

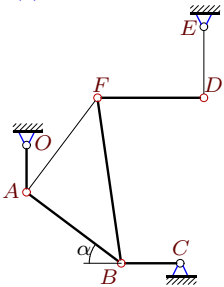
## Кинематический анализ механизма (5 звеньев)

В указанном положении механизма задана угловая скорость одного из его звеньев. Длины звеньев даны в сантиметрах. Найти угловые скорости звеньев механизма.

Кирсанов М.Н. **Решебник. Теоретическая механика**/Под ред. А. И. Кириллова.– М.:ФИЗМАТЛИТ, 2002.– 384 с. (с.158.)

### Задача 23.1.

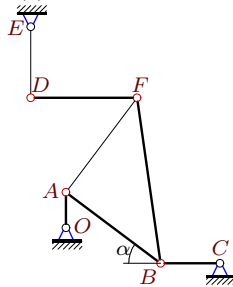
13



$\omega_{OA} = 45$  рад/с,  $OA = 4$ ,  $AB=AF=10$ ,  
 $BC = 5$ ,  $DF=9$ ,  $DE=6$ ,  $\cos \alpha=0.8$ ,  $AB \perp AF$ .

### Задача 23.2.

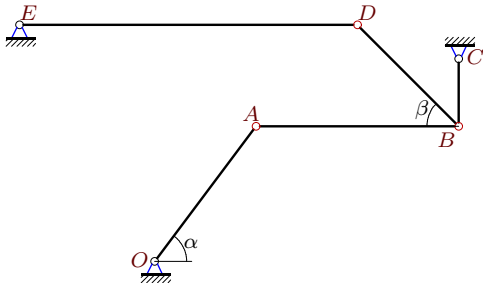
13



$\omega_{OA} = 30$  рад/с,  $OA = 3$ ,  $AB=AF=10$ ,  
 $BC = 5$ ,  $DF=9$ ,  $DE=6$ ,  $\cos \alpha=0.8$ ,  $AB \perp AF$ .

### Задача 23.3.

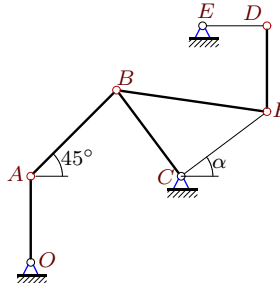
13



$\omega_{OA} = 30$  рад/с,  $OA = 5$ ,  $AB = 6$ ,  $BC = 2$ ,  
 $DE = 10$ ,  $BD = 3\sqrt{2}$ ,  $\cos \alpha = 0.6$ ,  $\beta = 45^\circ$ .

### Задача 23.4.

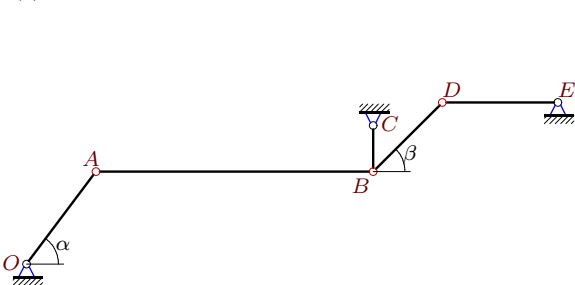
13



$\omega_{OA} = 21$  рад/с,  $OA = 4$ ,  $DF=4$ ,  $BC=CF=5$ ,  
 $AB = 4\sqrt{2}$ ,  $DE=3$ ,  $\cos \alpha=0.8$ ,  $CB \perp CF$ .

### Задача 23.5.

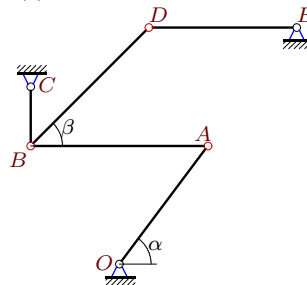
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$\omega_{OA} = 60$  рад/с,  $OA = 5$ ,  $AB = 12$ ,  $BC = 2$ ,  
 $DE = 5$ ,  $BD = 3\sqrt{2}$ ,  $\cos \alpha = 0.6$ ,  $\beta = 45^\circ$ .

