

## Расчет фермы

Кирсанов М.Н. Решебник. Теоретическая механика с. 45.

**Вариант 1**

**C6.**  
 $P = 30 \text{ кН}$ ,  
 $F = 1 \text{ кН}$ ,  
 $\alpha = 60^\circ$ ,  
 $\beta = 45^\circ$ ,  
 $Q = 30 \text{ кН}$ .

**Вариант 2**

**C6.**  
 $P = 40 \text{ кН}$ ,  
 $F = 2 \text{ кН}$ ,  
 $\alpha = 70^\circ$ ,  
 $\beta = 60^\circ$ ,  
 $Q = 10 \text{ кН}$ .

**Вариант 3**

**C6.**  
 $P = 10 \text{ кН}$ ,  
 $F = 3 \text{ кН}$ ,  
 $\alpha = 40^\circ$ ,  
 $\beta = 30^\circ$ ,  
 $Q = 40 \text{ кН}$ .

**Вариант 4**

**C6.**  
 $P = 45 \text{ кН}$ ,  
 $F = 4 \text{ кН}$ ,  
 $\alpha = 75^\circ$ ,  
 $\beta = 60^\circ$ ,  
 $Q = 10 \text{ кН}$ .

**Вариант 5**

**C6.**  
 $P = 25 \text{ кН}$ ,  
 $F = 5 \text{ кН}$ ,  
 $\alpha = 55^\circ$ ,  
 $\beta = 45^\circ$ ,  
 $Q = 20 \text{ кН}$ .

**Вариант 6**

**C6.**  
 $P = 25 \text{ кН}$ ,  
 $F = 6 \text{ кН}$ ,  
 $\alpha = 55^\circ$ ,  
 $\beta = 45^\circ$ ,  
 $Q = 10 \text{ кН}$ .

**Вариант 7**

**C6.**  
 $P = 35 \text{ кН}$ ,  
 $F = 7 \text{ кН}$ ,  
 $\alpha = 65^\circ$ ,  
 $\beta = 45^\circ$ ,  
 $Q = 60 \text{ кН}$ .

**Вариант 8**

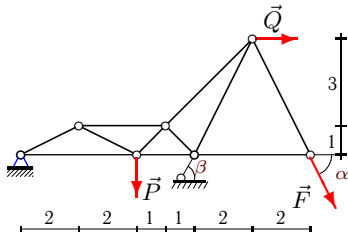
**C6.**  
 $P = 5 \text{ кН}$ ,  
 $F = 8 \text{ кН}$ ,  
 $\alpha = 35^\circ$ ,  
 $\beta = 30^\circ$ ,  
 $Q = 20 \text{ кН}$ .

**Вариант 9**

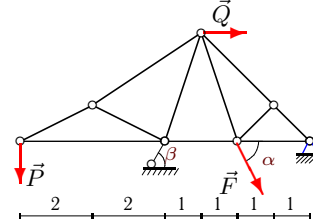
**C6.**  
 $P = 35 \text{ кН}$ ,  
 $F = 9 \text{ кН}$ ,  
 $\alpha = 65^\circ$ ,  
 $\beta = 45^\circ$ ,  
 $Q = 60 \text{ кН}$ .

**Вариант 10**

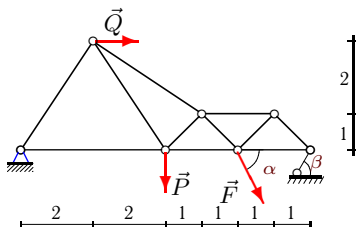
**C6.**  
 $P = 15 \text{ кН}$ ,  
 $F = 10 \text{ кН}$ ,  
 $\alpha = 45^\circ$ ,  
 $\beta = 30^\circ$ ,  
 $Q = 40 \text{ кН}$ .

