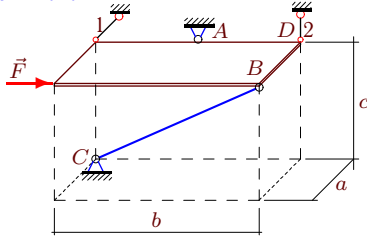


## Равновесие полки

Горизонтальная однородная прямоугольная полка весом  $G$  имеет в точке  $A$  сферическую опору и поддерживается двумя невесомыми, шарнирно закрепленными по концам стержнями (горизонтальным 1 и вертикальным 2) и подпоркой  $BC$ . К полке приложена сила  $F$ , направленная вдоль одного из ее ребер. Определить реакции опор (в кН).

Кирсанов М.Н. **Решбник. Теоретическая механика**/Под ред. А. И. Кириллова.– М.: ФИЗМАТЛИТ, 2008. — 384 с. (с.106.)

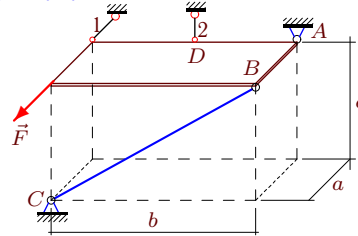
### Задача 14.1.



$$\begin{aligned} a &= 5 \text{ м,} \\ b &= 14 \text{ м,} \\ c &= 2 \text{ м,} \end{aligned}$$

$$AD = 7 \text{ м, } G=28 \text{ кН, } F=7 \text{ кН.}$$

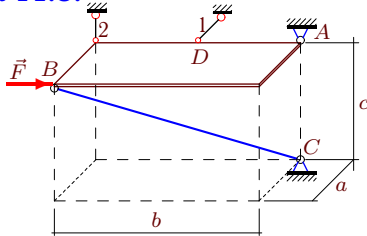
### Задача 14.2.



$$\begin{aligned} a &= 13 \text{ м,} \\ b &= 12 \text{ м,} \\ c &= 5 \text{ м,} \end{aligned}$$

$$AD = 6 \text{ м, } G=30 \text{ кН, } F=4 \text{ кН.}$$

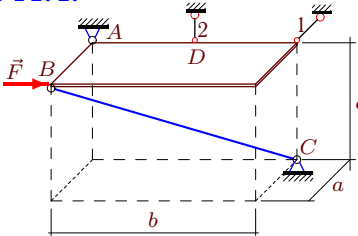
### Задача 14.3.



$$\begin{aligned} a &= 5 \text{ м,} \\ b &= 14 \text{ м,} \\ c &= 2 \text{ м,} \end{aligned}$$

$$AD = 7 \text{ м, } G=12 \text{ кН, } F=14 \text{ кН.}$$

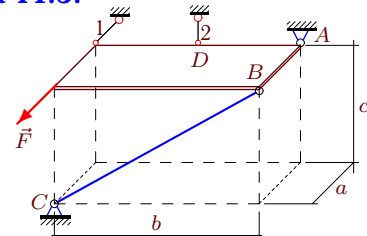
### Задача 14.4.



$$\begin{aligned} a &= 10 \text{ м,} \\ b &= 11 \text{ м,} \\ c &= 2 \text{ м,} \end{aligned}$$

$$AD = 5 \text{ м, } G=40 \text{ кН, } F=11 \text{ кН.}$$

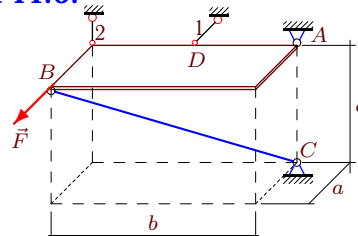
### Задача 14.5.