### Задача 23.6.

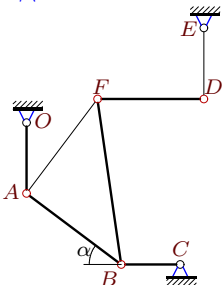
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$\omega_{OA} = 10$  рад/с,  $OA = 5$ ,  $AB = 6$ ,  $BC = 2$ ,  
 $DE = 5$ ,  $BD = 4\sqrt{2}$ ,  $\cos \alpha = 0.6$ ,  $\beta = 45^\circ$ .

### Задача 23.7.

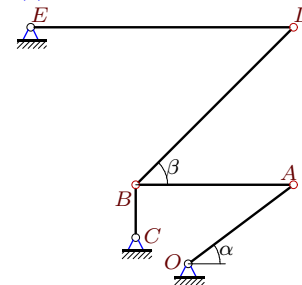
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$\omega_{OA} = 15$  рад/с,  $OA = 6$ ,  $AB=AF=10$ ,  
 $BC = 5$ ,  $DF=9$ ,  $DE=6$ ,  $\cos \alpha=0.8$ ,  $AB \perp AF$ .

### Задача 23.8.

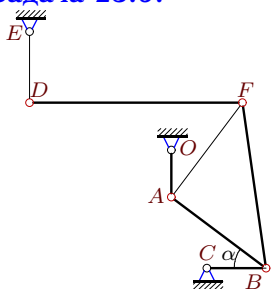
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$\omega_{OA} = 30$  рад/с,  $OA = 5$ ,  $AB = 6$ ,  $BC = 2$ ,  
 $DE = 10$ ,  $BD = 6\sqrt{2}$ ,  $\cos \alpha = 0.8$ ,  $\beta = 45^\circ$ .

**Задача 23.9.**

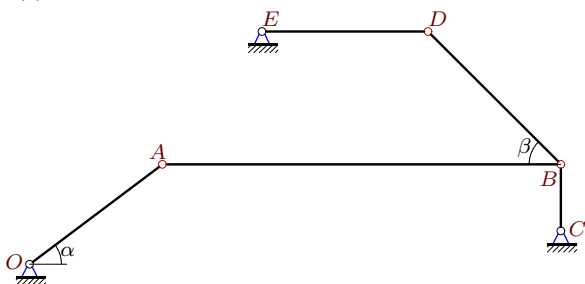
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$\omega_{OA} = 45$  рад/с,  $OA = 4$ ,  $AB=AF=10$ ,  
 $BC = 5$ ,  $DF=18$ ,  $DE=6$ ,  $\cos \alpha=0.8$ ,  $AB \perp AF$ .

**Задача 23.11.**

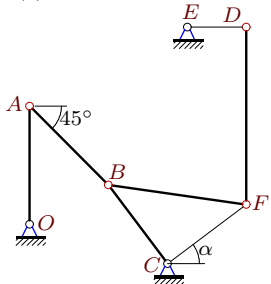
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$\omega_{OA} = 60$  рад/с,  $OA = 5$ ,  $AB = 12$ ,  $BC = 2$ ,  
 $DE = 5$ ,  $BD = 4\sqrt{2}$ ,  $\cos \alpha = 0.8$ ,  $\beta = 45^\circ$ .

**Задача 23.13.**

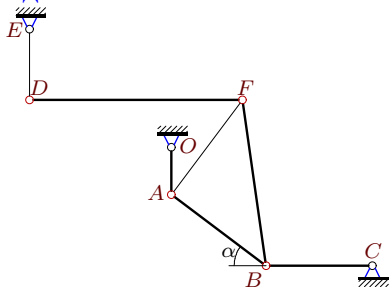
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$\omega_{OA} = 2$  рад/с,  $OA = 6$ ,  $DF=9$ ,  $BC=CF=5$ ,  
 $AB = 4\sqrt{2}$ ,  $DE=3$ ,  $\cos \alpha=0.8$ ,  $CB \perp CF$ .