**Вариант 11****C6.**

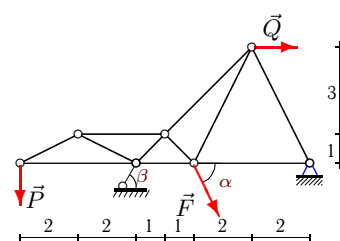
$P = 40 \text{ кН}$ ,  
 $F = 11 \text{ кН}$ ,  
 $\alpha = 70^\circ$ ,  
 $\beta = 60^\circ$ ,  
 $Q = 50 \text{ кН}$ .

**Вариант 12****C6.**

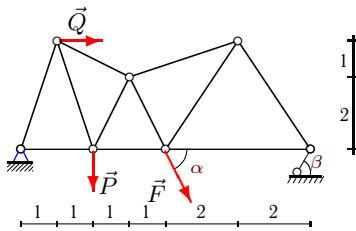
$P = 10 \text{ кН}$ ,  
 $F = 12 \text{ кН}$ ,  
 $\alpha = 40^\circ$ ,  
 $\beta = 30^\circ$ ,  
 $Q = 10 \text{ кН}$ .

**Вариант 13****C6.**

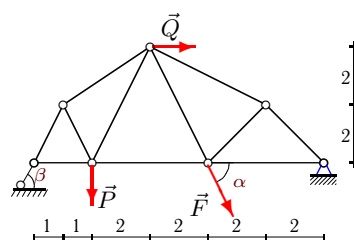
$P = 25 \text{ кН}$ ,  
 $F = 13 \text{ кН}$ ,  
 $\alpha = 55^\circ$ ,  
 $\beta = 45^\circ$ ,  
 $Q = 10 \text{ кН}$ .

**Вариант 14****C6.**

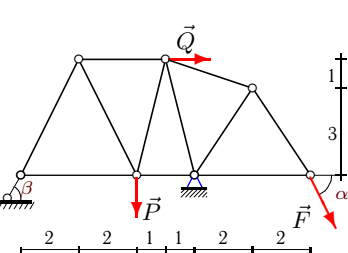
$P = 5 \text{ кН}$ ,  
 $F = 14 \text{ кН}$ ,  
 $\alpha = 35^\circ$ ,  
 $\beta = 30^\circ$ ,  
 $Q = 50 \text{ кН}$ .

**Вариант 15****C6.**

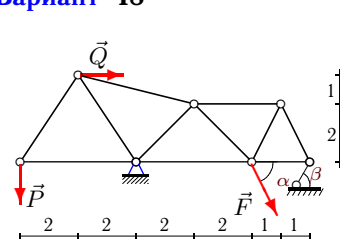
$P = 5 \text{ кН}$ ,  
 $F = 15 \text{ кН}$ ,  
 $\alpha = 35^\circ$ ,  
 $\beta = 30^\circ$ ,  
 $Q = 40 \text{ кН}$ .

**Вариант 16****C6.**

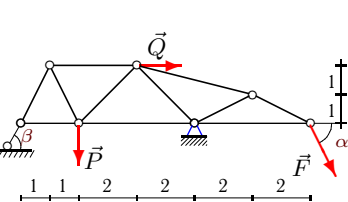
$P = 5 \text{ кН}$ ,  
 $F = 16 \text{ кН}$ ,  
 $\alpha = 35^\circ$ ,  
 $\beta = 30^\circ$ ,  
 $Q = 60 \text{ кН}$ .

**Вариант 17****C6.**

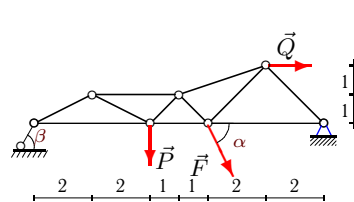
$P = 40 \text{ кН}$ ,  
 $F = 17 \text{ кН}$ ,  
 $\alpha = 70^\circ$ ,  
 $\beta = 60^\circ$ ,  
 $Q = 50 \text{ кН}$ .

