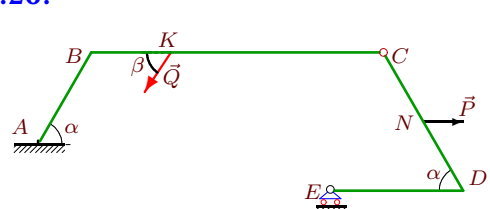
8



$P = 7 \text{ кН}, Q = 8 \text{ кН}, \alpha = 60^\circ, \beta = 75^\circ,$   
 $AB = 6 \text{ м}, BC = 8 \text{ м}, CD = 6 \text{ м},$   
 $DE = 5 \text{ м}, CN = 3 \text{ м}, BK = 2 \text{ м}.$

**Задача 7.20.**

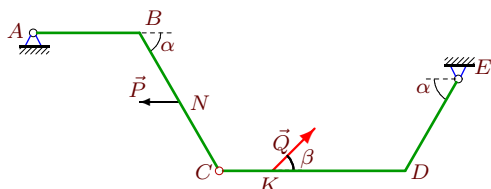
8



$P = 8 \text{ кН}, Q = 4 \text{ кН}, \alpha = 60^\circ, \beta = 60^\circ,$   
 $AB = 4 \text{ м}, BC = 11 \text{ м}, CD = 6 \text{ м},$   
 $DE = 5 \text{ м}, CN = 3 \text{ м}, BK = 3 \text{ м}.$

**Задача 7.21.**

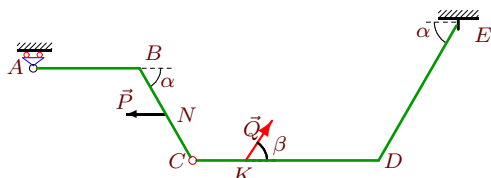
8



$P = 5 \text{ кН}, Q = 5 \text{ кН}, \alpha = 60^\circ, \beta = 45^\circ,$   
 $AB = 4 \text{ м}, BC = 6 \text{ м}, CD = 7 \text{ м},$   
 $DE = 4 \text{ м}, CN = 3 \text{ м}, CK = 2 \text{ м}.$

**Задача 7.23.**

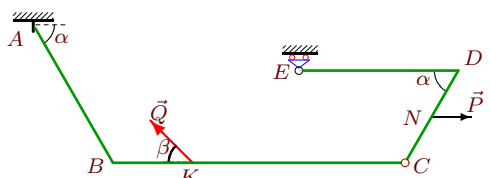
8



$P = 8 \text{ кН}, Q = 4 \text{ кН}, \alpha = 60^\circ, \beta = 60^\circ,$   
 $AB = 4 \text{ м}, BC = 4 \text{ м}, CD = 7 \text{ м},$   
 $DE = 6 \text{ м}, CN = 2 \text{ м}, CK = 2 \text{ м}.$

**Задача 7.25.**

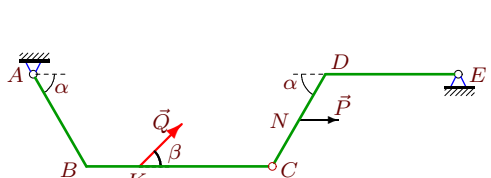
8



$P = 7 \text{ кН}, Q = 3 \text{ кН}, \alpha = 60^\circ, \beta = 45^\circ,$   
 $AB = 6 \text{ м}, BC = 11 \text{ м}, CD = 4 \text{ м},$   
 $DE = 6 \text{ м}, CN = 2 \text{ м}, BK = 3 \text{ м}.$

**Задача 7.27.**

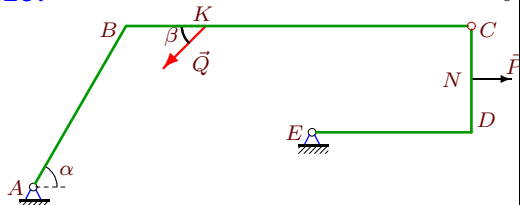
8



$P = 4 \text{ кН}, Q = 4 \text{ кН}, \alpha = 60^\circ, \beta = 30^\circ,$   
 $AB = 4 \text{ м}, BC = 7 \text{ м}, CD = 4 \text{ м},$   
 $DE = 5 \text{ м}, CN = 2 \text{ м}, BK = 2 \text{ м}.$

**Задача 7.29.**

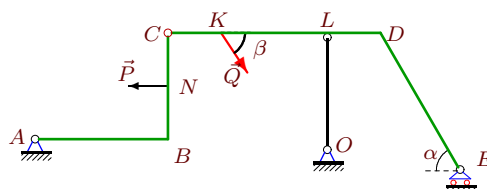
8



$P = 4 \text{ кН}, Q = 2 \text{ кН}, \alpha = 60^\circ, \beta = 30^\circ,$   
 $AB = 7 \text{ м}, BC = 13 \text{ м}, CD = 4 \text{ м},$   
 $DE = 6 \text{ м}, CN = 2 \text{ м}, BK = 3 \text{ м}.$

**Задача 7.22.**

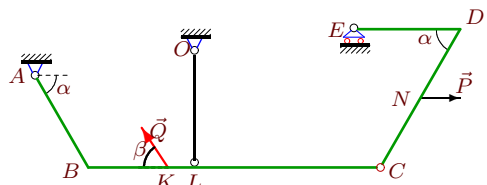
8



$P = 7 \text{ кН}, Q = 8 \text{ кН}, \alpha = 60^\circ, \beta = 60^\circ,$   
 $AB = 5 \text{ м}, BC = 4 \text{ м}, CD = 8 \text{ м},$   
 $DE = 6 \text{ м}, CN = 2 \text{ м}, CK = 2 \text{ м}, LD = 2 \text{ м}.$