**Задача 23.15.**

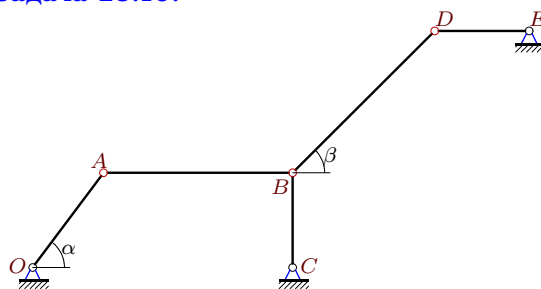
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$\omega_{OA} = 27$  рад/с,  $OA = 4$ ,  $AB=AF=10$ ,  
 $BC = 9$ ,  $DF=18$ ,  $DE=6$ ,  $\cos \alpha=0.8$ ,  $AB \perp AF$ .

**Задача 23.10.**

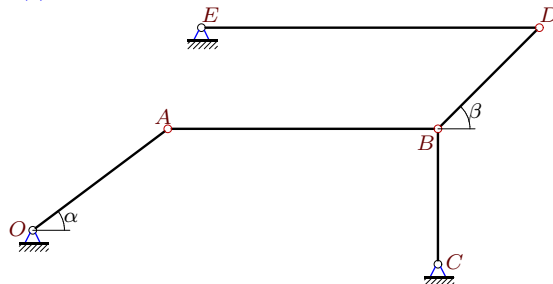
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$\omega_{OA} = 24$  рад/с,  $OA = 5$ ,  $AB = 8$ ,  $BC = 4$ ,  
 $DE = 4$ ,  $BD = 6\sqrt{2}$ ,  $\cos \alpha = 0.6$ ,  $\beta = 45^\circ$ .

**Задача 23.12.**

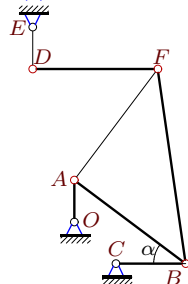
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$\omega_{OA} = 20$  рад/с,  $OA = 5$ ,  $AB = 8$ ,  $BC = 4$ ,  
 $DE = 10$ ,  $BD = 3\sqrt{2}$ ,  $\cos \alpha = 0.8$ ,  $\beta = 45^\circ$ .

**Задача 23.14.**

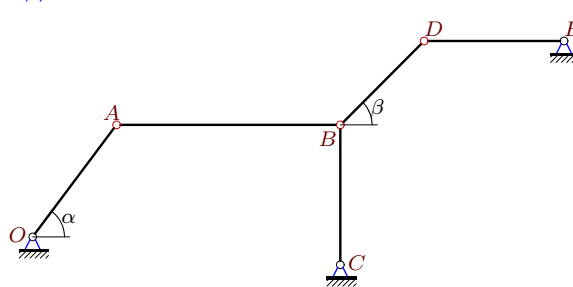
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$\omega_{OA} = 30$  рад/с,  $OA = 3$ ,  $AB=AF=10$ ,  
 $BC = 5$ ,  $DF=9$ ,  $DE=3$ ,  $\cos \alpha=0.8$ ,  $AB \perp AF$ .

**Задача 23.16.**

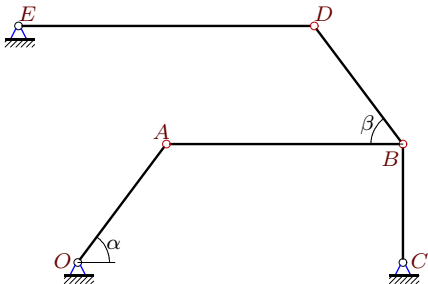
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$\omega_{OA} = 120$  рад/с,  $OA = 5$ ,  $AB = 8$ ,  $BC = 5$ ,  
 $DE = 5$ ,  $BD = 3\sqrt{2}$ ,  $\cos \alpha = 0.6$ ,  $\beta = 45^\circ$ .

