

Olmsteadite, $K_2Fe_2^{2+}[Fe_2^{2+}(Nb,Ta)_2^{5+}O_4(H_2O)_4(PO_4)_4]$, a new species, its crystal structure and relation to vauxite and montgomeryite

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Abstract

Olmsteadite, $K_2Fe_2^{2+}[Fe_2^{2+}(Nb,Ta)_2^{5+}O_4(H_2O)_4(PO_4)_4]$, a 7.512(1), b 10.000(3), c 6.492(2) Å, $Z = 1$, space group $Pb2_1m$, occurs as lustrous deep brown to black thick prismatic crystals at the Hesnard pegmatite and as thin prismatic crystals at the Big Chief pegmatite, Black Hills, South Dakota. Hardness = 4; specific gravity 3.36(1) (Hesnard), 3.31(1) (Ta-poor: Big Chief); streak olive-green, cleavages good parallel to $\{100\}$ and $\{001\}$. Variable Ta content (to $Nb_{0.71}Ta_{0.29}$) is noted for Big Chief material. Crystals show $c\{001\}$, $a\{100\}$, $p\{111\}$, $p'\{1\bar{1}1\}$ (Big Chief) and additional $m\{110\}$, $g\{10i\}$ (Hesnard). Biaxial (+): α 1.725(5), β 1.755(5), γ 1.815(5); $2V \sim 60^\circ$; X blue-green, Y yellow, Z brown; absorption $X \gg Z > Y$, $X||c$, $Y||a$, $Z||b$ (Big Chief); α 1.765(4), β 1.775(4), γ 1.835(4), X dark blue, Y light brown, Z dark brown (Hesnard).

Olmsteadite contains the same kind of structural unit as found in montgomeryite and vauxite. It consists of corner-linked octahedral chains of composition $[Fe_2^{2+}(Nb,Ta)_2^{5+}O_4(H_2O)_4(PO_4)_4]^{6-}$ which are oriented parallel to $[010]$. These chains are in a *cis*-configuration across the *oxo*-bridges. Average interatomic distances are Nb⁵⁺-O 1.98, Fe²⁺-O 2.12, P(1)-O 1.53 and P(2)-O 1.55 Å. The K⁺ cation occurs in a distorted cube of oxygen atoms affording an average of K-O 3.02 Å.

Introduction

In 1973, Mr. W. L. Roberts of Rapid City, South Dakota, sent us thick prismatic crystals of a deep brown to black phosphate culled from the Hesnard pegmatite near Custer, Custer County, South Dakota, which he noted qualitatively contained potassium, niobium, iron, and phosphorus. Preliminary X-ray powder and single crystal study suggested a species new to scientific intelligence. Several months later, Mr. Roberts submitted thin tabular crystals of an unknown brown phosphate collected by Mr. M. Olmstead from the Big Chief pegmatite, near Glendale, Pennington County, South Dakota, which qualitatively revealed the presence of potassium, iron, and phosphorus. Mutual identity of the two materials was not suspected until we compared their X-ray photographs. In this study, we propose the Big Chief crystals as the type since the crystal structure analysis was performed on that material.

Owing to the peculiar chemistry of the new mineral, here named *olmsteadite*, a complete three-dimensional crystal structure analysis was undertaken, the results of which establish the ideal formula

$K_2Fe_2^{2+}[Fe_2^{2+}(Nb,Ta)_2^{5+}O_4(H_2O)_4(PO_4)_4]$. To our knowledge, this is the first known example of a secondary transition-metal phosphate containing essential niobium.

Descriptive mineralogy

Physical properties

Olmsteadite is a product of hydrothermal leaching and corrosion of primary triphylite-lithiophilite and, presumably, columbite-tantalite. Columbite-tantalite occurs in a paragenesis similar to the primary giant phosphate phases and many occurrences show the two in close contact. Although columbite-tantalite is more resistant to corrosion than triphylite-lithiophilite, many examples are known of partly to extensively altered crystals. It was not possible to locate such examples at either of the localities but columbite-tantalite and triphylite do occur at both.

Olmsteadite occurs early in the sequence of late stage products, its crystals being embedded in minerals later in the sequence. At the Hesnard pegmatite, it is embedded in dense aggregates of red-brown botryoidal-platy rockbridgeite. The crystals are thick

H	K	L	FD	FC	ALPH	H	K	L	FD	FC	ALPH	H	K	L	FD	FC	ALPH
0	-14	0	21.3	21.6	260.7	4	6	0	7.2	6.7	2.8	9	8	0	33.5	35.1	137.3
0	-12	0	84.3	85.9	45.6	4	7	0	42.0	44.2	116.6	-10	-6	0	4.3	6.6	-59.4
0	-10	0	51.4	49.2	-75.3	4	8	0	80.4	80.7	-20.3	-10	-5	0	59.1	59.8	244.0
0	-8	0	132.1	131.8	15.5	4	9	0	32.6	32.8	8.1	-10	-4	0	7.9	9.3	2.2
0	-6	0	59.5	55.4	205.3	4	10	0	22.3	20.8	69.6	-10	-3	0	29.0	30.0	-28.2
0	-4	0	130.2	138.5	27.0	4	11	0	17.2	19.4	79.9	-10	-2	0	9.1	6.4	51.8
0	-2	0	14.8	18.3	41.2	4	12	0	45.1	45.9	-27.8	-10	-1	0	46.8	50.0	208.7
0	2	0	15.2	19.0	-46.7	4	13	0	8.0	10.0	-63.6	10	0	0	5.6	7.4	0.6
0	4	0	128.0	135.3	-20.2	-5	-13	0	6.0	5.1	-45.3	10	1	0	48.7	51.7	161.9
0	6	0	62.5	57.6	157.0	-5	-12	0	14.4	16.6	-52.4	10	2	0	2.7	4.9	-34.5
0	8	0	134.9	134.0	-9.3	-5	-11	0	47.5	45.5	240.9	10	3	0	31.6	31.8	42.9
0	10	0	48.6	47.4	81.6	-5	-10	0	38.2	43.3	33.4	10	4	0	8.4	8.9	-0.8
0	12	0	82.3	83.0	-37.3	-5	-9	0	18.6	15.6	-5.2	10	5	0	57.5	57.6	125.9
0	14	0	23.7	23.8	113.8	-5	-8	0	23.1	21.4	-66.6	10	6	0	8.5	8.6	64.3
-1	-14	0	24.1	24.6	2.2	-5	-7	0	43.5	45.0	232.7	-11	-3	0	22.4	23.4	259.0
-1	-13	0	42.2	43.1	72.0	-5	-6	0	56.4	55.9	2.3	-11	-2	0	34.2	37.0	200.5
-1	-12	0	23.7	25.3	-20.0	-5	-5	0	26.3	26.9	-2.0	-11	-1	0	15.3	18.3	268.5
-1	-11	0	54.4	54.0	223.0	-5	-4	0	20.6	21.9	-60.2	11	0	0	31.5	32.4	7.2
-1	-10	0	39.7	40.3	2.1	-5	-3	0	48.7	49.3	231.3	11	1	0	14.9	18.9	104.7
-1	-9	0	77.0	77.4	28.1	-5	-2	0	77.0	80.2	4.8	11	2	0	34.6	36.4	170.4
-1	-8	0	69.3	68.1	-6.0	-5	-1	0	36.1	36.8	-25.3	11	3	0	24.9	24.7	110.4
-1	-7	0	82.1	83.4	231.3	5	0	0	10.9	10.0	183.5	0	-14	-1	12.5	14.3	258.3
-1	-6	0	60.5	61.2	-5.0	5	1	0	35.9	37.7	36.3	0	-12	-1	44.4	42.7	49.9
-1	-5	0	88.7	89.4	14.6	5	2	0	77.5	80.4	2.2	0	-10	-1	46.4	47.0	261.5
-1	-4	0	15.4	14.9	8.2	5	3	0	48.6	47.8	137.8	0	-8	-1	16.6	16.4	-55.4
-1	-3	0	162.8	159.7	191.6	5	4	0	17.3	20.5	64.3	0	-6	-1	72.0	75.3	212.4
-1	-2	0	74.5	72.3	-11.8	5	5	0	25.4	27.0	14.3	0	-4	-1	27.3	24.6	36.0
-1	-1	0	112.3	115.0	16.2	5	6	0	59.7	58.3	7.1	0	-2	-1	54.0	55.8	168.1
1	0	0	67.1	65.0	1.9	5	7	0	44.4	44.7	138.2	0	0	1	83.7	84.6	2.9
1	1	0	111.6	113.0	-11.6	5	8	0	20.7	20.6	74.3	0	2	1	57.9	59.6	200.3
1	2	0	77.2	73.7	17.0	5	9	0	17.9	17.0	19.1	0	4	1	25.1	23.2	-16.6
1	3	0	165.3	160.8	172.0	5	10	0	57.5	42.7	-22.4	0	6	1	72.6	75.1	154.7
1	4	0	12.3	14.0	11.0	5	11	0	46.9	46.1	129.8	0	8	1	24.1	24.2	57.5
1	5	0	90.2	89.9	-9.0	5	12	0	12.8	15.1	65.5	0	10	1	43.0	43.1	107.8
1	6	0	62.3	62.1	11.5	5	13	0	8.0	8.4	52.9	0	12	1	43.0	42.8	-39.3
1	7	0	81.0	81.1	135.1	-6	-12	0	24.9	24.6	-16.2	0	14	1	13.6	14.1	129.9
1	8	0	67.7	67.8	11.2	-6	-11	0	15.1	17.8	8.5	-1	-14	-1	7.7	8.4	78.2
1	9	0	78.9	78.5	-21.9	-6	-10	0	38.7	37.9	15.7	-1	-13	-1	29.8	29.4	77.8
1	10	0	41.9	40.9	6.7	-6	-9	0	36.0	36.8	249.2	-1	-12	-1	7.0	5.9	202.9
1	11	0	56.3	56.4	145.9	-6	-8	0	19.0	19.2	-88.2	-1	-11	-1	26.0	24.5	235.1
1	12	0	23.6	26.2	30.0	-6	-7	0	38.5	39.2	-6.2	-1	-10	-1	17.9	17.4	68.7
1	13	0	41.3	41.3	-62.2	-6	-6	0	38.4	38.0	19.0	-1	-9	-1	43.3	44.6	35.1
1	14	0	24.6	25.4	9.7	-6	-5	0	67.5	68.1	248.6	-1	-8	-1	6.2	8.2	66.3
-2	-14	0	53.1	52.4	36.8	-6	-4	0	26.4	28.5	25.1	-1	-7	-1	39.3	41.0	239.5
-2	-13	0	16.4	17.5	-79.8	-6	-3	0	47.9	51.7	-39.4	-1	-6	-1	35.5	37.4	38.2
-2	-12	0	30.2	32.8	249.8	-6	-2	0	67.3	69.7	33.0	-1	-5	-1	40.3	42.5	3.9
-2	-11	0	11.5	11.7	-40.0	-6	-1	0	55.8	55.4	232.9	-1	-4	-1	29.2	30.3	67.5
-2	-10	0	78.3	80.9	41.9	6	0	0	14.0	13.6	-1.3	-1	-3	-1	61.4	62.7	205.7
-2	-9	0	15.9	16.4	245.2	6	10	0	39.8	39.9	-4.3	-1	-2	-1	42.6	46.6	-0.6
-2	-8	0	18.9	18.0	237.2	6	1	0	54.6	54.3	135.5	-1	-1	-1	53.3	52.2	42.3
-2	-7	0	12.3	9.6	103.3	6	2	0	64.0	65.8	-25.1	1	0	1	25.4	25.6	180.4
-2	-6	0	177.8	174.5	19.9	6	3	0	52.5	53.7	47.0	1	1	1	49.1	47.4	-33.9
-2	-5	0	33.0	31.8	224.9	6	4	0	26.9	27.9	-27.9	1	2	1	43.5	47.0	3.7
-2	-4	0	49.5	49.3	-63.1	6	5	0	64.7	66.0	118.4	1	3	1	62.8	61.4	162.6
-2	-3	0	59.0	57.1	-29.5	6	6	0	38.9	37.4	-6.5	1	4	1	31.0	30.5	-67.7
-2	-2	0	193.0	191.6	3.5	6	7	0	39.8	39.3	14.5	1	5	1	43.1	45.4	6.4
-2	-1	0	58.8	60.9	-76.6	6	8	0	21.0	18.8	97.2	1	6	1	34.8	37.1	-34.4
2	0	0	35.3	29.0	182.0	6	9	0	37.0	36.3	123.9	1	7	1	38.0	38.0	131.8
2	1	0	54.2	58.3	78.5	6	11	0	17.1	18.3	4.5	1	8	1	8.2	8.8	-67.7
2	2	0	156.8	192.6	1.3	6	12	0	21.1	21.4	20.1	1	9	1	46.2	45.5	-24.5
2	3	0	59.8	57.2	32.5	-7	-11	0	2.8	6.9	-35.6	1	10	1	15.0	17.0	-62.6
2	4	0	49.0	46.8	64.7	-7	-10	0	19.2	21.3	244.3	1	11	1	25.2	24.5	142.4

