

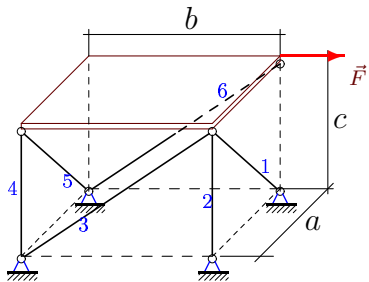
## Равновесие плиты

Однородная прямоугольная горизонтальная плита весом  $G$  опирается на шесть невесомых шарнирно закрепленных по концам стержней. Вдоль ребра плиты действует сила  $F$ . Определить усилия в стержнях (в кН).

Кирсанов М.Н. **Решebник. Теоретическая механика**/Под ред. А. И. Кириллова. – М.: ФИЗМАТЛИТ, 2008. — 384 с. (с.101.)

**Задача S-13.1.**

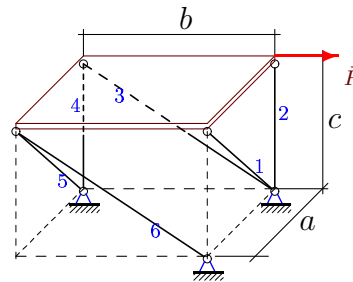
8



$a = b = 15 \text{ м}, c = 8 \text{ м},$   
 $F = 15 \text{ кН}, G = 16 \text{ кН}.$

**Задача S-13.2.**

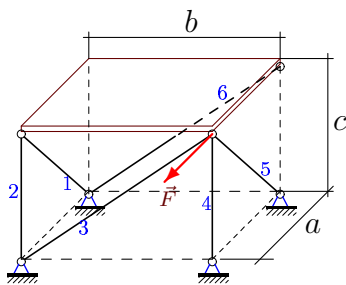
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$a = b = 5 \text{ м}, c = 12 \text{ м},$   
 $F = 15 \text{ кН}, G = 168 \text{ кН}.$

**Задача S-13.3.**

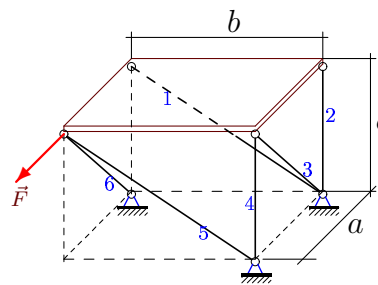
8



$a = b = 3 \text{ м}, c = 4 \text{ м},$   
 $F = 3 \text{ кН}, G = 32 \text{ кН}.$

**Задача S-13.4.**

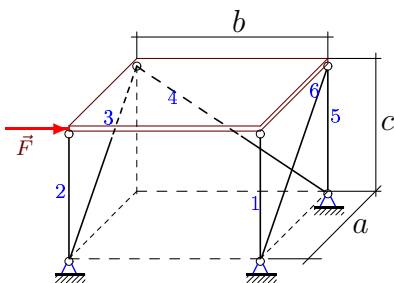
8



$a = b = 5 \text{ м}, c = 12 \text{ м},$   
 $F = 15 \text{ кН}, G = 24 \text{ кН}.$

**Задача S-13.5.**

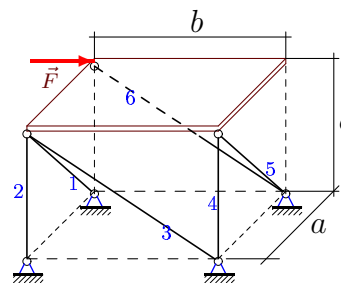
8



$a = b = 3 \text{ м}, c = 4 \text{ м},$   
 $F = 3 \text{ кН}, G = 24 \text{ кН}.$

**Задача S-13.6.**

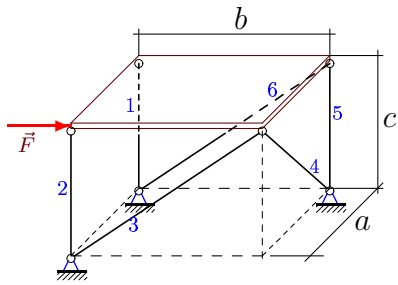
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$a = b = 12 \text{ м}, c = 5 \text{ м},$   
 $F = 12 \text{ кН}, G = 10 \text{ кН}.$

Задача S-13.7.

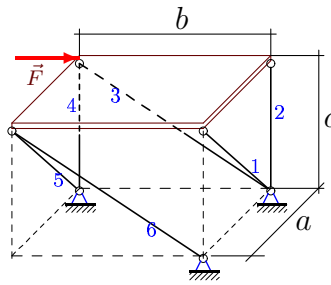
8



$a = b = 3 \text{ м}, c = 4 \text{ м},$   
 $F = 3 \text{ кН}, G = 32 \text{ кН}.$

Задача S-13.8.