**Вариант 18****C6.**

$P = 10 \text{ кН}$ ,  
 $F = 18 \text{ кН}$ ,  
 $\alpha = 40^\circ$ ,  
 $\beta = 30^\circ$ ,  
 $Q = 30 \text{ кН}$ .

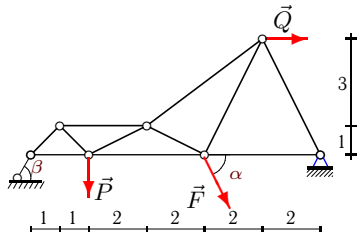
**Вариант 19****C6.**

$P = 20 \text{ кН}$ ,  
 $F = 19 \text{ кН}$ ,  
 $\alpha = 50^\circ$ ,  
 $\beta = 45^\circ$ ,  
 $Q = 60 \text{ кН}$ .

**Вариант 20****C6.**

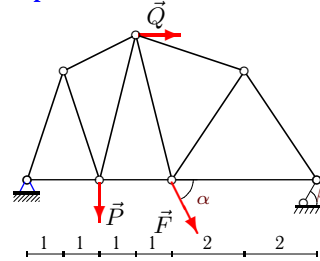
$P = 20 \text{ кН}$ ,  
 $F = 20 \text{ кН}$ ,  
 $\alpha = 50^\circ$ ,  
 $\beta = 45^\circ$ ,  
 $Q = 50 \text{ кН}$ .

**Вариант 21**



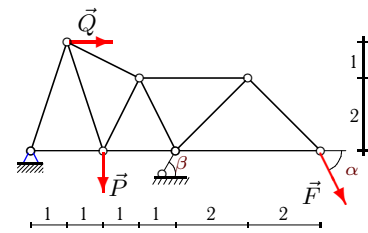
**C6.**  
 $P = 35\text{кН}$ ,  
 $F = 21\text{кН}$ ,  
 $\alpha = 65^\circ$ ,  
 $\beta = 45^\circ$ ,  
 $Q = 60\text{кН}$ .

**Вариант 22**



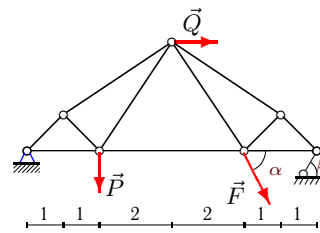
**C6.**  
 $P = 10\text{кН}$ ,  
 $F = 22\text{кН}$ ,  
 $\alpha = 40^\circ$ ,  
 $\beta = 30^\circ$ ,  
 $Q = 40\text{кН}$ .

**Вариант 23**



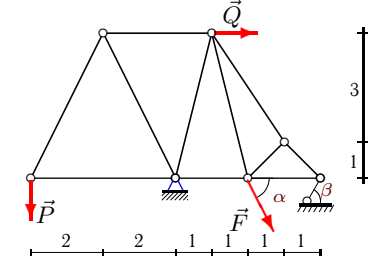
**C6.**  
 $P = 20\text{кН}$ ,  
 $F = 23\text{кН}$ ,  
 $\alpha = 50^\circ$ ,  
 $\beta = 45^\circ$ ,  
 $Q = 40\text{кН}$ .

**Вариант 24**



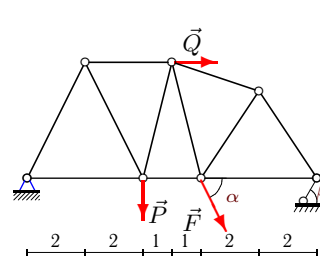
**C6.**  
 $P = 40\text{кН}$ ,  
 $F = 24\text{кН}$ ,  
 $\alpha = 70^\circ$ ,  
 $\beta = 60^\circ$ ,  
 $Q = 20\text{кН}$ .