$$\begin{aligned} a &= 3 \text{ м,} \\ b &= 4 \text{ м,} \\ c &= 3 \text{ м,} \end{aligned}$$

$$AD = 2 \text{ м, } G=18 \text{ кН, } F=4 \text{ кН.}$$

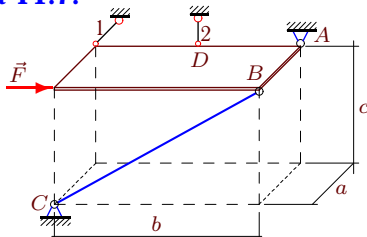
### Задача 14.6.



$$\begin{aligned} a &= 10 \text{ м,} \\ b &= 11 \text{ м,} \\ c &= 2 \text{ м,} \end{aligned}$$

$$AD = 5 \text{ м, } G=12 \text{ кН, } F=10 \text{ кН.}$$

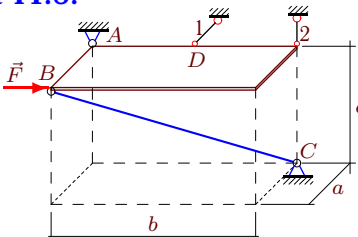
### Задача 14.7.



$$\begin{aligned} a &= 13 \text{ м,} \\ b &= 12 \text{ м,} \\ c &= 5 \text{ м,} \end{aligned}$$

$$AD = 6 \text{ м, } G=60 \text{ кН, } F=12 \text{ кН.}$$

### Задача 14.8.

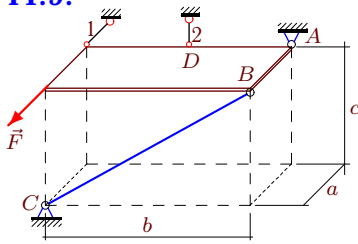


$$\begin{aligned} a &= 3 \text{ м,} \\ b &= 6 \text{ м,} \\ c &= 2 \text{ м,} \end{aligned}$$