2	5	0	32.6	32.4	140.3	-7	-9	0	22.9	23.7	-84.5	1	12	1	7.1	6.3	166.3
2	6	0	179.4	174.2	-14.9	-7	-8	0	41.4	42.9	36.2	1	13	1	27.4	27.6	-63.2
2	7	0	7.4	7.8	251.0	-7	-7	0	21.3	22.1	-88.8	1	14	1	8.6	8.0	-69.8
2	8	0	21.4	20.4	133.9	-7	-6	0	25.0	22.8	245.9	-2	-14	-1	20.0	20.7	52.7
2	9	0	17.2	16.3	126.5	-7	-5	0	43.0	43.2	247.4	-2	-13	-1	17.8	17.2	263.2
2	10	0	76.8	78.8	-32.8	-7	-4	0	69.8	73.7	7.3	-2	-12	-1	32.3	33.4	238.2
2	11	0	12.1	12.7	45.2	-7	-3	0	25.5	27.7	269.8	-2	-11	-1	3.9	7.6	1.1
2	12	0	33.2	34.7	119.3	-7	-2	0	23.0	22.7	224.8	-2	-10	-1	26.7	27.1	51.2
2	13	0	14.7	16.3	89.6	-7	-1	0	19.1	18.9	220.8	-2	-9	-1	35.1	35.5	197.9
2	14	0	55.2	53.6	-25.8	7	0	0	51.2	52.3	5.7	-2	-8	-1	44.0	45.5	217.5
-3	-14	0	28.7	27.6	-5.5	7	1	0	20.6	19.9	157.0	-2	-7	-1	37.0	34.8	75.1
-3	-13	0	50.3	48.6	245.4	7	2	0	21.2	21.3	144.3	-2	-6	-1	55.2	54.6	24.5
-3	-12	0	38.1	39.5	3.8	7	3	0	28.2	31.4	95.7	-2	-5	-1	29.3	28.7	168.5
-3	-11	0	35.3	34.6	21.9	7	4	0	71.8	74.9	0.5	-2	-4	-1	65.9	69.2	234.9
-3	-10	0	32.0	23.7	-46.5	7	5	0	42.2	41.9	122.2	-2	-3	-1	31.0	31.9	11.5
-3	-9	0	61.4	62.2	234.6	7	6	0	21.9	21.8	124.4	-2	-2	-1	32.3	29.6	-48.6
-3	-8	0	45.6	47.5	5.6	7	7	0	22.9	25.5	93.7	-2	-1	-1	33.4	33.5	217.3
-3	-7	0	23.5	26.2	42.4	7	8	0	41.4	41.7	-23.7	2	0	1	82.0	88.7	183.0
-3	-6	0	24.0	24.2	-31.3	7	9	0	21.0	20.9	101.0	2	1	1	31.2	32.1	146.8
-3	-5	0	87.7	85.6	209.1	7	10	0	19.9	22.0	127.8	2	2	1	38.3	36.4	55.9
-3	-4	0	73.0	73.1	11.0	7	11	0	5.9	8.2	52.3	2	3	1	32.0	32.2	-6.2
-3	-3	0	134.3	130.8	-1.6	-8	-10	0	10.7	9.4	10.2	2	4	1	64.0	64.6	131.6
-3	-2	0	41.6	41.9	-39.8	-8	-9	0	17.2	18.2	-18.8	2	5	1	32.6	30.0	196.3
-3	-1	0	37.1	40.2	194.9	-8	-8	0	22.3	20.4	43.9	2	6	1	55.7	54.8	-15.9
3	0	0	73.9	75.7	3.4	-8	-7	0	45.8	48.5	235.3	2	7	1	34.2	33.4	-71.6
3	1	0	38.3	41.6	177.5	-8	-6	0	17.8	22.0	5.0	2	8	1	46.1	46.2	152.6
3	2	0	41.7	43.0	42.3	-8	-5	0	47.0	49.7	-3.9	2	9	1	36.8	36.4	166.7
3	3	0	135.5	131.1	5.1	-8	-4	0	24.6	27.2	-7.4	2	10	1	25.6	26.6	-34.8
3	4	0	74.1	72.9	-4.4	-8	-3	0	46.7	46.7	241.9	2	11	1	10.2	9.1	8.6
3	5	0	90.0	90.5	156.8	-8	-2	0	15.7	14.2	-41.3	2	12	1	33.8	33.6	134.7
3	6	0	20.9	23.7	37.9	-8	-1	0	69.8	70.4	-36.9	2	13	1	16.5	16.3	105.0
3	7	0	21.7	23.9	-27.5	8	0	0	10.1	6.5	26.2	2	14	1	21.8	22.1	-34.6
3	8	0	48.0	48.4	3.7	8	1	0	73.0	71.8	44.1	-3	-14	-1	9.0	8.0	233.6
3	9	0	61.0	61.6	134.1	8	2	0	13.6	13.4	41.7	-3	-13	-1	29.1	27.8	248.1
3	10	0	31.7	34.2	53.3	8	3	0	44.5	44.6	129.8	-3	-12	-1	29.4	28.5	37.2
3	11	0	26.3	26.3	-12.7	8	4	0	27.8	29.2	18.6	-3	-11	-1	22.9	24.9	46.3
3	12	0	40.5	41.7	5.9	8	5	0	47.0	48.8	12.6	-3	-10	-1	25.7	26.2	224.2
3	13	0	49.9	48.7	124.8	8	6	0	18.1	20.7	-5.0	-3	-9	-1	39.3	41.0	233.5
3	14	0	25.7	25.7	12.7	8	7	0	47.5	49.0	136.2	-3	-8	-1	31.6	31.3	38.0
-4	-13	0	7.8	11.5	73.3	8	8	0	21.6	19.0	-28.8	-3	-7	-1	48.6	50.1	29.1
-4	-12	0	45.4	46.1	39.9	8	9	0	23.1	20.8	33.3	-3	-6	-1	34.1	32.6	190.8
-4	-11	0	21.6	23.0	-68.4	8	10	0	11.0	7.6	-12.1	-3	-5	-1	33.7	33.7	219.4
-4	-10	0	24.5	23.0	-60.4	-9	-8	0	34.7	35.5	232.5	-3	-4	-1	60.4	63.1	35.5
-4	-9	0	31.2	32.7	-1.3	-9	-7	0	17.9	18.9	258.5	-3	-3	-1	66.5	66.5	0.6
-4	-8	0	81.2	81.3	28.6	-9	-6	0	35.4	37.2	24.3	-3	-2	-1	11.2	9.1	185.8
-4	-7	0	44.1	45.0	251.4	-9	-5	0	7.5	9.1	-79.6	-3	-1	-1	56.9	59.6	193.3
-4	-6	0	10.6	9.5	-8.3	-9	-4	0	27.5	29.7	190.4	3	0	1	56.3	60.0	2.7
-4	-5	0	34.5	34.9	-74.7	-9	-3	0	19.9	23.9	-86.7	3	1	1	57.8	59.5	174.6
-4	-4	0	103.1	105.1	11.3	-9	-2	0	58.9	63.1	22.7	3	2	1	8.5	9.3	192.3
-4	-3	0	60.6	60.5	242.9	-9	-1	0	29.7	32.3	260.9	3	3	1	66.8	68.1	6.3
-4	-2	0	15.0	16.6	-58.7	9	0	0	18.4	22.0	187.1	3	4	1	60.1	62.2	-31.1
-4	-1	0	66.0	65.0	-35.0	9	1	0	32.8	35.3	105.5	3	5	1	32.2	32.6	154.1
4	0	0	138.8	143.6	2.7	9	2	0	58.8	61.3	-13.6	3	6	1	36.2	33.3	175.2
4	1	0	66.8	65.2	39.7	9	3	0	21.5	22.1	98.8	3	7	1	48.5	50.4	-20.0
4	2	0	13.7	14.8	59.1	9	4	0	30.4	31.1	180.2	3	8	1	30.9	31.2	-30.4
4	3	0	57.6	59.0	123.1	9	5	0	4.4	10.8	99.4	3	9	1	40.3	39.9	136.9
4	4	0	103.8	105.7	-4.1	9	6	0	35.0	37.7	-10.5	3	10	1	25.7	26.4	142.9
4	5	0	39.9	38.7	79.3	9	7	0	18.6	18.7	118.2	3	11	1	25.4	25.7	-29.9