**Задача 23.17.**

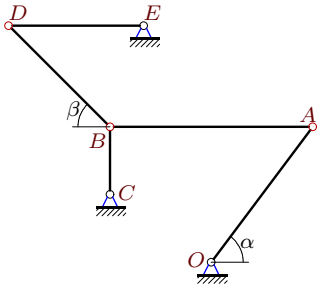
13



$\omega_{OA} = 40$  рад/с,  $OA = 5$ ,  $AB = 8$ ,  $BC = 4$ ,  
 $DE = 10$ ,  $BD = 5$ ,  $\cos \alpha = 0.6$ ,  $\cos \beta = 0.6$ .

**Задача 23.19.**

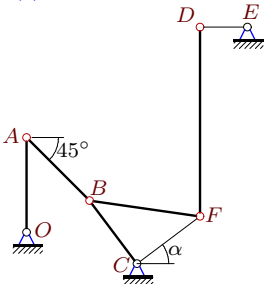
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$\omega_{OA} = 6$  рад/с,  $OA = 5$ ,  $AB = 6$ ,  $BC = 2$ ,  
 $DE = 4$ ,  $BD = 3\sqrt{2}$ ,  $\cos \alpha = 0.6$ ,  $\beta = 45^\circ$ .

**Задача 23.21.**

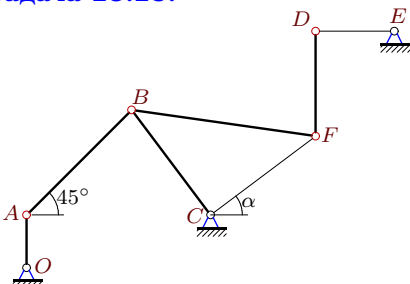
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$\omega_{OA} = 2$  рад/с,  $OA = 6$ ,  $DF = 12$ ,  $BC = CF = 5$ ,  
 $AB = 4\sqrt{2}$ ,  $DE = 3$ ,  $\cos \alpha = 0.8$ ,  $CB \perp CF$ .

**Задача 23.23.**

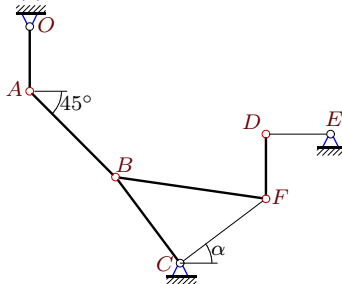
13



$\omega_{OA} = 42$  рад/с,  $OA = 2$ ,  $DF = 4$ ,  $BC = CF = 5$ ,  
 $AB = 4\sqrt{2}$ ,  $DE = 3$ ,  $\cos \alpha = 0.8$ ,  $CB \perp CF$ .

**Задача 23.18.**

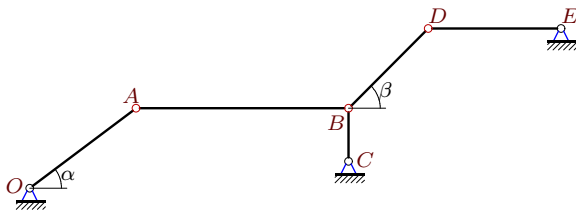
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$\omega_{OA} = 4$  рад/с,  $OA = 3$ ,  $DF = 3$ ,  $BC = CF = 5$ ,  
 $AB = 4\sqrt{2}$ ,  $DE = 3$ ,  $\cos \alpha = 0.8$ ,  $CB \perp CF$ .

**Задача 23.20.**

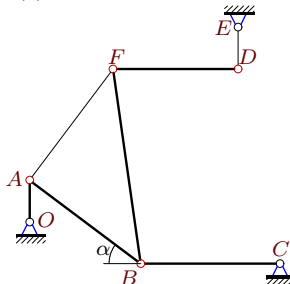
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$\omega_{OA} = 10$  рад/с,  $OA = 5$ ,  $AB = 8$ ,  $BC = 2$ ,  
 $DE = 5$ ,  $BD = 3\sqrt{2}$ ,  $\cos \alpha = 0.8$ ,  $\beta = 45^\circ$ .