$$AD = 3 \text{ м, } G=16 \text{ кН, } F=1 \text{ кН.}$$

**Задача 14.9.**

4



$$a = 11 \text{ м,}$$

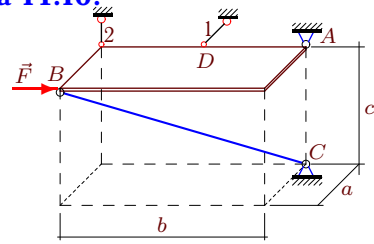
$$b = 8 \text{ м,}$$

$$c = 6 \text{ м,}$$

$$AD = 4 \text{ м, } G = 12 \text{ кН, } F = 4 \text{ кН.}$$

**Задача 14.10.**

4



$$a = 7 \text{ м,}$$

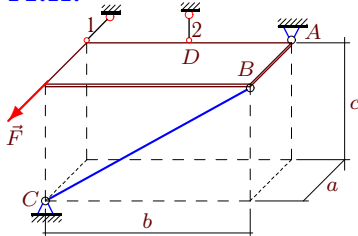
$$b = 6 \text{ м,}$$

$$c = 6 \text{ м,}$$

$$AD = 3 \text{ м, } G = 24 \text{ кН, } F = 3 \text{ кН.}$$

**Задача 14.11.**

4



$$a = 5 \text{ м,}$$

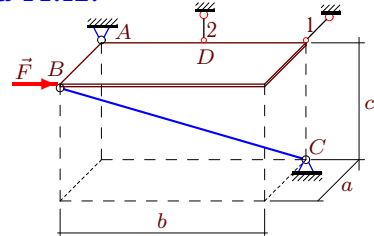
$$b = 4 \text{ м,}$$

$$c = 3 \text{ м,}$$

$$AD = 2 \text{ м, } G = 6 \text{ кН, } F = 2 \text{ кН.}$$

**Задача 14.12.**

4



$$a = 3 \text{ м,}$$

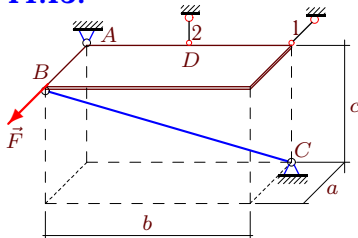
$$b = 6 \text{ м,}$$

$$c = 2 \text{ м,}$$

$$AD = 3 \text{ м, } G = 16 \text{ кН, } F = 2 \text{ кН.}$$

**Задача 14.13.**

4



$$a = 5 \text{ м,}$$

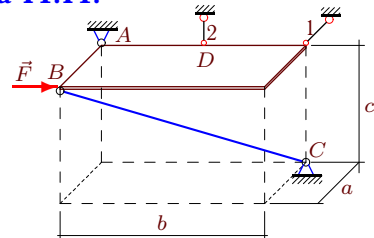
$$b = 14 \text{ м,}$$

$$c = 2 \text{ м,}$$

$$AD = 7 \text{ м, } G = 4 \text{ кН, } F = 4 \text{ кН.}$$

**Задача 14.14.**

4



$$a = 2 \text{ м,}$$

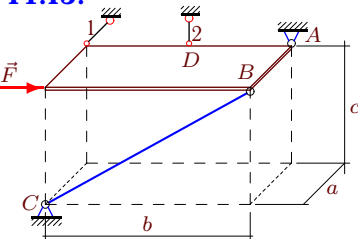
$$b = 2 \text{ м,}$$

$$c = 1 \text{ м,}$$

$$AD = 1 \text{ м, } G = 2 \text{ кН, } F = 1 \text{ кН.}$$

**Задача 14.15.**

4



$$a = 4 \text{ м,}$$

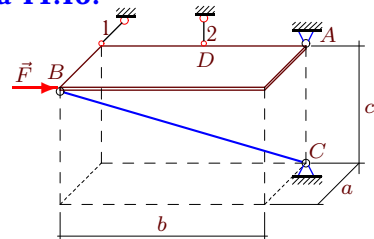
$$b = 4 \text{ м,}$$

$$c = 3 \text{ м,}$$

$$AD = 2 \text{ м, } G = 6 \text{ кН, } F = 1 \text{ кН.}$$

**Задача 14.16.**

4



$$a = 4 \text{ м,}$$

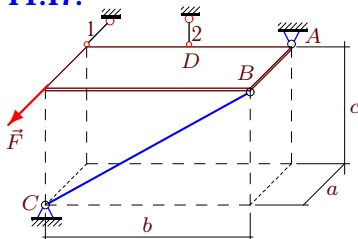
$$b = 8 \text{ м,}$$

$$c = 1 \text{ м,}$$

$$AD = 4 \text{ м, } G = 2 \text{ кН, } F = 2 \text{ кН.}$$

**Задача 14.17.**

4



$$a = 21 \text{ м,}$$