4

H	K	L	FO	FC	ALPH	H	K	L	FO	FC	ALPH	H	K	L	FO	FC	ALPH
3	12	1	30.4	29.5	-29.5	8	5	1	37.2	37.1	-32.9	-3	-8	-2	40.9	41.6	202.7
3	13	1	28.3	27.2	126.0	8	6	1	18.3	18.2	152.5	-3	-7	-2	56.5	56.4	49.1
3	14	1	7.9	8.6	145.7	8	7	1	38.1	37.5	167.4	-3	-6	-2	69.1	72.9	194.8
-4	-13	-1	28.2	25.7	71.2	8	8	1	31.5	32.1	-34.5	-3	-5	-2	55.1	57.1	172.9
-4	-12	-1	26.5	26.7	54.1	8	9	1	13.5	14.0	-31.7	-3	-4	-2	77.2	79.2	172.3
-4	-11	-1	23.9	24.5	219.4	8	10	1	20.2	19.4	160.8	-3	-3	-2	76.4	76.5	40.6
-4	-10	-1	33.8	34.2	230.8	-9	-8	-1	32.9	31.0	227.5	-3	-2	-2	63.5	65.9	183.1
-4	-9	-1	38.1	37.3	41.8	-9	-7	-1	21.8	21.7	208.6	-3	-1	-2	71.5	72.7	148.9
-4	-8	-1	40.5	40.4	35.4	-9	-6	-1	20.1	21.7	42.7	3	0	2	67.0	68.8	181.2
-4	-7	-1	31.7	32.7	214.3	-9	-5	-1	23.8	23.0	32.8	3	1	2	74.4	75.7	217.4
-4	-6	-1	42.6	44.0	219.8	-9	-4	-1	32.1	32.6	192.5	3	2	2	65.1	66.5	185.4
-4	-5	-1	20.4	21.5	6.3	-9	-3	-1	15.4	14.9	228.0	3	3	2	75.2	75.3	-33.7
-4	-4	-1	45.6	46.6	5.8	-9	-2	-1	36.0	36.8	23.1	3	4	2	77.1	78.8	190.2
-4	-3	-1	77.7	78.8	186.5	-9	-1	-1	25.5	26.6	-30.7	3	5	2	57.9	58.8	194.7
-4	-2	-1	73.1	75.3	187.1	9	0	1	25.1	22.6	189.0	3	6	2	71.0	73.0	172.5
-4	-1	-1	42.6	43.3	40.6	9	1	1	27.1	27.7	36.1	3	7	2	56.8	56.2	-39.8
4	0	1	39.4	41.2	5.0	9	2	1	36.0	35.9	-11.2	3	8	2	39.0	39.6	160.6
4	1	1	38.6	41.1	-34.4	9	3	1	14.3	14.2	141.3	3	9	2	32.2	32.4	160.4
4	2	1	74.7	76.2	178.9	9	4	1	30.5	33.7	180.1	3	10	2	34.9	32.7	154.6
4	3	1	78.5	79.1	177.6	9	5	1	21.8	22.2	-26.3	3	11	2	40.9	38.8	-55.6
4	4	1	48.2	48.2	2.9	9	6	1	19.7	20.7	-24.1	3	12	2	14.8	12.8	184.8
4	5	1	22.0	23.1	4.7	9	7	1	22.0	22.1	157.6	3	13	2	34.0	34.3	151.1
4	6	1	42.5	43.2	149.9	9	8	1	32.3	30.3	145.8	3	14	2	17.5	18.4	195.3
4	7	1	32.3	32.7	154.8	-10	-6	-1	8.9	10.9	35.3	-4	-13	-2	26.7	26.4	106.3
4	8	1	39.1	40.4	-25.3	-10	-5	-1	33.4	34.2	218.4	-4	-12	-2	24.2	24.0	112.3
4	9	1	38.0	37.1	-34.6	-10	-4	-1	2.9	8.3	207.7	-4	-11	-2	20.6	19.3	72.7
4	10	1	32.2	34.1	140.7	-10	-3	-1	23.6	21.9	46.4	-4	-10	-2	59.5	57.2	195.8
4	11	1	25.9	25.2	151.1	-10	-2	-1	11.4	12.8	-6.6	-4	-9	-2	43.9	43.6	55.0
4	12	1	27.3	26.8	-40.1	-10	-1	-1	31.8	29.9	170.3	-4	-8	-2	30.9	34.4	109.2
4	13	1	25.9	25.0	-62.0	10	0	1	6.1	9.1	183.6	-4	-7	-2	9.0	8.3	44.6
-5	-13	-1	23.9	23.8	46.2	10	1	1	32.6	32.2	202.9	-4	-6	-2	53.9	57.1	191.7
-5	-12	-1	30.8	29.8	219.1	10	2	1	10.4	13.3	12.7	-4	-5	-2	9.9	9.7	198.5
-5	-11	-1	38.6	38.0	230.7	10	3	1	19.5	19.1	-28.9	-4	-4	-2	27.8	29.5	25.0
-5	-10	-1	40.8	39.5	62.4	10	4	1	7.8	8.2	160.2	-4	-3	-2	24.4	25.3	165.7
-5	-9	-1	35.8	37.8	38.5	10	5	1	32.3	32.9	154.3	-4	-2	-2	102.4	103.4	185.4
-5	-8	-1	24.7	23.6	207.8	10	6	1	10.8	10.7	-27.9	-4	-1	-2	45.9	45.3	79.3
-5	-7	-1	34.4	35.7	217.7	-11	-2	-1	34.1	33.0	207.7	4	0	2	26.5	24.1	177.0
-5	-6	-1	42.6	44.7	15.6	-11	-1	-1	7.7	6.9	245.9	4	1	2	41.5	41.8	-73.9
-5	-5	-1	59.6	60.7	15.9	11	0	1	14.2	14.1	13.8	4	2	2	103.1	104.0	181.4
-5	-4	-1	37.1	39.3	207.5	11	1	1	9.7	7.1	118.3	4	3	2	25.7	25.3	204.9
-5	-3	-1	47.3	49.5	220.7	11	2	1	34.2	31.6	165.0	4	4	2	30.4	30.8	-19.3
-5	-2	-1	58.8	60.6	8.3	0	-14	-2	44.6	43.8	214.0	4	5	2	10.4	9.0	125.8
-5	-1	-1	50.4	52.0	-2.4	0	-12	-2	44.2	42.9	94.3	4	6	2	55.7	58.6	179.7
5	0	1	38.1	37.4	184.3	0	-10	-2	83.5	82.7	208.4	4	7	2	9.8	10.9	-55.4
5	1	1	49.7	52.3	10.3	0	-8	-2	22.5	25.8	100.4	4	8	2	29.4	32.1	257.5
5	2	1	59.0	60.8	-2.1	0	-6	-2	118.4	118.1	191.4	4	9	2	44.8	43.9	-46.5
5	3	1	47.4	47.5	146.6	0	-4	-2	30.9	34.3	85.4	4	10	2	61.0	58.7	170.4
5	4	1	35.5	38.8	160.2	0	-2	-2	138.4	131.8	174.8	4	11	2	23.1	21.5	-74.8
5	5	1	60.5	61.2	-9.2	0	0	2	78.0	83.4	1.5	4	12	2	23.4	22.8	260.0
5	6	1	45.2	46.2	-7.5	0	2	2	142.0	134.7	191.6	4	13	2	23.6	23.3	265.5
5	7	1	35.6	35.6	152.6	0	4	2	27.4	31.7	-78.5	-5	-13	-2	19.1	22.7	77.1
5	8	1	25.9	24.4	164.2	0	6	2	120.6	119.4	175.7	-5	-12	-2	32.4	31.7	215.6
5	9	1	37.2	38.0	-29.0	0	8	2	21.5	23.7	-88.9	-5	-11	-2	21.5	20.2	208.6
5	10	1	39.2	38.1	-54.2	0	10	2	84.7	83.0	160.6	-5	-10	-2	29.9	28.0	154.5
5	11	1	39.0	38.3	138.5	0	12	2	45.3	42.5	-85.4	-5	-9	-2	43.8	42.7	74.6
5	12	1	31.3	31.0	150.3	0	14	2	47.4	45.3	159.5	-5	-8	-2	43.4	43.7	189.1
5	13	1	24.9	24.9	-32.9	-1	-14	-2	25.4	22.3	195.7	-5	-7	-2	47.2	47.7	163.2
-6	-12	-1	24.0	24.2	250.3	-1	-13	-2	45.3	43.8	66.8	-5	-6	-2	15.5	15.0	173.0
-6	-11	-1	22.1	22.0	54.0	-1	-12	-2	36.9	35.3	201.6	-5	-5	-2	53.0	53.1	67.9
-6	-10	-1	39.1	38.1	23.2	-1	-11	-2	32.4	33.6	235.2	-5	-4	-2	46.6	47.3	214.5
-6	-9	-1	39.3	39.3	212.3	-1	-10	-2	39.0	39.5	189.6	-5	-3	-2	24.8	23.4	127.5
-6	-8	-1	42.1	42.5	229.2	-1	-9	-2	62.5	61.1	36.9	-5	-2	-2	37.4	38.5	211.4

-8	-7	-1	38.9	38.6	40.8	-1	-8	-2	24.6	26.3	193.9	-5	-1	-2	71.7	75.1	49.3
-6	-6	-1	25.8	27.6	31.5	-1	-7	-2	78.7	77.2	204.4	5	0	2	91.1	94.4	183.3
-6	-5	-1	45.0	44.7	200.2	-1	-6	-2	60.8	61.0	189.5	5	1	2	71.3	73.5	-43.3
-5	-4	-1	56.1	57.8	184.7	-1	-5	-2	54.8	54.3	33.4	5	2	2	37.5	38.1	148.2
-6	-3	-1	38.0	39.0	32.7	-1	-4	-2	104.4	105.2	183.3	5	3	2	28.0	27.4	245.1
-6	-2	-1	54.5	56.4	35.2	-1	-3	-2	38.7	41.8	192.9	5	4	2	43.2	44.3	157.7
-6	-1	-1	40.9	44.7	180.1	-1	-2	-2	111.1	112.9	194.9	5	5	2	51.7	50.9	-58.9
6	0	1	33.0	32.4	185.1	-1	-1	-2	121.3	120.2	22.2	5	6	2	12.0	13.0	197.0
6	1	1	43.9	45.4	188.4	1	0	2	98.6	103.3	182.4	5	7	2	48.1	49.2	203.6
6	2	1	53.0	54.1	-29.3	1	1	2	121.1	119.0	-17.7	5	8	2	46.9	46.1	181.9
6	3	1	37.0	38.5	-23.3	1	2	2	111.6	111.7	168.2	5	9	2	42.4	41.2	-63.9
6	4	1	56.0	59.2	181.0	1	3	2	38.9	41.8	180.3	5	10	2	26.4	25.4	209.7
6	5	1	44.0	44.0	168.5	1	4	2	106.0	106.0	181.0	5	11	2	20.6	20.0	164.3
6	6	1	24.9	27.4	-20.1	1	5	2	55.0	53.7	-23.6	5	12	2	34.0	31.8	158.3
6	7	1	36.9	38.1	-31.9	1	6	2	60.2	60.5	175.5	5	13	2	19.9	22.4	-58.0
6	8	1	42.2	41.7	138.6	1	7	2	80.9	78.0	162.0	-6	-12	-2	16.7	18.4	228.3
6	9	1	40.8	40.2	177.1	1	8	2	26.0	26.6	180.9	-6	-11	-2	29.7	30.7	60.7
6	10	1	40.9	39.6	-15.5	1	9	2	64.3	62.3	-28.4	-6	-10	-2	8.5	8.2	48.6
6	11	1	22.4	21.8	-39.7	1	10	2	37.3	38.7	177.1	-6	-9	-2	15.1	15.7	168.9
6	12	1	25.3	23.4	121.3	1	11	2	33.5	32.5	137.9	-6	-8	-2	46.9	47.7	208.6
-7	-11	-1	35.8	35.2	50.7	1	12	2	36.0	34.7	167.7	-6	-7	-2	45.8	44.6	69.2
-7	-10	-1	23.8	26.2	217.3	1	13	2	45.4	43.3	-55.8	-6	-6	-2	23.8	26.0	138.3
-7	-9	-1	21.1	21.7	250.7	1	14	2	20.3	21.0	174.2	-6	-5	-2	23.4	22.9	144.6
-7	-8	-1	34.2	36.1	40.7	-2	-14	-2	29.0	29.7	118.6	-6	-4	-2	55.7	55.5	176.9
-7	-7	-1	34.6	35.1	5.9	-2	-13	-2	5.5	7.4	14.1	-6	-3	-2	46.9	49.1	44.0
-7	-6	-1	38.2	38.0	217.3	-2	-12	-2	69.8	68.2	202.6	-6	-2	-2	21.5	22.7	86.8
-7	-5	-1	39.0	40.5	214.4	-2	-11	-2	9.4	6.4	11.1	-6	-1	-2	16.8	17.2	143.0
-7	-4	-1	37.9	38.8	16.8	-2	-10	-2	34.4	36.9	89.1	6	0	2	41.7	44.5	185.8
-7	-3	-1	31.9	31.6	0.3	-2	-9	-2	4.5	7.5	132.6	6	1	2	18.6	19.7	236.8
-7	-2	-1	32.3	33.9	195.1	-2	-8	-2	74.2	73.8	195.6	6	2	2	21.1	21.3	-83.4
-7	-1	-1	45.5	48.5	192.6	-2	-7	-2	37.1	36.1	123.9	6	3	2	46.4	48.8	-34.5
7	0	1	46.1	48.4	4.4	-2	-6	-2	44.3	47.0	80.2	6	4	2	57.9	57.8	192.1
7	1	1	47.5	48.5	173.5	-2	-5	-2	27.8	29.4	104.3	6	5	2	27.6	25.3	227.1
7	2	1	32.4	33.9	176.5	-2	-4	-2	144.7	142.7	194.0	6	6	2	22.5	23.9	224.4
7	3	1	30.8	32.3	8.1	-2	-3	-2	37.3	36.8	20.9	6	7	2	44.4	42.6	-58.2
7	4	1	40.7	39.4	-6.1	-2	-2	-2	14.5	15.4	-13.8	6	8	2	46.0	47.2	161.7
7	5	1	38.7	40.4	152.7	-2	-1	-2	48.8	47.4	-29.7	6	9	2	14.8	17.1	205.2
7	6	1	37.1	37.2	152.6	2	0	2	67.9	71.7	185.9	6	10	2	10.1	10.4	-34.2
7	7	1	35.1	35.6	1.7	2	1	2	47.8	47.2	27.0	6	11	2	30.6	31.8	-45.7
7	8	1	35.7	35.8	-29.7	2	2	2	16.4	17.8	23.3	6	12	2	15.9	17.5	153.4
7	9	1	18.8	20.2	120.0	2	3	2	37.8	37.7	-16.2	-7	-11	-2	32.7	34.0	86.8
7	10	1	26.0	27.4	155.9	2	4	2	146.4	142.2	171.6	-7	-10	-2	34.5	33.1	211.5
7	11	1	35.3	35.0	-43.1	2	5	2	31.4	30.9	258.0	-7	-9	-2	9.7	11.3	121.9
-8	-10	-1	19.1	18.6	208.8	2	6	2	44.0	45.4	-74.4	-7	-8	-2	8.5	10.1	100.0
-8	-9	-1	12.2	14.6	56.9	2	7	2	33.0	33.0	238.2	-7	-7	-2	29.6	29.8	73.6
-8	-8	-1	29.8	32.4	41.3	2	8	2	76.1	75.4	174.3	-7	-6	-2	57.4	58.4	208.7
-8	-7	-1	33.4	36.4	203.0	2	9	2	11.5	8.8	235.3	-7	-5	-2	34.4	31.6	140.7
-8	-6	-1	17.2	18.5	217.8	2	10	2	36.7	36.8	-79.8	-7	-4	-2	14.4	14.2	48.9
-8	-5	-1	39.0	39.0	43.2	2	11	2	7.8	8.9	1.1	-7	-3	-2	39.5	39.9	94.7
-8	-4	-1	31.3	31.4	4.8	2	12	2	72.6	70.5	166.7	-7	-2	-2	51.0	52.7	184.3
-8	-3	-1	24.8	23.7	175.2	2	13	2	5.3	7.2	-21.6	-7	-1	-2	53.6	53.6	129.3
-8	-2	-1	34.7	36.5	196.8	2	14	2	29.4	28.0	253.4	7	0	2	7.1	6.0	16.2
-8	-1	-1	43.9	45.4	1.1	-3	-14	-2	12.3	15.5	181.3	7	1	2	52.9	54.4	237.7
8	0	1	16.1	22.0	4.8	-3	-13	-2	32.8	33.2	218.6	7	2	2	52.8	54.0	186.9
8	1	1	43.5	46.4	8.0	-3	-12	-2	16.3	14.8	184.6	7	3	2	36.6	36.3	-86.2
8	2	1	34.6	36.4	169.2	-3	-11	-2	39.6	39.7	68.1	7	4	2	13.2	13.5	-34.0
8	3	1	27.5	26.7	200.1	-3	-10	-2	36.1	34.0	218.0	7	5	2	35.4	32.6	228.3
8	4	1	30.2	32.2	2.1	-3	-9	-2	31.9	32.8	211.7	7	6	2	57.4	57.3	160.9