**Задача 23.22.**

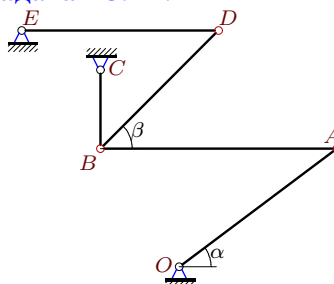
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$\omega_{OA} = 30$  рад/с,  $OA = 3$ ,  $AB = AF = 10$ ,  
 $BC = 10$ ,  $DF = 9$ ,  $DE = 3$ ,  $\cos \alpha = 0.8$ ,  $AB \perp AF$ .

**Задача 23.24.**

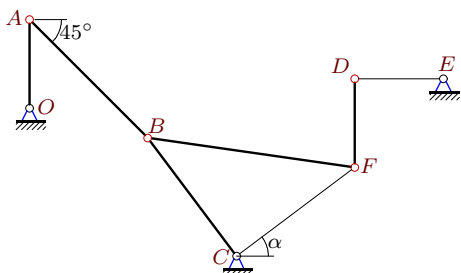
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$\omega_{OA} = 30$  рад/с,  $OA = 5$ ,  $AB = 6$ ,  $BC = 2$ ,  
 $DE = 5$ ,  $BD = 3\sqrt{2}$ ,  $\cos \alpha = 0.8$ ,  $\beta = 45^\circ$ .

**Задача 23.25.**

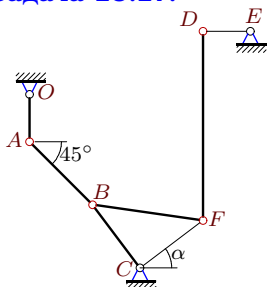
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$\omega_{OA} = 4$  рад/с,  $OA = 3$ ,  $DF=3$ ,  $BC=CF=5$ ,  
 $AB = 4\sqrt{2}$ ,  $DE=3$ ,  $\cos \alpha=0.8$ ,  $CB \perp CF$ .

**Задача 23.27.**

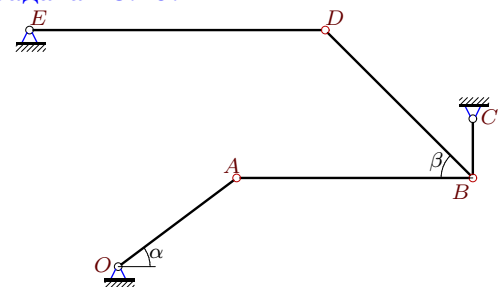
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$\omega_{OA} = 4$  рад/с,  $OA = 3$ ,  $DF=12$ ,  $BC=CF=5$ ,  
 $AB = 4\sqrt{2}$ ,  $DE=3$ ,  $\cos \alpha=0.8$ ,  $CB \perp CF$ .

**Задача 23.29.**

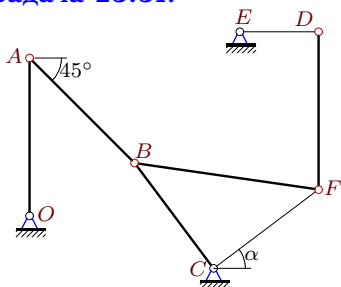
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$\omega_{OA} = 10$  рад/с,  $OA = 5$ ,  $AB = 8$ ,  $BC = 2$ ,  
 $DE = 10$ ,  $BD = 5\sqrt{2}$ ,  $\cos \alpha = 0.8$ ,  $\beta = 45^\circ$ .

**Задача 23.31.**

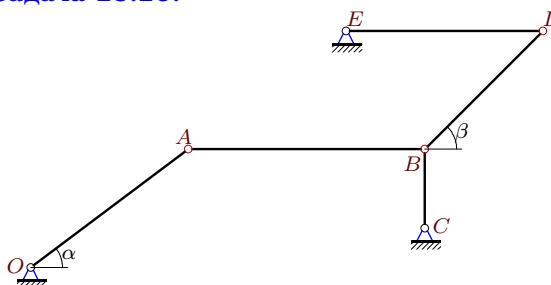
13



$\omega_{OA} = 2$  рад/с,  $OA = 6$ ,  $DF=6$ ,  $BC=CF=5$ ,  
 $AB = 4\sqrt{2}$ ,  $DE=3$ ,  $\cos \alpha=0.8$ ,  $CB \perp CF$ .