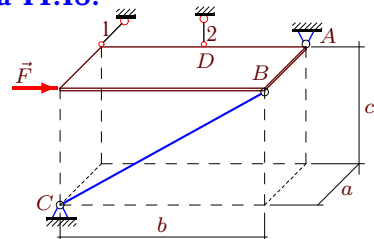
$$b = 15 \text{ м,}$$

$$c = 8 \text{ м,}$$

$$AD = 7 \text{ м, } G = 224 \text{ кН, } F = 15 \text{ кН.}$$

**Задача 14.18.**

4



$$a = 12 \text{ м,}$$

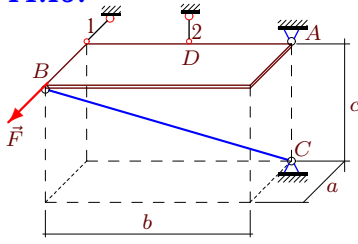
$$b = 6 \text{ м,}$$

$$c = 8 \text{ м,}$$

$$AD = 3 \text{ м, } G = 8 \text{ кН, } F = 1 \text{ кН.}$$

**Задача 14.19.**

4

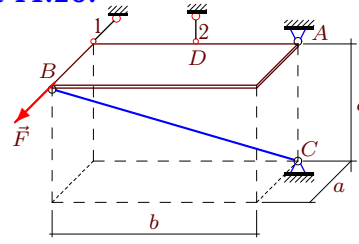


$a = 5 \text{ м},$   
 $b = 14 \text{ м},$   
 $c = 2 \text{ м},$

$AD = 7 \text{ м}, G=4 \text{ кН}, F=14 \text{ кН}.$

**Задача 14.20.**

4

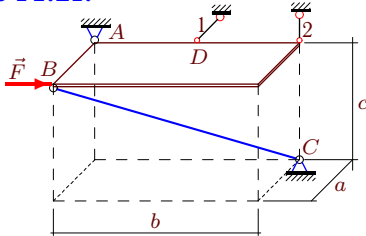


$a = 4 \text{ м},$   
 $b = 7 \text{ м},$   
 $c = 4 \text{ м},$

$AD = 3 \text{ м}, G=16 \text{ кН}, F=7 \text{ кН}.$

**Задача 14.21.**

4

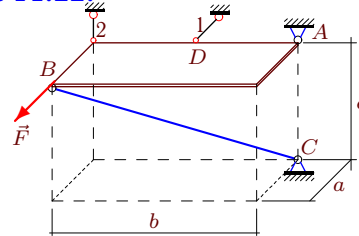


$a = 7 \text{ м},$   
 $b = 6 \text{ м},$   
 $c = 6 \text{ м},$

$AD = 3 \text{ м}, G=144 \text{ кН}, F=3 \text{ кН}.$

**Задача 14.22.**

4

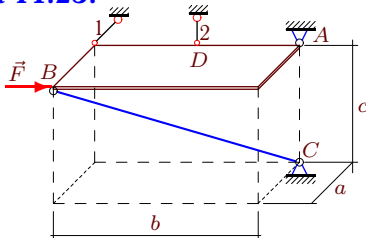


$a = 10 \text{ м},$   
 $b = 11 \text{ м},$   
 $c = 2 \text{ м},$

$AD = 5 \text{ м}, G=4 \text{ кН}, F=5 \text{ кН}.$

**Задача 14.23.**

4

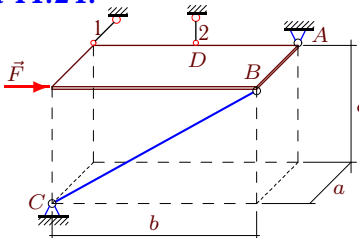


$a = 6 \text{ м},$   
 $b = 7 \text{ м},$   
 $c = 6 \text{ м},$

$AD = 3 \text{ м}, G=48 \text{ кН}, F=7 \text{ кН}.$

**Задача 14.24.**

4

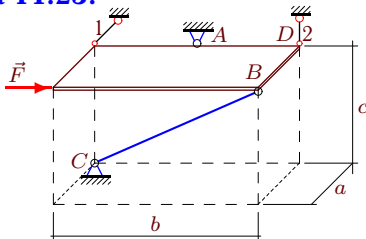


$a = 19 \text{ м},$   
 $b = 9 \text{ м},$   
 $c = 12 \text{ м},$

$AD = 4 \text{ м}, G=64 \text{ кН}, F=3 \text{ кН}.$

**Задача 14.25.**

4

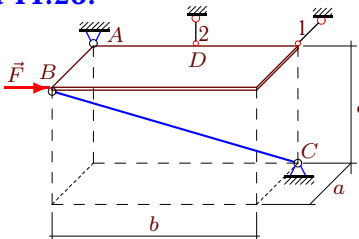


$a = 6 \text{ м},$   
 $b = 7 \text{ м},$   
 $c = 6 \text{ м},$

$AD = 3 \text{ м}, G=108 \text{ кН}, F=8 \text{ кН}.$