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H	K	L	FD	FC	ALPH	H	K	L	FD	FC	ALPH	H	K	L	FD	FC	ALPH
7	7	2	29.0	29.0	-60.4	2	6	3	41.3	40.8	-10.6	7	0	3	50.1	52.7	3.6
7	8	2	7.6	7.8	-76.7	2	7	3	36.4	36.4	-71.3	7	1	3	34.6	36.1	186.8
7	9	2	14.0	13.5	250.1	2	8	3	57.9	58.6	147.8	7	2	3	39.3	39.2	187.3
7	10	2	34.6	33.8	163.2	2	9	3	38.9	39.5	162.1	7	3	3	26.3	25.9	1.0
7	11	2	31.5	32.6	-75.2	2	10	3	30.2	31.1	-42.9	7	4	3	34.2	31.6	-17.1
-8	-10	-2	17.3	17.8	187.1	2	11	3	13.2	13.4	-6.5	7	5	3	29.6	31.2	158.7
-8	-9	-2	41.1	42.8	69.8	2	12	3	34.3	34.3	146.8	7	6	3	47.7	48.0	153.8
-8	-8	-2	12.3	13.5	128.2	2	13	3	11.4	15.3	103.1	7	7	3	27.4	28.6	-3.7
-8	-7	-2	20.4	22.3	162.2	-3	-13	-3	30.4	30.8	242.6	7	8	3	31.6	33.8	-23.7
-8	-6	-2	16.4	17.1	217.2	-3	-12	-3	29.2	29.6	49.1	7	9	3	10.1	10.9	127.4
-8	-5	-2	54.6	55.3	42.1	-3	-11	-3	27.0	29.6	57.6	7	10	3	23.7	26.3	153.8
-8	-4	-2	8.4	6.2	2.4	-3	-10	-3	30.1	31.3	223.2	-8	-9	-3	24.9	23.1	62.2
-8	-3	-2	31.5	34.3	158.1	-3	-9	-3	32.3	32.3	224.5	-8	-8	-3	26.4	24.5	43.0
-8	-2	-2	32.2	33.5	185.8	-3	-8	-3	27.2	28.2	34.0	-8	-7	-3	29.1	29.7	203.0
-8	-1	-2	48.9	48.7	34.1	-3	-7	-3	54.0	54.4	30.4	-8	-6	-3	15.3	16.0	211.7
8	0	2	21.4	24.1	179.7	-3	-6	-3	56.6	55.4	196.7	-8	-5	-3	36.9	37.7	40.9
8	1	2	47.8	49.0	-23.7	-3	-5	-3	44.0	45.1	224.3	-8	-4	-3	17.6	17.7	3.0
8	2	2	33.4	34.1	184.2	-3	-4	-3	54.6	53.9	46.6	-8	-3	-3	30.3	30.8	173.1
8	3	2	33.2	35.3	213.7	-3	-3	-3	59.0	58.8	2.3	-8	-2	-3	27.8	30.1	198.1
8	4	2	8.3	6.9	1.9	-3	-2	-3	35.3	35.2	168.8	-8	-1	-3	41.7	41.3	16.4
8	5	2	54.8	56.4	-32.0	-3	-1	-3	63.6	63.3	173.1	8	0	3	11.4	14.2	6.1
8	6	2	14.9	15.8	160.3	3	0	3	66.5	67.8	1.8	8	1	3	41.9	41.3	-6.1
8	7	2	24.1	24.2	211.9	3	1	3	64.5	65.4	193.7	8	2	3	26.8	29.9	170.1
8	8	2	13.1	12.3	238.3	3	2	3	37.2	36.3	197.5	8	3	3	32.9	32.8	199.0
8	9	2	41.1	41.4	-56.7	3	3	3	61.0	60.8	5.4	8	4	3	18.6	18.7	7.1
8	10	2	17.5	19.6	186.6	3	4	3	53.8	52.9	-42.8	8	5	3	35.4	37.0	-29.7
-9	-8	-2	44.3	46.8	209.5	3	5	3	41.9	42.6	145.0	8	6	3	14.0	15.9	161.7
-9	-7	-2	26.4	25.6	121.4	3	6	3	56.9	55.5	168.0	8	7	3	31.1	30.3	169.6
-9	-6	-2	23.2	26.1	44.7	3	7	3	55.1	54.9	-22.0	8	8	3	25.1	24.4	-35.1
-9	-5	-2	35.6	33.5	85.5	3	8	3	29.2	28.9	-27.7	8	9	3	18.1	21.9	-45.4
-9	-4	-2	44.4	45.3	195.1	3	9	3	31.4	32.2	148.0	-9	-7	-3	10.7	12.2	198.2
-9	-3	-2	24.9	24.2	114.7	3	10	3	29.9	31.0	144.1	-9	-6	-3	23.5	23.4	44.9
-9	-2	-2	33.6	34.1	22.1	3	11	3	28.7	29.1	-43.2	-9	-5	-3	19.7	18.9	44.8
-9	-1	-2	30.4	30.8	90.1	3	12	3	31.6	30.3	-42.8	-9	-4	-3	28.4	29.1	195.0
9	0	2	47.8	52.1	185.2	3	13	3	31.0	30.5	129.3	-9	-3	-3	9.8	9.2	205.7
9	1	2	29.9	29.2	-80.3	-4	-13	-3	28.2	27.7	76.1	-9	-2	-3	29.5	29.4	17.5
9	2	2	33.2	33.7	-12.0	-4	-12	-3	19.6	19.4	60.2	-9	-1	-3	14.7	14.2	-26.0
9	3	2	25.2	24.7	256.5	-4	-11	-3	25.3	27.3	207.6	9	0	3	26.1	28.7	187.3
9	4	2	44.6	45.7	176.9	-4	-10	-3	39.0	39.6	223.6	9	1	3	15.9	15.9	33.9
9	5	2	32.9	32.7	-75.7	-4	-9	-3	49.6	48.8	46.4	9	2	3	28.1	29.4	-3.7
9	6	2	23.3	25.6	-32.2	-4	-8	-3	37.9	37.7	48.5	9	3	3	10.3	8.7	167.5
9	7	2	26.0	25.9	247.4	-4	-7	-3	31.4	32.2	217.9	9	4	3	30.2	29.5	175.8
9	8	2	46.8	47.3	161.3	-4	-6	-3	41.2	42.0	208.4	9	5	3	18.2	18.3	-35.9
-10	-6	-2	2.9	2.4	138.4	-4	-5	-3	29.2	31.1	5.4	9	6	3	22.4	22.3	-28.9
-10	-5	-2	30.3	32.2	185.8	-4	-4	-3	36.9	37.3	0.6	9	7	3	9.9	12.3	171.1
-10	-4	-2	11.8	11.0	216.8	-4	-3	-3	89.8	90.9	186.2	-10	-5	-3	25.3	27.1	206.2
-10	-3	-2	43.5	45.7	51.3	-4	-2	-3	80.4	80.8	196.9	-10	-4	-3	2.8	4.0	257.2
-10	-2	-2	8.0	6.1	227.5	-4	-1	-3	57.3	54.5	46.2	-10	-3	-3	25.7	25.8	51.2
-10	-1	-2	47.5	49.8	157.5	4	0	3	28.8	27.4	6.3	-10	-2	-3	7.2	6.6	-38.5
10	0	2	15.3	13.9	185.0	4	1	3	54.6	52.3	-41.3	-10	-1	-3	27.6	24.8	166.0
10	1	2	46.2	50.0	212.6	4	2	3	79.6	80.0	169.4	10	0	3	4.5	9.9	184.1
10	2	2	6.9	5.7	133.9	4	3	3	88.9	90.7	177.3	10	1	3	28.5	27.0	205.6
10	3	2	41.8	44.6	-39.5	4	4	3	39.2	39.5	8.1	10	2	3	4.0	7.5	44.5
10	4	2	9.7	10.1	154.8	4	5	3	33.3	33.1	2.2	10	3	3	23.7	23.0	-36.2
10	5	2	29.9	31.0	186.9	4	6	3	42.9	42.2	162.7	10	4	3	2.8	2.8	114.9
10	6	2	2.9	2.4	233.6	4	7	3	31.7	31.5	150.7	10	5	3	25.7	26.8	168.9
11	0	2	29.4	32.5	6.0	4	8	3	38.2	36.8	-39.0	0	-12	-4	66.3	67.4	43.8
0	-14	-3	19.6	20.0	252.2	4	9	3	49.3	48.6	-40.6	0	-10	-4	39.7	38.0	-80.9
0	-12	-3	33.9	35.1	52.4	4	10	3	38.6	39.8	147.1	0	-8	-4	94.3	93.7	18.4
0	-10	-3	55.0	56.3	244.0	4	11	3	26.9	28.4	160.6	0	-6	-4	32.0	31.5	209.7
0	-8	-3	9.7	9.9	40.2	4	12	3	20.5	19.6	-43.0	0	-4	-4	104.5	103.9	22.2
0	-6	-3	74.1	76.3	202.0	4	13	3	27.4	26.8	-67.0	0	-2	-4	6.1	9.0	7.4
0	-4	-3	49.0	46.8	64.7	-7	-10	0	19.2	21.3	244.3	1	11	1	25.2	24.5	142.4