**Вариант 25**



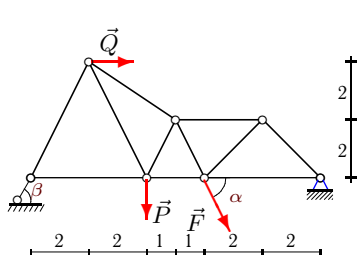
**C6.**  
 $P = 45\text{кН}$ ,  
 $F = 25\text{кН}$ ,  
 $\alpha = 75^\circ$ ,  
 $\beta = 60^\circ$ ,  
 $Q = 10\text{кН}$ .

**Вариант 26**



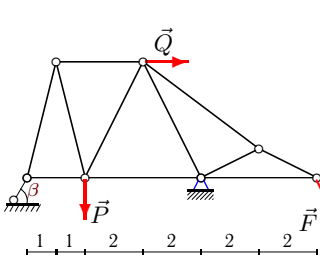
**C6.**  
 $P = 25\text{кН}$ ,  
 $F = 26\text{кН}$ ,  
 $\alpha = 55^\circ$ ,  
 $\beta = 45^\circ$ ,  
 $Q = 50\text{кН}$ .

**Вариант 27**



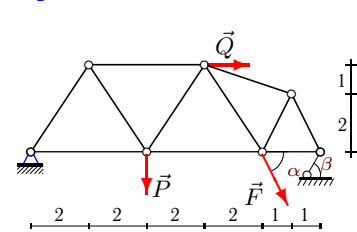
**C6.**  
 $P = 10\text{кН}$ ,  
 $F = 27\text{кН}$ ,  
 $\alpha = 40^\circ$ ,  
 $\beta = 30^\circ$ ,  
 $Q = 50\text{кН}$ .

**Вариант 28**



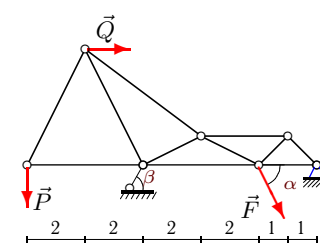
**C6.**  
 $P = 40\text{кН}$ ,  
 $F = 28\text{кН}$ ,  
 $\alpha = 70^\circ$ ,  
 $\beta = 60^\circ$ ,  
 $Q = 60\text{кН}$ .

**Вариант 29**



**C6.**  
 $P = 5\text{кН}$ ,  
 $F = 29\text{кН}$ ,  
 $\alpha = 35^\circ$ ,  
 $\beta = 30^\circ$ ,  
 $Q = 30\text{кН}$ .

**Вариант 30**



**C6.**  
 $P = 20\text{кН}$ ,  
 $F = 30\text{кН}$ ,  
 $\alpha = 50^\circ$ ,  
 $\beta = 45^\circ$ ,  
 $Q = 30\text{кН}$ .