**Задача 14.26.**

4

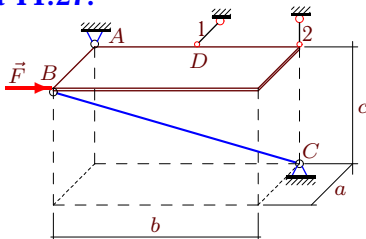


$a = 5 \text{ м},$   
 $b = 14 \text{ м},$   
 $c = 2 \text{ м},$

$AD = 7 \text{ м}, G=56 \text{ кН}, F=14 \text{ кН}.$

**Задача 14.27.**

4

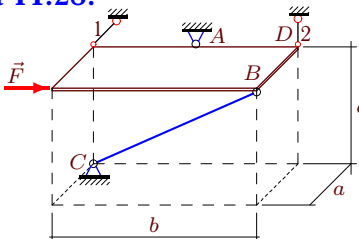


$a = 3 \text{ м},$   
 $b = 6 \text{ м},$   
 $c = 2 \text{ м},$

$AD = 3 \text{ м}, G=4 \text{ кН}, F=2 \text{ кН}.$

**Задача 14.28.**

4

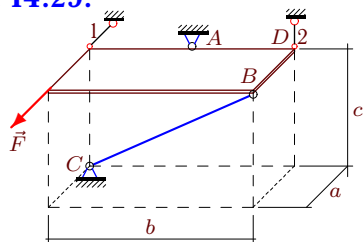


$a = 6 \text{ м},$   
 $b = 7 \text{ м},$   
 $c = 6 \text{ м},$

$AD = 3 \text{ м}, G=108 \text{ кН}, F=8 \text{ кН}.$

**Задача 14.29.**

4

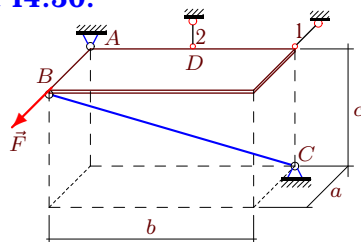


$$\begin{aligned} a &= 2 \text{ м,} \\ b &= 2 \text{ м,} \\ c &= 1 \text{ м,} \end{aligned}$$

$$AD = 1 \text{ м, } G=6 \text{ кН, } F=1 \text{ кН.}$$

**Задача 14.30.**

4



$$\begin{aligned} a &= 4 \text{ м,} \\ b &= 8 \text{ м,} \\ c &= 1 \text{ м,} \end{aligned}$$

$$AD = 4 \text{ м, } G=2 \text{ кН, } F=4 \text{ кН.}$$

**Равновесие полки**

	$H$	$V$	$X_A$	$Y_A$	$Z_A$	$S$
1	-40	-14	5	-105	28	-105
2	-43	30	39	-36	-15	-39
3	-10	0	-5	28	6	-45
4	-90	44	-10	99	-24	-150
5	-13	18	9	-12	-9	-15
6	-22	0	-18	33	6	-45
7	-91	60	91	-84	-30	-78
8	-23	8	11	23	0	-28
9	-15	12	11	-8	-6	-10
10	-7	0	-7	9	12	-22
11	-7	6	5	-4	-3	-5
12	-11	16	-1	22	-8	-28
13	-5	4	-4	14	-2	-15
14	-1	2	-1	1	-1	-3
15	-5	6	5	-5	-3	-5
16	-1	0	-3	6	1	-9
17	-309	240	294	-210	-128	-238
18	-8	8	8	-4	-4	-5
19	-14	0	-5	14	2	-15
20	-7	0	-8	14	8	-18
21	-161	72	77	69	0	-132
22	-11	0	-4	11	2	-15
23	-6	0	-18	21	24	-44
24	-57	72	57	-27	-40	-40
25	-66	-72	12	-71	126	-99
26	-65	56	-5	182	-28	-210
27	-4	2	1	4	0	-7
28	-66	-72	12	-71	126	-99
29	-7	-3	0	-6	6	-9
30	-4	2	-4	8	-1	-9