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0	-4	-3	37.2	34.7	15.7	-5	-12	-3	37.3	38.4	227.4	0	0	4	233.2	233.0	2.0
0	-2	-3	94.5	94.1	197.5	-5	-11	-3	35.2	33.6	229.5	0	2	4	8.5	8.8	-22.2
0	0	3	62.9	66.0	3.2	-5	-10	-3	36.4	36.9	72.4	0	4	4	104.1	102.5	-13.6
0	2	3	94.0	92.8	168.7	-5	-9	-3	33.8	32.2	40.8	0	6	4	34.4	33.4	156.7
0	4	3	38.3	35.8	-4.7	-5	-8	-3	33.4	34.4	195.8	0	8	4	95.8	95.4	-10.2
0	6	3	74.9	77.4	165.5	-5	-7	-3	28.8	30.5	208.5	0	10	4	38.2	36.6	88.9
0	8	3	10.0	11.2	-3.8	-5	-6	-3	50.6	50.7	22.9	0	12	4	66.6	66.1	-33.7
0	10	3	51.7	53.8	124.8	-5	-5	-3	58.0	58.0	28.1	-1	-13	-4	37.3	36.8	65.6
0	12	3	36.5	35.7	-40.9	-5	-4	-3	46.9	48.1	212.1	-1	-12	-4	20.4	21.0	-17.9
0	14	3	17.0	19.3	128.9	-5	-3	-3	36.1	36.1	210.1	-1	-11	-4	42.9	42.3	228.8
-1	-14	-3	9.3	8.0	98.1	-5	-2	-3	53.8	53.0	-0.9	-1	-10	-4	29.3	29.6	2.8
-1	-13	-3	37.0	37.1	70.8	-5	-1	-3	44.1	45.3	-3.8	-1	-9	-4	57.7	56.5	26.7
-1	-12	-3	12.9	13.2	206.3	5	0	3	65.6	67.0	192.8	-1	-8	-4	53.4	51.3	-2.5
-1	-11	-3	27.5	30.8	242.3	5	1	3	45.0	46.5	12.3	-1	-7	-4	65.6	64.5	226.9
-1	-10	-3	15.1	15.5	93.3	5	2	3	55.0	54.1	6.6	-1	-6	-4	43.1	44.1	-3.3
-1	-9	-3	39.9	40.8	30.0	5	3	3	33.0	34.8	159.7	-1	-5	-4	57.0	58.3	18.6
-1	-8	-3	11.2	11.4	151.1	5	4	3	46.8	46.7	155.1	-1	-4	-4	26.5	24.3	-0.7
-1	-7	-3	48.0	49.5	225.2	5	5	3	58.8	57.7	-21.0	-1	-3	-4	83.9	85.1	194.1
-1	-6	-3	28.8	30.6	46.6	5	6	3	51.2	51.6	-16.7	-1	-2	-4	45.3	44.8	-11.7
-1	-5	-3	59.4	59.4	30.5	5	7	3	30.2	30.8	162.7	-1	-1	-4	71.7	71.8	10.4
-1	-4	-3	17.0	15.9	120.5	5	8	3	35.4	35.9	173.2	1	0	4	43.8	43.1	2.7
-1	-3	-3	61.8	61.2	194.1	5	9	3	34.7	32.7	-29.3	1	1	4	71.1	71.0	-3.3
-1	-2	-3	24.2	26.7	-8.8	5	10	3	35.7	35.2	-64.8	1	2	4	47.2	46.3	19.5
-1	-1	-3	68.7	66.9	5.1	5	11	3	33.5	33.6	140.0	1	3	4	84.5	85.9	172.3
1	0	3	48.7	45.8	181.1	5	12	3	38.0	38.8	145.7	1	4	4	26.3	23.9	11.3
1	1	3	70.6	67.6	2.2	-6	-11	-3	26.5	26.7	47.6	1	5	4	57.6	58.4	-10.4
1	2	3	26.6	27.2	11.0	-6	-10	-3	30.9	30.1	25.9	1	6	4	45.4	44.9	11.5
1	3	3	62.1	61.6	174.1	-6	-9	-3	44.8	44.0	212.6	1	7	4	64.7	63.2	141.2
1	4	3	20.4	17.4	242.0	-6	-8	-3	42.3	41.7	227.1	1	8	4	50.8	50.8	7.5
1	5	3	58.6	58.4	-22.5	-6	-7	-3	41.9	41.0	52.2	1	9	4	60.0	57.9	-18.6
1	6	3	29.6	30.8	-44.0	-6	-6	-3	16.0	16.1	33.1	1	10	4	30.0	30.3	8.0
1	7	3	47.6	48.3	144.2	-6	-5	-3	44.8	45.7	185.5	1	11	4	44.4	43.0	142.3
1	8	3	14.3	12.4	216.0	-6	-4	-3	49.4	52.4	181.9	1	12	4	18.8	21.6	28.9
1	9	3	42.5	42.6	-18.8	-6	-3	-3	54.1	55.9	31.9	1	13	4	37.3	35.4	-58.4
1	10	3	13.6	15.4	-88.1	-6	-2	-3	45.6	45.5	45.9	-2	-13	-4	14.1	13.4	-65.2
1	11	3	28.4	29.5	131.3	-6	-1	-3	43.6	43.8	184.0	-2	-12	-4	22.9	24.4	249.7
1	12	3	13.2	13.1	162.0	6	0	3	32.0	32.1	185.8	-2	-11	-4	10.9	11.1	-54.0
1	13	3	34.8	36.0	-59.2	6	1	3	42.4	43.2	184.7	-2	-10	-4	66.3	67.3	39.9
1	14	3	2.8	8.1	269.4	6	2	3	43.2	42.8	-40.2	-2	-9	-4	11.0	12.8	247.9
-2	-13	-3	12.5	16.3	264.4	6	3	3	53.9	55.1	-25.1	-2	-8	-4	16.9	16.3	254.5
-2	-12	-3	31.2	33.2	226.6	6	4	3	51.6	54.1	185.1	-2	-7	-4	13.2	9.9	142.9
-2	-11	-3	12.2	12.0	14.4	6	5	3	44.9	46.8	182.3	-2	-6	-4	120.0	118.1	15.8
-2	-10	-3	29.1	31.5	55.3	6	6	3	15.9	16.3	-16.5	-2	-5	-4	12.8	11.3	226.9
-2	-9	-3	37.7	39.1	201.9	6	7	3	40.4	39.8	-43.3	-2	-4	-4	27.4	26.8	-78.4
-2	-8	-3	57.6	59.3	220.7	6	8	3	41.4	40.6	141.5	-2	-3	-4	33.0	32.6	-30.4
-2	-7	-3	37.8	37.8	74.9	6	9	3	44.0	44.3	155.3	-2	-2	-4	125.5	124.8	6.7
-2	-6	-3	40.1	39.6	20.4	6	10	3	32.4	31.7	-17.6	-2	-1	-4	44.7	42.4	-68.6
-2	-5	-3	36.2	34.5	164.3	6	11	3	26.9	27.6	-35.4	2	0	4	2.3	2.9	204.3
-2	-4	-3	75.7	76.8	212.3	-7	-10	-3	22.5	25.7	220.6	2	1	4	38.5	39.7	70.5
-2	-3	-3	49.7	49.5	17.0	-7	-9	-3	9.8	12.5	248.8	2	2	4	125.4	125.2	0.2
-2	-2	-3	32.9	31.3	21.5	-7	-8	-3	31.6	33.0	34.4	2	3	4	34.3	33.0	35.3
-2	-1	-3	39.8	36.8	212.6	-7	-7	-3	25.9	26.9	13.7	2	4	4	25.4	24.5	82.7
2	0	3	50.7	93.7	183.2	-7	-6	-3	48.5	48.9	214.4	2	5	4	11.8	11.9	146.6
2	1	3	37.2	35.3	150.9	-7	-5	-3	30.1	31.6	209.6	2	6	4	119.7	118.1	-12.9
2	2	3	32.7	30.3	-9.3	-7	-4	-3	34.5	32.2	28.8	2	7	4	10.5	9.1	206.8
2	3	3	51.1	49.8	-13.5	-7	-3	-3	24.5	25.0	9.5	2	8	4	16.9	16.5	119.9
2	4	3	74.5	75.0	155.0	-7	-2	-3	37.8	38.0	183.5	2	9	4	12.4	12.7	126.2
2	5	3	37.6	35.6	199.6	-7	-1	-3	35.4	35.9	181.1	2	10	4	66.3	65.9	-29.6