**Задача 23.26.**

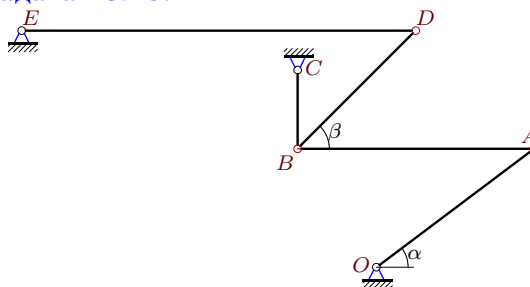
13



$\omega_{OA} = 30$  рад/с,  $OA = 5$ ,  $AB = 6$ ,  $BC = 2$ ,  
 $DE = 5$ ,  $BD = 3\sqrt{2}$ ,  $\cos \alpha = 0.8$ ,  $\beta = 45^\circ$ .

**Задача 23.28.**

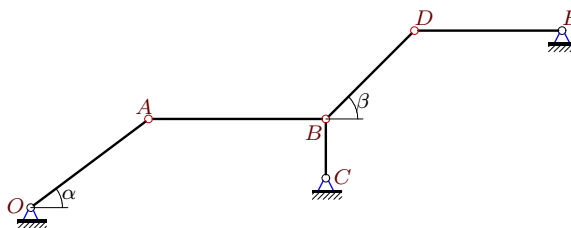
13



$\omega_{OA} = 30$  рад/с,  $OA = 5$ ,  $AB = 6$ ,  $BC = 2$ ,  
 $DE = 10$ ,  $BD = 3\sqrt{2}$ ,  $\cos \alpha = 0.8$ ,  $\beta = 45^\circ$ .

**Задача 23.30.**

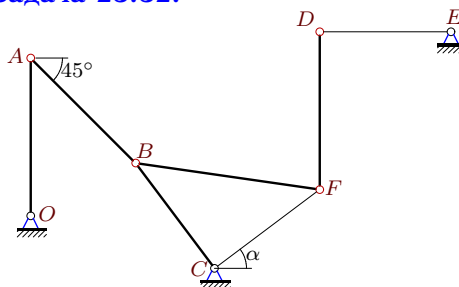
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$\omega_{OA} = 30$  рад/с,  $OA = 5$ ,  $AB = 6$ ,  $BC = 2$ ,  
 $DE = 5$ ,  $BD = 3\sqrt{2}$ ,  $\cos \alpha = 0.8$ ,  $\beta = 45^\circ$ .

**Задача 23.32.**

13



$\omega_{OA} = 10$  рад/с,  $OA = 6$ ,  $DF=6$ ,  $BC=CF=5$ ,  
 $AB = 4\sqrt{2}$ ,  $DE=5$ ,  $\cos \alpha=0.8$ ,  $CB \perp CF$ .

**Кинематический анализ механизма (5 звеньев)**

№	$\omega_{AB}$	$\omega_{BC}$	$\omega_{DB}$	$\omega_{DF}$	$\omega_{DE}$
1	30	48	—	20	70
2	15	24	—	10	35
3	15	60	40	—	12
4	9	12	—	9	16
5	15	120	80	—	48
6	5	20	10	—	8
7	15	24	—	10	35
8	20	45	15	—	9
9	30	48	—	10	70
10	9	24	16	—	24
11	20	90	45	—	36
12	10	15	20	—	6
13	9	12	—	4	16
14	15	24	—	10	70
15	18	16	—	6	42
16	45	96	160	—	96
17	15	40	40	—	12
18	9	12	—	12	16
19	3	12	8	—	6
20	5	15	10	—	6
21	9	12	—	3	16
22	15	12	—	10	70
23	9	12	—	9	16
24	20	45	30	—	18
25	9	12	—	12	16
26	20	45	30	—	18
27	9	12	—	3	16
28	20	45	30	—	9
29	5	15	6	—	3
30	20	45	30	—	18
31	9	12	—	6	16
32	45	60	—	30	48