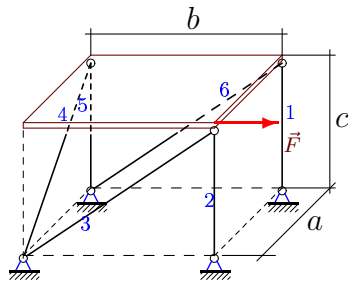
8



$a = b = 3 \text{ м}, c = 4 \text{ м},$   
 $F = 15 \text{ кН}, G = 24 \text{ кН}.$

Задача S-13.9.

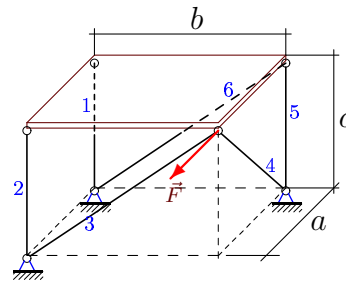
8



$a = b = 15 \text{ м}, c = 8 \text{ м},$   
 $F = 45 \text{ кН}, G = 56 \text{ кН}.$

Задача S-13.10.

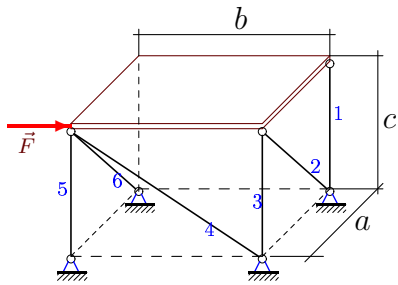
8



$a = b = 12 \text{ м}, c = 5 \text{ м},$   
 $F = 12 \text{ кН}, G = 20 \text{ кН}.$

Задача S-13.11.

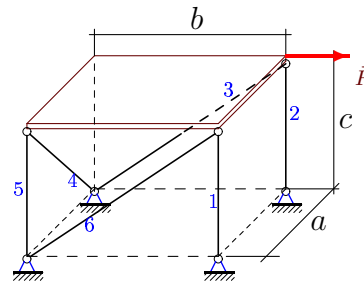
8



$a = b = 8 \text{ м}, c = 15 \text{ м},$   
 $F = 8 \text{ кН}, G = 60 \text{ кН}.$

Задача S-13.12.

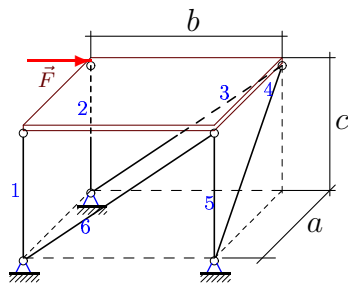
8



$a = b = 12 \text{ м}, c = 5 \text{ м},$   
 $F = 12 \text{ кН}, G = 12 \text{ кН}.$

Задача S-13.13.

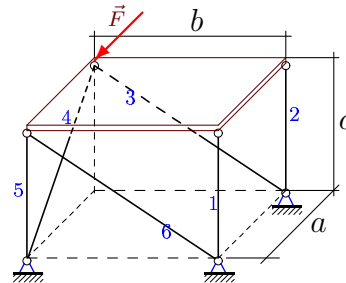
8



$a = b = 12 \text{ м}, c = 5 \text{ м},$   
 $F = 12 \text{ кН}, G = 12 \text{ кН}.$

Задача S-13.14.

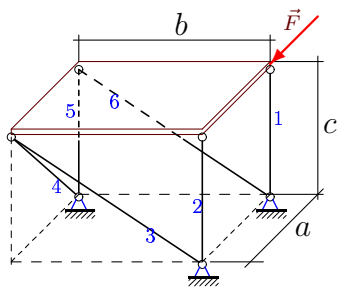
8



$a = b = 5 \text{ м}, c = 12 \text{ м},$   
 $F = 5 \text{ кН}, G = 96 \text{ кН}.$

Задача S-13.15.

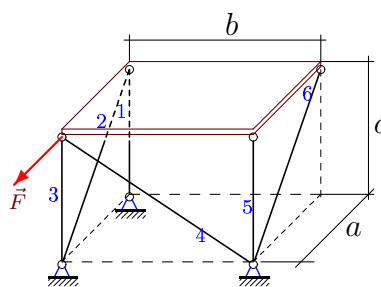
8



$a = b = 8 \text{ м}, c = 15 \text{ м},$   
 $F = 56 \text{ кН}, G = 180 \text{ кН}.$

Задача S-13.16.