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H	K	L	FO	FC	ALPH	H	K	L	FO	FC	ALPH	H	K	L	FO	FC	ALPH
2	11	4	11.3	12.2	57.7	-8	-8	-4	21.3	20.2	41.2	3	8	5	26.9	25.7	-23.8
2	12	4	26.7	26.2	122.0	-8	-7	-4	38.1	39.9	238.9	3	9	5	38.1	36.1	134.5
2	13	4	10.4	11.8	80.5	-8	-6	-4	12.1	14.5	-4.9	3	10	5	18.8	17.9	133.4
-3	-13	-4	44.6	42.0	243.8	-8	-5	-4	40.7	41.6	-7.0	3	11	5	19.3	19.5	-19.0
-3	-12	-4	30.2	31.8	5.4	-8	-4	-4	25.8	26.1	-1.3	3	12	5	26.4	25.1	-18.0
-3	-11	-4	28.4	27.0	28.7	-8	-3	-4	41.4	41.2	238.0	-4	-11	-5	19.6	18.9	233.3
-3	-10	-4	29.6	29.2	-35.4	-8	-2	-4	8.9	8.1	-62.6	-4	-10	-5	23.9	23.0	239.0
-3	-9	-4	48.3	47.5	235.4	-8	-1	-4	54.6	53.4	-33.7	-4	-9	-5	22.1	24.2	34.0
-3	-8	-4	33.8	33.6	-2.7	8	0	4	12.6	9.9	15.7	-4	-8	-5	35.1	35.6	29.3
-3	-7	-4	24.9	26.1	29.9	8	1	4	56.9	54.6	42.6	-4	-7	-5	29.1	27.2	219.2
-3	-6	-4	20.0	18.7	-29.0	8	2	4	6.3	7.3	65.0	-4	-6	-5	30.7	31.6	228.8
-3	-5	-4	64.0	64.6	213.6	8	3	4	39.3	39.7	134.6	-4	-5	-5	16.6	15.4	2.6
-7	-4	-4	41.0	41.0	19.3	8	4	4	26.1	27.5	12.7	-4	-4	-5	42.8	42.6	12.1
-3	-3	-4	75.1	76.5	-1.4	8	5	4	40.2	41.4	16.8	-4	-3	-5	47.9	47.4	192.3
-3	-2	-4	27.5	35.7	-7.6	8	6	4	11.5	13.3	5.1	-4	-2	-5	42.2	42.1	184.0
-3	-1	-4	40.1	39.7	194.6	8	7	4	36.8	39.7	134.4	-4	-1	-5	26.4	27.3	24.1
3	0	4	55.7	54.1	4.5	8	8	4	20.4	19.1	-26.8	4	0	5	41.7	40.5	5.6
3	1	4	41.3	40.9	177.3	-9	-6	-4	33.8	35.2	26.6	4	1	5	22.8	26.0	-14.4
3	2	4	35.8	35.6	10.6	-9	-5	-4	9.6	9.6	-58.1	4	2	5	43.5	43.4	184.4
3	3	4	76.2	76.9	7.1	-9	-4	-4	22.5	24.9	196.0	4	3	5	48.9	48.0	174.1
3	4	4	39.3	40.0	-8.2	-9	-3	-4	20.7	22.4	262.1	4	4	5	42.3	43.4	-1.6
3	5	4	64.5	64.9	154.4	-9	-2	-4	50.9	52.5	20.2	4	5	5	17.1	16.7	11.6
3	6	4	16.7	18.2	36.5	-9	-1	-4	23.6	24.6	269.5	4	6	5	31.7	30.4	142.2
3	7	4	23.8	25.3	-15.0	9	0	4	22.9	22.9	185.7	4	7	5	27.8	27.4	151.5
3	8	4	36.1	35.8	14.2	9	1	4	23.0	26.9	98.9	4	8	5	35.9	36.2	-17.3
3	9	4	47.5	46.9	135.4	9	2	4	51.2	51.3	-9.8	4	9	5	25.3	24.3	-24.1
3	10	4	27.9	28.8	42.6	9	3	4	19.8	21.6	110.2	4	10	5	23.0	22.7	135.7
3	11	4	29.3	28.2	-16.9	9	4	4	23.8	25.8	176.7	4	11	5	19.6	19.0	140.5
3	12	4	33.1	33.8	5.7	9	5	4	8.5	10.1	78.5	-5	-10	-5	36.1	33.6	54.1
3	13	4	42.5	42.4	127.3	9	6	4	35.1	35.4	-12.6	-5	-9	-5	29.9	30.5	38.3
-4	-12	-4	38.8	38.5	38.8	-10	-3	-4	29.4	28.3	-20.5	-5	-8	-5	15.9	14.5	229.2
-4	-11	-4	16.1	15.3	-63.1	-10	-2	-4	8.0	6.6	22.6	-5	-7	-5	32.1	31.8	221.0
-4	-10	-4	18.2	18.3	-71.9	-10	-1	-4	41.4	44.0	210.0	-5	-6	-5	33.3	34.5	12.5
-4	-9	-4	23.2	24.9	0.7	10	0	4	2.8	1.9	1.6	-5	-5	-5	45.3	44.3	10.4
-4	-8	-4	65.6	64.8	31.6	10	1	4	41.5	45.2	161.4	-5	-4	-5	24.2	25.2	208.3
-4	-7	-4	33.2	32.6	265.8	10	2	4	9.1	6.2	-4.0	-5	-3	-5	40.9	40.3	224.2
-4	-6	-4	9.9	8.6	-17.0	10	3	4	30.5	29.3	35.6	-5	-2	-5	46.8	47.1	11.7
-4	-5	-4	31.1	31.5	-86.7	0	-12	-5	40.1	39.8	49.0	-5	-1	-5	42.7	41.8	-2.9
-4	-4	-4	83.5	83.7	10.4	0	-10	-5	33.2	32.7	-83.6	5	0	5	19.5	18.4	187.0
-4	-3	-4	43.0	42.8	242.1	0	-8	-5	17.1	18.1	-37.6	5	1	5	42.3	41.7	12.1
-4	-2	-4	12.4	13.2	-88.9	0	-6	-5	44.4	46.9	220.5	5	2	5	44.9	46.9	-3.2
-4	-1	-4	27.7	28.2	-40.0	0	-4	-5	32.4	29.8	41.9	5	3	5	39.7	38.5	144.8
4	0	4	90.6	92.8	3.9	0	-2	-5	22.2	23.9	144.4	5	4	5	22.3	25.1	161.4
4	1	4	25.7	29.3	45.7	0	0	5	58.8	62.8	4.4	5	5	5	45.9	45.0	-2.2
4	2	4	10.6	11.4	93.7	0	2	5	29.8	29.5	225.8	5	6	5	35.4	36.2	-1.7
4	3	4	40.9	41.3	125.8	0	4	5	29.3	26.9	-24.5	5	7	5	33.5	31.8	150.5
4	4	4	85.3	84.7	-2.0	0	6	5	45.0	46.3	148.8	5	8	5	16.6	14.2	147.4
4	5	4	35.7	35.5	89.9	0	8	5	25.9	25.9	46.1	5	9	5	29.6	30.3	-27.9
4	6	4	7.1	5.7	12.3	0	10	5	29.1	28.4	94.1	5	10	5	35.4	32.5	-44.0
4	7	4	30.2	30.3	104.2	0	12	5	39.7	39.5	-37.2	-6	-10	-5	34.7	34.5	23.1
4	8	4	63.4	63.8	-21.8	-1	-12	-5	6.6	1.6	-52.3	-6	-9	-5	30.8	28.6	217.3
4	9	4	26.4	25.1	7.7	-1	-11	-5	19.6	17.8	230.6	-6	-8	-5	31.7	31.4	232.4
4	10	4	17.4	16.7	84.3	-1	-10	-5	17.2	15.9	46.8	-6	-7	-5	27.9	29.7	29.6
4	11	4	12.6	11.6	79.2	-1	-9	-5	36.5	36.9	39.8	-6	-6	-5	28.0	28.6	31.5
4	12	4	40.2	38.6	-25.2	-1	-8	-5	6.4	10.1	26.2	-6	-5	-5	37.1	35.5	214.3
-5	-11	-4	40.3	39.7	243.7	-1	-7	-5	29.0	29.9	247.6	-6	-4	-5	42.9	41.5	186.9
-5	-10	-4	27.5	30.6	36.5	-1	-6	-5	29.2	29.2	27.4	-6	-3	-5	25.2	24.2	21.9
-5	-9	-4	16.0	13.7	-0.3	-1	-5	-5	25.5	26.0	-14.1	-6	-2	-5	48.2	48.5	27.4
-5	-8	-4	15.3	12.9	-49.9	-1	-4	-5	17.2	16.6	42.2	-6	-1	-5	31.7	34.1	186.7
-5	-7	-4	39.9	39.5	228.1	-1	-3	-5	47.2	46.6	207.7	6	0	5	21.9	21.0	186.2
-5	-6	-4	46.1	44.1	6.0	-1	-2	-5	31.8	31.8	1.5	6	1	5	33.5	35.1	183.8
-5	-5	-4	23.3	24.6	6.7	-1	-1	-5	34.5	36.6	47.5	6	2	5	46.6	46.8	-19.7

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-5	-4	-4	23.8	24.1	-42.9	1	0	5	2.4	0.4	133.7	6	-3	5	23.5	23.4	-7.4
-5	-3	-4	35.9	37.0	234.5	1	1	5	28.8	31.5	-36.7	6	4	5	43.2	42.6	179.5
-5	-2	-4	47.8	50.5	-2.1	1	2	5	32.6	32.1	4.5	6	5	5	37.3	35.0	156.3
-5	-1	-4	36.4	36.1	-22.7	1	3	5	46.3	45.4	162.8	6	6	5	27.6	28.2	-19.7
5	0	4	7.8	7.1	185.4	1	4	5	16.4	16.0	-40.6	6	7	5	26.5	29.7	-19.2
5	1	4	36.6	36.7	33.5	1	5	5	29.7	30.9	26.6	6	8	5	31.9	30.8	136.6
5	2	4	50.1	52.1	12.3	1	6	5	28.1	28.9	-21.1	6	9	5	31.9	29.8	155.3
5	3	4	35.3	35.3	137.0	1	7	5	24.9	26.3	126.8	6	10	5	36.8	35.0	-14.2
5	4	4	21.4	22.2	44.9	1	8	5	6.2	9.8	-24.2	-7	-8	-5	31.0	31.2	43.3
5	5	4	22.6	24.0	6.4	1	9	5	36.6	37.1	-27.6	-7	-7	-5	30.5	29.9	1.5
5	6	4	46.6	46.0	5.3	1	10	5	16.1	15.4	-38.1	-7	-6	-5	24.7	23.8	222.6
5	7	4	39.1	39.9	143.5	1	11	5	19.6	18.8	151.6	-7	-5	-5	36.6	35.9	218.0
5	8	4	13.2	11.3	60.6	1	12	5	8.5	1.5	76.8	-7	-4	-5	34.1	35.6	12.3
5	9	4	16.4	15.0	16.0	-2	-12	-5	26.5	26.7	247.7	-7	-3	-5	27.3	25.4	-3.6
5	10	4	29.6	29.9	-21.8	-2	-11	-5	2.6	4.7	-7.6	-7	-2	-5	26.7	25.1	204.8
5	11	4	41.4	39.9	127.9	-2	-10	-5	23.0	23.2	47.1	-7	-1	-5	41.8	41.6	197.4
-6	-11	-4	15.5	15.2	-3.5	-2	-9	-5	24.3	24.4	199.0	7	0	5	34.3	35.6	6.1
-6	-10	-4	34.9	34.9	16.7	-2	-8	-5	23.0	23.5	217.8	7	1	5	42.2	41.8	169.4
-6	-9	-4	32.7	32.5	249.8	-2	-7	-5	21.7	22.1	68.4	7	2	5	25.3	24.3	168.6
-6	-8	-4	19.2	18.5	266.2	-2	-6	-5	50.3	49.9	27.0	7	3	5	26.1	25.7	13.4
-6	-7	-4	25.2	25.4	-6.7	-2	-5	-5	16.2	16.3	182.9	7	4	5	35.4	36.7	-0.6
-6	-6	-4	33.4	32.6	23.7	-2	-4	-5	38.3	40.1	246.8	7	5	5	36.3	36.2	150.1
-6	-5	-4	48.4	46.6	248.3	-2	-3	-5	20.7	20.2	3.3	7	6	5	24.5	23.1	151.1
-6	-4	-4	13.3	14.5	34.1	-2	-2	-5	33.0	32.3	-29.7	7	7	5	30.3	31.0	6.4
-6	-3	-4	40.5	39.6	-34.3	-2	-1	-5	21.0	20.6	217.1	7	8	5	30.8	30.5	-30.5
-6	-2	-4	57.9	58.4	30.7	2	0	5	43.9	44.4	184.8	-8	-7	-5	31.3	32.3	209.5
-6	-1	-4	42.9	42.6	243.7	2	1	5	19.7	19.7	149.9	-8	-6	-5	15.8	14.6	225.2
6	0	4	9.0	9.0	-2.7	2	2	5	37.9	38.1	40.6	-8	-5	-5	32.6	30.5	39.7
6	1	4	40.3	40.0	126.3	2	3	5	21.3	20.6	4.5	-8	-4	-5	31.5	31.4	6.2
6	2	4	55.8	55.3	-21.7	2	4	5	35.0	35.6	121.6	-8	-3	-5	18.4	15.7	194.1
6	3	4	43.3	41.3	43.6	2	5	5	17.4	17.3	185.5	-8	-2	-5	29.3	28.8	196.9
6	4	4	14.0	14.3	-40.5	2	6	5	49.0	49.5	-16.8	-8	-1	-5	37.3	38.7	-9.5
6	5	4	45.5	44.7	121.3	2	7	5	21.8	20.8	-63.5	8	0	5	18.2	20.7	5.5
6	6	4	33.2	32.5	-9.0	2	8	5	25.2	24.8	157.8	8	1	5	39.1	40.0	19.5
6	7	4	27.3	25.9	18.5	2	9	5	26.4	25.5	167.3	8	2	5	27.7	28.8	169.2
6	8	4	17.4	18.2	103.0	2	10	5	22.2	23.1	-27.2	8	3	5	18.7	17.7	189.2
6	9	4	30.1	31.9	124.3	2	11	5	6.7	6.1	19.7	8	4	5	31.6	32.0	1.2
6	10	4	36.2	36.6	-5.0	2	12	5	26.2	26.5	126.4	8	5	5	31.3	28.6	-27.9
6	11	4	18.5	16.7	10.6	-3	-12	-5	25.6	23.9	27.7	8	6	5	13.8	14.2	145.4
-7	-9	-4	22.3	22.7	-89.6	-3	-11	-5	17.0	17.9	38.6	8	7	5	33.0	33.6	162.9
-7	-8	-4	35.1	34.4	31.7	-3	-10	-5	19.4	17.5	234.9	-9	-4	-5	26.4	27.0	190.5
-7	-7	-4	17.1	17.7	-72.3	-3	-9	-5	38.6	37.3	236.8	-9	-3	-5	13.9	15.3	237.3
-7	-6	-4	22.5	21.3	243.4	-3	-8	-5	27.5	25.9	34.1	-9	-2	-5	32.8	34.1	25.9
-7	-5	-4	37.4	37.7	243.8	-3	-7	-5	33.8	34.0	29.9	-9	-1	-5	28.6	26.2	-32.5
-7	-4	-4	52.6	54.6	10.9	-3	-6	-5	16.5	15.6	192.5	9	0	5	17.3	14.7	192.3
-7	-3	-4	20.7	20.4	-79.4	-3	-5	-5	25.8	24.2	212.5	9	1	5	26.6	26.7	38.5
-7	-2	-4	14.5	13.8	218.8	-3	-4	-5	46.4	46.1	29.5	9	2	5	32.4	32.8	-13.2
-7	-1	-4	20.8	20.8	213.4	-3	-3	-5	46.1	45.5	5.1	9	3	5	16.5	14.7	132.9
7	0	4	47.4	45.2	6.2	-3	-2	-5	5.0	1.6	220.2	9	4	5	28.5	28.4	182.8
7	1	4	23.3	22.2	161.4	-3	-1	-5	43.4	41.9	207.7	0	-10	-6	62.0	59.9	216.4
7	2	4	14.5	12.9	156.8	3	0	5	44.7	44.6	3.9	0	-8	-6	23.6	20.5	56.8
7	3	4	19.8	23.5	87.6	3	1	5	40.8	40.4	162.9	0	-6	-6	98.1	95.5	197.2
7	4	4	52.9	55.5	-0.9	3	2	5	5.2	1.5	210.6	0	-4	-6	33.7	32.6	71.5
7	5	4	36.4	37.0	126.6	3	3	5	45.2	46.3	4.5	0	-2	-6	92.3	87.3	176.4
7	6	4	18.8	20.3	127.4	3	4	5	43.8	45.3	-22.8	0	0	6	70.7	70.6	1.7
7	7	4	19.0	19.9	80.4	3	5	5	25.3	24.6	165.4	0	2	6	95.3	89.9	192.2
7	8	4	36.1	34.2	-17.1	3	6	5	17.7	16.5	175.9	0	4	6	30.1	30.8	-64.1
7	9	4	20.0	20.5	106.0	3	7	5	33.4	34.2	-17.7	0	6	6	99.2	95.7	170.7