Ответы

	$X_A$	$Y_A$	$R_B$	$U_1$	$U_2$	$U_3$	$O_1$	$O_2$	$O_3$	$O_4$	$D_1$	$D_2$	$D_3$	$D_4$
1	-30.283	31.083	-0.306	0.108	28.917	-0.366	0.242	-59.567	1.732	1.225	39.717	-12.351	-67.566	-1.225
2	-24.488	17.970	27.608	42.458	84.337	37.714	-25.413	-72.637	-47.819	-33.813	57.897	-1.329	-31.155	33.813
3	-109.600	-26.928	77.713	82.672	18.815	1.013	38.082	53.857	92.095	2.318	-38.082	52.225	20.021	-63.715
4	-35.179	7.045	48.288	38.702	40.293	-0.897	-7.877	-30.729	3.864	4.320	26.934	23.377	-42.434	-4.320
5	-39.690	12.274	23.790	45.827	39.388	25.233	-13.723	-11.090	-15.199	-18.807	9.802	19.510	-9.518	13.434
6	-13.470	29.887	0.040	0.028	-6.243	-1.473	-0.063	-0.053	7.088	6.951	-0.021	25.779	-31.820	1.390
7	-91.765	12.538	40.739	95.944	191.915	48.011	-13.216	-105.630	-64.413	-34.621	74.978	-80.791	-114.641	69.242
8	-17.655	14.726	-10.274	-1.667	1.329	-12.747	5.270	3.162	-9.313	-15.522	-4.216	10.216	-8.041	12.418
9	-81.632	25.328	25.213	-8.750	-10.000	-56.304	36.077	-61.294	-50.657	-35.820	-1.031	-23.799	-24.284	35.820
10	-94.331	-5.214	54.571	91.724	79.009	60.903	5.830	5.214	22.921	-30.506	-5.830	22.600	-8.385	16.291
11	-98.350	-26.891	89.175	44.567	-76.106	-1.406	60.130	107.564	170.658	11.557	-60.130	94.598	76.059	-146.473
12	-47.523	1.357	32.713	-20.000	-39.545	-46.166	22.361	20.603	-1.919	-1.919	3.194	-18.747	8.131	0.000
13	-41.693	11.412	34.276	49.301	93.754	48.473	-13.716	-54.551	-48.473	-34.276	50.083	-23.578	-19.216	34.276
14	-27.439	32.677	-39.293	-10.000	-10.618	-11.101	11.180	20.000	48.998	-36.534	-11.180	34.856	14.142	-2.202
15	-87.884	-6.948	41.104	85.568	94.962	49.298	7.324	-47.451	-37.137	-24.700	15.045	-10.367	-26.489	38.815
16	-44.824	30.506	-32.658	20.118	9.454	-14.317	18.257	14.719	-45.476	-43.142	-9.128	14.718	-1.109	14.381
17	-38.119	86.625	-35.391	2.371	-30.617	-4.836	34.268	30.650	18.370	19.199	-34.268	72.824	-78.812	-12.218
18	-71.583	5.523	32.094	-6.667	62.106	35.817	12.019	-20.616	-16.047	-17.941	-6.009	-0.740	-6.331	17.941
19	-55.843	50.925	-23.151	8.185	-36.370	-16.897	18.302	16.370	40.007	32.546	-18.302	51.435	-65.157	-10.849
20	-70.984	27.193	11.495	8.128	12.513	-43.792	-18.176	-32.513	-6.933	-38.456	18.176	16.789	-19.890	41.557
21	-80.488	42.419	16.423	0.000	-35.161	-59.278	-16.423	-23.226	35.161	-47.426	16.423	52.295	-5.121	23.840
22	-108.071	-5.429	59.141	106.261	101.499	70.932	5.723	3.469	-34.004	-35.540	-4.088	14.305	-4.820	22.616
23	-130.022	-37.619	106.403	117.482	83.594	-2.835	39.654	-20.018	35.238	24.917	-30.217	54.411	-64.420	-24.917
24	-48.078	28.138	39.738	76.216	58.929	54.284	-39.793	-40.581	-49.633	-48.669	7.959	41.310	18.833	9.734
25	-3.234	92.074	-26.473	-22.500	-29.997	-36.162	50.312	45.000	33.064	32.422	-50.312	-48.523	20.165	6.484
26	-107.692	3.519	60.498	109.451	105.841	71.298	-3.935	-3.519	-49.192	-51.414	3.935	22.142	-6.107	32.718
27	-58.459	34.413	-14.116	8.696	39.580	-24.045	7.891	-77.415	-68.826	-48.668	40.120	-28.939	-19.071	48.668
28	-51.751	97.186	-35.651	10.107	-33.049	-43.046	31.824	15.437	52.623	58.834	-31.824	79.240	-114.540	11.767
29	-95.856	-2.673	48.614	94.074	87.176	54.254	3.213	3.564	-21.962	-27.176	-3.213	9.222	-0.875	19.411
30	-70.277	21.988	29.690	-10.000	-9.006	-48.290	22.361	-20.000	-43.975	-31.095	-8.944	-29.055	2.222	31.095