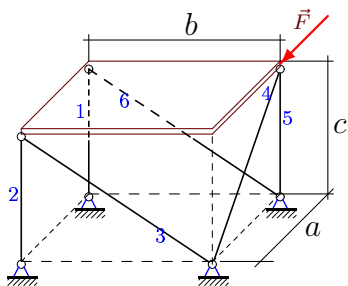
8



$a = b = 4 \text{ м}, c = 3 \text{ м},$   
 $F = 28 \text{ кН}, G = 36 \text{ кН}.$

Задача S-13.17.

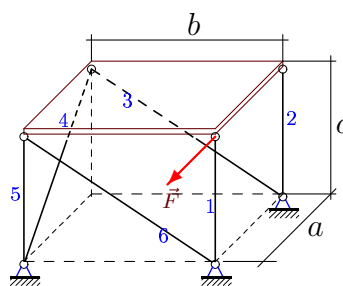
8



$a = b = 4 \text{ м}, c = 3 \text{ м},$   
 $F = 20 \text{ кН}, G = 36 \text{ кН}.$

Задача S-13.18.

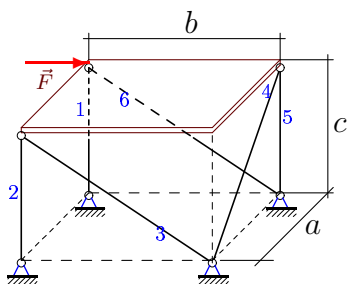
8



$a = b = 4 \text{ м}, c = 3 \text{ м},$   
 $F = 8 \text{ кН}, G = 30 \text{ кН}.$

Задача S-13.19.

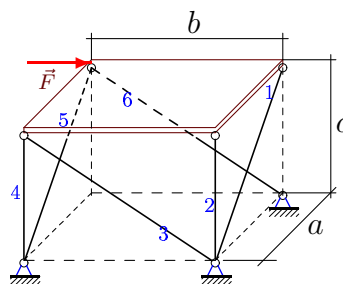
8



$a = b = 8 \text{ м}, c = 15 \text{ м},$   
 $F = 8 \text{ кН}, G = 30 \text{ кН}.$

Задача S-13.20.

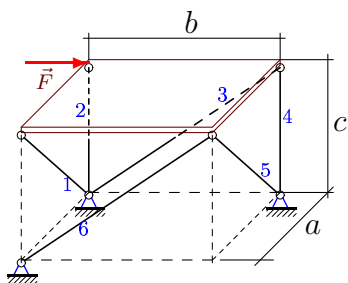
8



$a = b = 5 \text{ м}, c = 12 \text{ м},$   
 $F = 15 \text{ кН}, G = 24 \text{ кН}.$

Задача S-13.21.

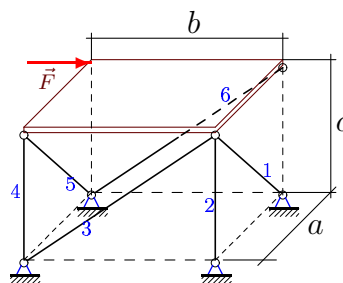
8



$a = b = 12 \text{ м}, c = 5 \text{ м},$   
 $F = 36 \text{ кН}, G = 10 \text{ кН}.$

Задача S-13.22.

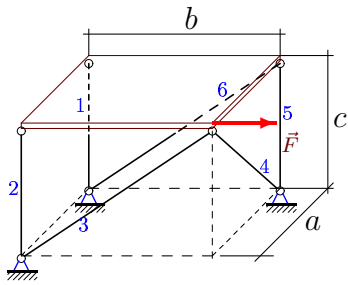
8



$a = b = 15 \text{ м}, c = 8 \text{ м},$   
 $F = 30 \text{ кН}, G = 48 \text{ кН}.$

Задача S-13.23.

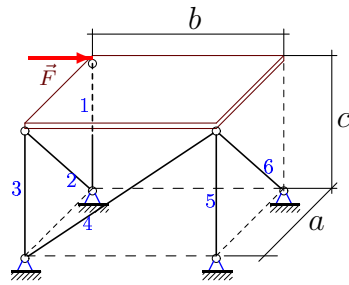
8



$a = b = 15 \text{ м}, c = 8 \text{ м},$   
 $F = 105 \text{ кН}, G = 64 \text{ кН}.$

Задача S-13.24.

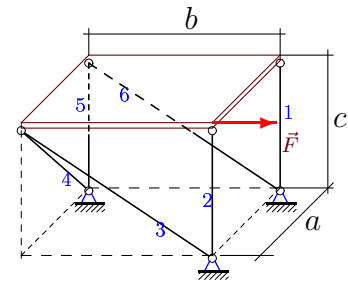
8



$a = b = 4 \text{ м}, c = 3 \text{ м},$   
 $F = 16 \text{ кН}, G = 42 \text{ кН}.$

Задача S-13.25.