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H	K	L	FO	FC	ALPH	H	K	L	FO	FC	ALPH	H	K	L	FO	FC	ALPH
0	8	6	24.4	21.9	-43.7	3	9	6	31.1	30.9	154.2	7	1	6	35.7	34.8	244.1
0	10	6	61.8	59.0	154.7	3	10	6	31.5	29.8	154.7	7	2	6	45.1	43.7	177.6
-1	-11	-6	32.0	31.3	224.5	3	11	6	34.8	32.8	-45.1	7	3	6	21.4	21.0	-89.1
-1	-10	-6	25.4	23.3	193.5	-4	-10	-6	42.9	39.5	206.3	7	4	6	21.4	18.9	-10.7
-1	-9	-6	57.3	55.5	39.1	-4	-9	-6	33.3	31.4	52.4	7	5	6	19.6	19.7	231.1
-1	-8	-6	18.9	18.5	198.9	-4	-8	-6	22.0	21.5	93.2	7	6	6	40.1	40.3	164.5
-1	-7	-6	54.9	53.3	215.8	-4	-7	-6	8.1	7.7	187.9	7	7	6	20.6	17.9	-60.3
-1	-6	-6	22.5	30.7	189.9	-4	-6	-6	45.4	45.5	196.7	-8	-5	-6	43.8	45.6	46.8
-1	-5	-6	49.7	47.1	21.3	-4	-5	-6	9.8	8.7	75.5	-8	-4	-6	4.2	2.1	-62.9
-1	-4	-6	55.4	54.2	186.4	-4	-4	-6	18.1	18.2	36.4	-8	-3	-6	23.6	24.3	157.7
-1	-3	-6	68.1	63.7	191.9	-4	-3	-6	21.5	21.9	169.3	-8	-2	-6	21.8	20.1	195.3
-1	-2	-6	48.0	46.9	192.3	-4	-2	-6	64.4	64.2	187.2	-8	-1	-6	39.8	38.5	25.4
-1	-1	-6	70.1	69.7	26.2	-4	-1	-6	30.2	28.3	53.1	8	0	6	21.0	20.1	175.4
1	0	6	54.6	52.1	183.9	4	0	6	5.7	3.7	21.0	8	1	6	41.2	39.8	-13.9
1	1	6	67.6	68.0	-19.1	4	1	6	27.9	27.2	-43.2	8	2	6	21.6	20.0	179.6
1	2	6	47.3	46.3	173.7	4	2	6	65.4	64.7	182.6	8	3	6	21.5	25.7	217.2
1	3	6	68.5	63.6	176.1	4	3	6	22.0	21.8	202.1	8	4	6	5.5	3.0	57.8
1	4	6	56.3	54.6	180.5	4	4	6	18.2	18.7	-26.5	8	5	6	45.0	45.8	-35.7
1	5	6	50.8	48.3	-11.3	4	5	6	11.5	7.3	-39.8	0	-10	-7	39.3	39.5	239.5
1	6	6	31.7	30.2	178.0	4	6	6	45.8	46.2	176.2	0	-8	-7	9.0	6.7	75.5
1	7	6	54.9	52.6	152.8	4	7	6	11.3	7.8	194.4	0	-6	-7	51.2	50.8	209.4
1	8	6	19.5	18.2	178.9	4	8	6	20.4	20.1	-82.3	0	-4	-7	17.1	15.5	44.9
1	9	6	57.8	56.3	-30.4	4	9	6	33.3	32.0	-42.2	0	-2	-7	50.5	48.9	194.0
1	10	6	21.0	23.0	186.0	4	10	6	43.0	40.4	166.9	0	0	7	26.4	31.7	5.3
1	11	6	32.4	31.7	148.3	-5	-9	-6	32.4	31.5	72.2	0	2	7	51.4	48.5	177.7
-2	-11	-6	4.7	6.9	48.7	-5	-8	-6	33.7	34.8	202.3	0	4	7	16.0	14.5	-24.0
-2	-10	-6	32.2	30.4	89.9	-5	-7	-6	28.0	27.9	167.1	0	6	7	52.2	51.9	170.5
-2	-9	-6	6.0	7.1	160.9	-5	-6	-6	7.1	5.5	151.4	0	8	7	8.9	5.7	-23.2
-2	-8	-6	61.9	59.2	196.4	-5	-5	-6	38.7	36.0	62.8	0	10	7	36.4	37.3	132.7
-2	-7	-6	21.2	21.7	103.4	-5	-4	-6	44.8	41.1	205.4	-1	-10	-7	11.8	9.6	120.1
-2	-6	-6	40.4	41.2	54.6	-5	-3	-6	20.0	18.0	149.1	-1	-9	-7	28.4	28.0	34.1
-2	-5	-6	12.0	13.6	126.2	-5	-2	-6	8.3	7.8	211.2	-1	-8	-7	11.9	11.5	172.4
-2	-4	-6	85.7	84.3	201.0	-5	-1	-6	40.8	42.0	48.2	-1	-7	-7	30.1	30.5	228.8
-2	-3	-6	23.0	22.4	24.0	5	0	6	57.9	58.6	184.6	-1	-6	-7	10.9	12.1	61.4
-2	-2	-6	22.2	20.9	-6.9	5	1	6	39.6	40.5	-38.6	-1	-5	-7	32.7	32.6	30.8
-2	-1	-6	7.7	9.3	-55.7	5	2	6	9.2	7.8	143.3	-1	-4	-7	12.1	13.0	170.3
2	0	6	85.9	82.0	184.6	5	3	6	21.7	20.1	228.0	-1	-3	-7	39.3	37.9	193.9
2	1	6	8.7	8.3	43.7	5	4	6	43.0	39.9	167.0	-1	-2	-7	6.6	4.7	-45.7
2	2	6	22.5	22.7	15.1	5	5	6	35.6	34.5	-50.7	-1	-1	-7	34.2	32.8	17.4
2	3	6	23.3	23.1	-16.8	5	6	6	3.8	3.5	213.6	1	0	7	31.1	29.5	182.8
2	4	6	84.5	82.8	167.6	5	7	6	28.5	29.4	203.1	1	1	7	33.3	32.3	-3.8
2	5	6	15.9	14.6	239.8	5	8	6	35.1	35.3	170.5	1	2	7	4.5	4.7	41.9
2	6	6	41.5	41.3	-48.1	5	9	6	32.6	30.4	-59.2	1	3	7	38.5	38.3	178.1
2	7	6	17.6	19.5	262.3	-6	-8	-6	33.5	33.7	209.4	1	4	7	13.4	13.9	200.3
2	8	6	63.9	60.8	174.5	-6	-7	-6	40.4	37.4	57.6	1	5	7	32.5	32.2	-17.5
2	9	6	9.8	7.8	210.3	-6	-6	-6	16.3	16.9	139.0	1	6	7	12.3	12.7	-58.8
2	10	6	30.3	29.8	-79.5	-6	-5	-6	17.9	19.8	179.7	1	7	7	29.2	29.0	144.9
2	11	6	6.9	7.9	-29.9	-6	-4	-6	34.1	33.2	177.9	1	8	7	14.7	12.3	199.2
-3	-11	-6	34.1	32.4	58.9	-6	-3	-6	34.8	33.7	43.2	1	9	7	31.1	25.5	-19.3
-3	-10	-6	32.7	30.8	217.2	-6	-2	-6	14.4	15.1	90.6	1	10	7	9.4	9.8	247.7
-3	-9	-6	30.8	31.7	217.4	-6	-1	-6	26.4	24.9	155.7	-2	-10	-7	21.8	20.9	65.2
-3	-8	-6	23.4	21.2	188.4	6	0	6	27.3	28.9	187.9	-2	-9	-7	25.0	24.0	199.5
-3	-7	-6	40.1	40.7	53.8	6	1	6	25.4	25.7	218.3	-2	-8	-7	40.9	41.1	216.3
-3	-6	-6	47.4	47.7	195.0	6	2	6	14.7	13.4	-86.2	-2	-7	-7	23.9	24.0	74.5
-3	-5	-6	44.5	43.0	177.5	6	3	6	34.6	33.6	-30.9	-2	-6	-7	22.3	22.7	29.4
-3	-4	-6	31.1	31.1	164.8	6	4	6	35.8	35.5	195.2	-2	-5	-7	20.0	18.6	162.5
-3	-3	-6	62.1	60.8	31.4	6	5	6	19.2	19.4	195.2	-2	-4	-7	49.1	46.7	210.9
-3	-2	-6	47.1	44.7	188.3	6	6	6	15.9	14.7	223.8	-2	-3	-7	28.6	28.0	18.8
-3	-1	-6	43.9	42.8	165.9	6	7	6	39.0	37.1	-45.9	-2	-2	-7	14.9	14.4	23.2
3	0	6	26.1	24.7	182.2	6	8	6	33.5	33.5	163.4	-2	-1	-7	20.5	18.3	209.3
3	1	6	43.9	43.7	204.4	-7	-7	-6	19.5	19.1	76.5	2	0	7	58.7	57.0	185.1
3	2	6	47.2	44.6	182.3	-7	-6	-6	41.5	40.9	207.7	2	1	7	19.5	17.0	157.4