**Задача 7.24.**

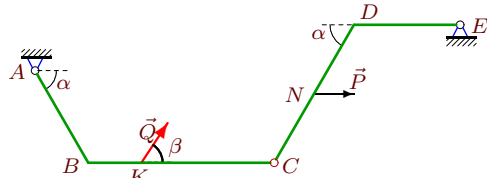
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$P = 7 \text{ кН}, Q = 5 \text{ кН}, \alpha = 60^\circ, \beta = 60^\circ,$   
 $AB = 4 \text{ м}, BC = 11 \text{ м}, CD = 6 \text{ м},$   
 $DE = 4 \text{ м}, CN = 3 \text{ м}, BK = 3 \text{ м}, LC = 7 \text{ м}.$

**Задача 7.26.**

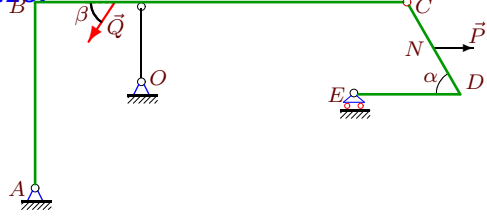
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$P = 6 \text{ кН}, Q = 4 \text{ кН}, \alpha = 60^\circ, \beta = 60^\circ,$   
 $AB = 4 \text{ м}, BC = 7 \text{ м}, CD = 6 \text{ м},$   
 $DE = 4 \text{ м}, CN = 3 \text{ м}, BK = 2 \text{ м}.$

**Задача 7.28.**

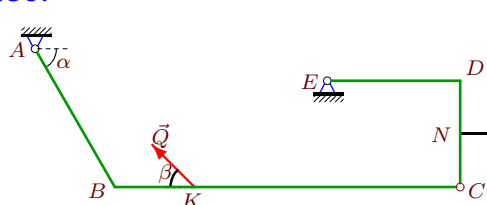
8



$P = 7 \text{ кН}, Q = 6 \text{ кН}, \alpha = 60^\circ, \beta = 60^\circ,$   
 $AB = 7 \text{ м}, BC = 14 \text{ м}, CD = 4 \text{ м},$   
 $DE = 4 \text{ м}, CN = 2 \text{ м}, BK = 3 \text{ м}, LC = 10 \text{ м}.$

**Задача 7.30.**

8



$P = 5 \text{ кН}, Q = 1 \text{ кН}, \alpha = 60^\circ, \beta = 45^\circ,$   
 $AB = 6 \text{ м}, BC = 13 \text{ м}, CD = 4 \text{ м},$   
 $DE = 5 \text{ м}, CN = 2 \text{ м}, BK = 3 \text{ м}.$

**Составная конструкция**

	$X_A$	$Y_A$	$X_E$	$Y_E$	$S_{OL}$	$M$	$X_C$	$Y_C$
1	—	-9.000	6.929	16.727	—	-238.008	9.000	9.000
2	5.500	1.732	—	6.755	-11.085		1.500	-1.732
3	-2.596	-4.402	-2.592	-2.359	—		4.408	-2.359
4	—	-1.485	10.330	3.985	—	-82.038	6.000	1.485
5	4.273	1.229	-2.102	1.600	—		0.727	-1.229
6	-12.928	-6.227	—	2.227	—	-79.755	6.000	2.227
7	-1.562	-2.057	-6.938	-2.273	—		-0.938	-2.273
8	-7.732	5.500	—	-4.500	—	99.177	6.000	-4.500
9	-10.500	-4.086	—	-3.031	13.179		7.000	-3.031
10	-1.662	-0.632	-5.838	-1.966	—		0.162	-1.966
11	-4.172	4.560	—	-1.732	—	54.235	7.000	-1.732
12	8.769	3.102	0.474	1.141	—		-3.769	-3.102
13	6.347	4.463	-4.847	3.331	—		-0.347	-4.463
14	—	3.340	8.224	-6.238	—	78.835	9.000	-3.340
15	—	-1.732	3.402	3.232	—	-51.560	6.000	1.732
16	-3.530	3.572	-1.659	3.189	—		5.341	3.189
17	-3.500	25.295	—	12.124	-31.358		7.000	12.124
18	-1.205	4.892	-7.866	2.836	—		-0.866	2.836
19	7.082	6.730	-3.288	-2.230	—		0.712	-2.230
20	-6.000	-6.928	—	10.392	—	-96.995	8.000	10.392
21	4.586	-1.548	-3.121	-1.987	—		0.414	1.548
22	3.000	-0.400	—	-6.023	13.351		4.000	0.400
23	—	2.309	6.000	-5.774	—	81.984	8.000	-2.309
24	-4.500	-19.341	—	-18.187	33.198		7.000	-18.187
25	-4.879	0.910	—	-3.031	—	4.357	7.000	-3.031
26	-1.927	-1.183	-6.073	-2.281	—		-0.073	-2.281
27	-2.063	-0.317	-5.401	-1.683	—		-1.401	-1.683
28	-4.000	9.454	—	6.062	-10.321		7.000	6.062
29	-1.913	-0.097	-0.355	1.097	—		3.645	1.097
30	-3.576	0.719	-0.717	-1.427	—		4.283	-1.427