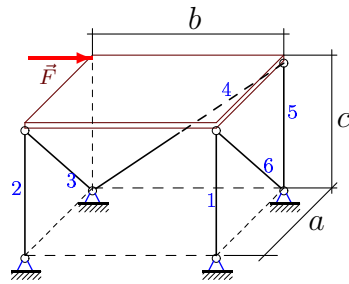
8



$a = b = 3 \text{ м}, c = 4 \text{ м},$   
 $F = 3 \text{ кН}, G = 8 \text{ кН}.$

Задача S-13.26.

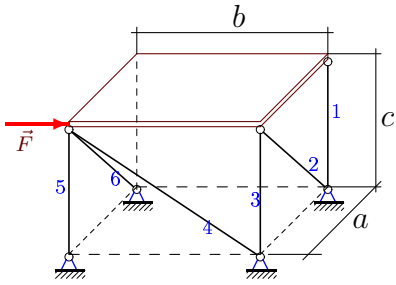
8



$a = b = 5 \text{ м}, c = 12 \text{ м},$   
 $F = 5 \text{ кН}, G = 24 \text{ кН}.$

Задача S-13.27.

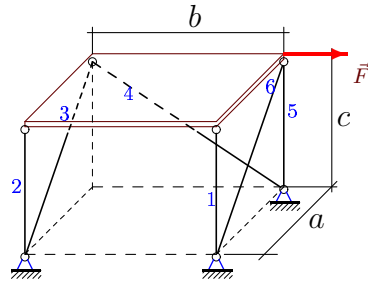
8



$a = b = 8 \text{ м}, c = 15 \text{ м},$   
 $F = 32 \text{ кН}, G = 210 \text{ кН}.$

Задача S-13.28.

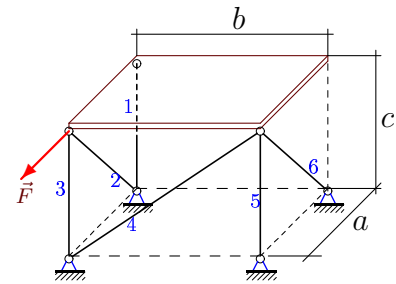
8



$a = b = 8 \text{ м}, c = 15 \text{ м},$   
 $F = 8 \text{ кН}, G = 210 \text{ кН}.$

Задача S-13.29.

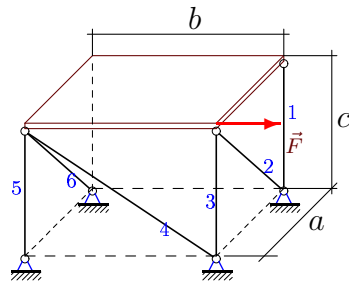
8



$a = b = 5 \text{ м}, c = 12 \text{ м},$   
 $F = 25 \text{ кН}, G = 168 \text{ кН}.$

Задача S-13.30.

8



$a = b = 3 \text{ м}, c = 4 \text{ м},$   
 $F = 3 \text{ кН}, G = 8 \text{ кН}.$

S-13

**Ответы.**  
**Равновесие плиты**

16.02.2015

№	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$
1	34	-32	34	8	-34	-17
2	91	-168	52	36	-91	-91
3	-20	0	20	-36	25	-20
4	52	-60	52	0	-52	-13
5	-8	-4	-5	-5	-8	5
6	0	0	0	-5	0	-13
7	4	-20	5	0	-20	0
8	15	-24	-10	20	-15	-15
9	0	-52	51	0	-28	0
10	5	-15	0	13	-15	0
11	-30	0	0	-17	-15	0
12	0	-11	13	0	-6	0
13	5	-11	13	0	-11	0
14	-12	-36	0	-13	-36	0
15	210	-300	119	119	-195	-119
16	3	-35	0	0	-18	0
17	0	-18	0	-25	-3	0
18	-12	-3	-10	-10	-9	10
19	15	-15	0	0	-15	-17
20	-26	12	-26	0	26	-13
21	13	-10	52	-15	-13	-13
22	85	-80	85	16	-85	-51
23	56	-88	119	0	-88	0
24	-21	-20	12	20	-45	20
25	-4	0	-5	0	0	0
26	0	-12	0	13	-24	0
27	-105	0	0	-68	-45	0
28	-15	-90	0	-17	-90	0
29	-84	65	-60	0	-84	0
30	-4	0	0	-5	0	0

*S-13* файл о13s8A