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3	3	6	61.5	60.8	-23.5	-7	-5	-6	20.4	18.4	141.6	2	2	7	14.4	14.1	-1.9
3	4	6	31.0	30.9	199.8	-7	-4	-6	18.1	18.1	21.8	2	3	7	30.6	28.4	-13.1
3	5	6	46.3	44.4	191.8	-7	-3	-6	27.4	24.7	100.2	2	4	7	48.4	45.2	160.7
3	6	6	48.0	47.9	174.6	-7	-2	-6	45.9	44.1	194.5	2	5	7	21.0	19.5	203.8
3	7	6	40.2	39.8	-42.1	-7	-1	-6	35.6	33.2	125.1	2	6	7	23.2	23.5	-15.3
3	8	6	20.7	19.9	177.3	7	0	6	6.6	6.6	15.0	2	7	7	22.3	22.8	-68.8

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H	K	L	FO	FC	ALPH	H	K	L	FO	FC	ALPH	H	K	L	FO	FC	ALPH
2	8	7	41.8	40.9	155.7	-7	-3	-7	20.0	19.7	25.1	-4	-5	-8	19.5	20.0	267.8
2	9	7	24.6	24.3	166.1	-7	-2	-7	29.6	29.5	187.1	-4	-4	-8	54.1	51.1	10.4
2	10	7	19.2	20.0	-53.4	-7	-1	-7	29.3	27.1	170.6	-4	-3	-8	24.1	24.2	234.9
-3	-9	-7	23.1	22.4	220.4	7	0	7	30.2	31.3	4.9	-4	-2	-8	11.3	12.3	233.3
-3	-8	-7	10.4	12.8	41.0	7	1	7	26.6	27.2	199.0	-4	-1	-8	9.2	6.2	-29.9
-3	-7	-7	36.3	35.4	37.5	7	2	7	31.0	30.4	186.6	4	0	8	46.3	44.4	6.7
-3	-6	-7	41.5	39.7	156.7	7	3	7	20.1	20.2	-12.3	4	1	8	10.4	7.7	62.5
-3	-5	-7	27.8	28.6	217.1	7	4	7	21.2	19.7	-16.2	4	2	8	11.8	11.2	138.0
-3	-4	-7	26.2	25.3	57.0	0	-8	-8	51.2	50.1	24.0	4	3	8	21.2	23.3	137.0
-3	-3	-7	35.2	36.6	12.0	0	-6	-8	17.0	17.7	216.9	4	4	8	53.9	52.1	0.8
-3	-2	-7	28.3	26.8	173.7	0	-4	-8	63.7	60.0	20.5	4	5	8	23.8	23.5	94.5
-3	-1	-7	29.1	35.6	174.3	0	-2	-8	8.9	5.8	202.9	4	6	8	4.7	2.4	54.6
3	0	7	32.3	30.8	2.4	0	0	8	93.2	95.1	4.1	-5	-5	-8	19.1	18.7	15.0
3	1	7	38.7	37.1	196.8	0	2	8	6.1	6.2	186.8	-5	-4	-8	20.8	18.5	-38.4
3	2	7	29.1	27.9	196.0	0	4	8	63.7	59.6	-8.4	-5	-3	-8	21.9	21.9	238.9
3	3	7	37.8	37.9	-0.7	0	6	8	18.2	18.9	156.0	-5	-2	-8	21.9	25.3	-10.8
3	4	7	26.4	24.7	-51.8	0	8	8	53.5	50.9	-11.2	-5	-1	-8	27.4	26.9	-17.9
3	5	7	25.8	27.0	156.4	-1	-8	-8	30.1	28.5	4.3	5	0	8	6.4	7.2	186.5
3	6	7	41.6	39.8	170.6	-1	-7	-8	42.8	41.0	221.8	5	1	8	27.9	27.3	30.6
3	7	7	38.2	35.5	-25.7	-1	-6	-8	23.2	23.7	1.8	5	2	8	26.0	28.2	26.2
3	8	7	15.1	13.5	-32.0	-1	-5	-8	31.0	32.8	25.1	5	3	8	22.2	20.0	137.8
3	9	7	23.3	22.6	155.5	-1	-4	-8	22.0	16.7	-0.6	5	4	8	18.2	16.5	38.8
-4	-8	-7	26.6	25.2	54.9	-1	-3	-8	40.4	39.9	197.8	5	5	8	14.3	17.9	0.5
-4	-7	-7	21.9	19.8	215.8	-1	-2	-8	20.1	19.5	-11.3	-6	-2	-8	39.0	37.1	28.8
-4	-6	-7	34.0	32.6	205.6	-1	-1	-8	43.1	42.0	9.5	-6	-1	-8	27.6	26.1	251.8
-4	-5	-7	19.4	19.9	13.9	1	0	8	19.5	18.4	4.8	6	0	8	8.1	2.8	-14.0
-4	-4	-7	22.7	20.7	8.8	1	1	8	41.2	41.7	1.3	6	1	8	21.1	22.8	121.0
-4	-3	-7	51.4	50.9	185.0	1	2	8	22.0	21.0	25.2	6	2	8	36.2	35.0	-16.9
-4	-2	-7	53.9	52.5	197.0	1	3	8	39.4	40.4	174.2	0	-4	-8	33.2	31.4	27.7
-4	-1	-7	35.5	33.0	47.2	1	4	8	18.8	16.5	12.2	0	-2	-9	13.7	13.4	176.6
4	0	7	17.4	17.4	7.9	1	5	8	32.0	32.4	-11.9	0	0	9	43.4	44.2	6.1
4	1	7	32.9	31.3	-39.4	1	6	8	26.0	24.3	10.3	0	2	9	14.8	15.5	202.8
4	2	7	52.7	51.8	172.4	1	7	8	43.2	40.6	149.4	0	4	9	33.1	30.6	-11.5
4	3	7	50.3	50.6	180.4	1	8	8	28.1	27.9	2.4	-1	-5	-9	23.0	20.3	11.0
4	4	7	23.1	22.2	3.9	-2	-8	-8	14.5	14.3	263.2	-1	-4	-9	10.0	7.9	19.9
4	5	7	24.2	21.6	-2.4	-2	-7	-8	10.1	8.8	154.8	-1	-3	-9	33.1	30.3	205.6
4	6	7	34.2	33.0	168.3	-2	-6	-8	61.9	59.8	20.9	-1	-2	-9	22.2	20.3	-0.9
4	7	7	19.9	19.1	156.1	-2	-5	-8	2.7	1.5	175.4	-1	-1	-9	25.2	26.4	27.7
4	8	7	26.2	24.5	-43.2	-2	-4	-8	15.4	16.6	239.5	1	0	9	7.9	1.5	159.8
-5	-7	-7	22.9	22.0	201.6	-2	-3	-8	16.4	15.2	-22.2	1	1	9	23.3	24.3	-12.3
-5	-6	-7	30.0	28.5	25.4	-2	-2	-8	66.5	63.7	10.6	1	2	9	23.6	20.7	10.3
-5	-5	-7	42.9	40.7	34.8	-2	-1	-8	26.3	23.4	-63.7	1	3	9	32.3	29.8	168.6
-5	-4	-7	35.4	35.2	209.9	2	0	8	2.7	4.1	202.8	1	4	9	10.3	7.3	-12.1
-5	-3	-7	23.9	24.6	158.6	2	1	8	19.9	21.0	65.6	1	5	9	23.6	22.1	6.7
-5	-2	-7	28.0	26.6	-0.1	2	2	8	66.1	63.7	0.4	-2	-5	-9	11.5	11.9	191.3
-5	-1	-7	31.9	31.1	6.2	2	3	8	16.0	15.4	30.9	-2	-4	-9	19.4	22.7	237.3
5	0	7	45.6	45.9	184.2	2	4	8	15.8	15.8	132.2	-2	-3	-9	17.9	17.8	3.4
5	1	7	33.9	32.1	5.1	2	5	8	6.5	3.6	208.4	-2	-2	-9	30.8	29.3	-0.9
5	2	7	28.3	27.5	8.4	2	6	8	62.1	60.1	-9.8	-2	-1	-9	19.2	15.7	221.6
5	3	7	22.3	23.9	174.5	2	7	8	9.4	8.3	195.3	2	0	9	25.0	21.8	187.2
5	4	7	34.4	34.0	160.4	2	8	8	11.7	13.3	113.3	2	1	9	16.6	15.0	146.7
5	5	7	42.0	40.5	-25.5	-3	-7	-8	22.7	22.3	21.6	2	2	9	32.3	31.4	16.7
5	6	7	30.5	29.3	-17.0	-3	-6	-8	7.7	9.4	-35.3	2	3	9	18.6	17.8	4.4
5	7	7	23.9	22.5	171.9	-3	-5	-8	38.1	37.2	218.7	2	4	9	20.4	20.4	135.5
-6	-6	-7	13.1	11.2	41.2	-3	-4	-8	16.6	18.5	37.4	2	5	9	12.9	12.7	178.8
-6	-5	-7	29.4	29.3	183.9	-3	-3	-8	33.9	36.2	2.2	-3	-4	-9	33.1	30.9	29.9
-6	-4	-7	40.8	38.6	183.7	-3	-2	-8	26.0	22.3	11.3	-3	-3	-9	28.0	27.2	6.5
-6	-3	-7	39.8	37.5	34.5	-3	-1	-8	31.3	29.2	194.1	-3	-2	-9	2.8	3.9	164.5
-6	-2	-7	30.2	29.8	46.2	3	0	8	33.0	30.2	6.7	-3	-1	-9	30.6	28.4	200.4
-6	-1	-7	30.2	28.6	180.5	3	1	8	33.0	30.4	180.0	3	0	9	39.0	35.7	4.6
6	0	7	25.4	27.2	186.7	3	2	8	24.6	21.9	-8.6	3	1	9	30.0	28.3	173.3
6	1	7	30.7	28.2	191.5	3	3	8	34.1	36.6	8.6	3	2	9	6.0	4.4	208.4

6	2	7	27.6	27.8	-39.0	3	4	8	13.5	16.4	-17.2	3	3	9	29.9	27.8	7.2
6	3	7	37.3	37.0	-24.9	3	5	8	37.3	36.9	153.2	3	4	9	32.9	30.0	-20.4
6	4	7	40.1	40.0	185.6	3	6	8	10.7	8.9	45.5	-4	-1	-9	20.7	20.0	19.1
6	5	7	29.8	30.1	186.7	3	7	8	21.8	22.7	-6.2	4	0	9	31.5	29.0	7.6
6	6	7	11.8	11.2	-21.9	-4	-6	-8	8.6	5.4	-44.6	4	1	9	17.4	18.8	-7.7
-7	-4	-7	23.0	20.1	31.6												

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