

Memetic search for the generalized quadratic multiple knapsack problem–Supplementary material

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This supplementary material includes four tables. Tables A1 and A2 show the computational results of MAGQMKP on the 48 small-sized instances of Set I and the 48 large-sized instances of Set II respectively. Tables A3 and A4 present the comparative results of MAGQMKP with 3 state-of-the-art algorithms on Set I and Set II respectively.

TABLE A1: Computational results of MAGQMK on the 48 small-sized instances of Set I with a short time limit (100 generations). A value in bold indicates a best known lower bound. A starred value indicates an improved best lower bound.

No.	Instance			f_{bk}	MAGQMK				
	k	r	d		f_{best}	f_{avg}	sd	t_{best}	t_{avg}
5-1	3	15	1.00	2835.30	2835.30	2828.22	21.24	0.48	1.23
5-2	3	15	1.00	3304.80	3304.80	3293.90	22.89	0.02	0.83
5-3	3	15	1.00	1678.00	1678.00	1678.00	0.00	0.01	0.01
6-1	1	3	0.25	346.40	346.40	346.40	0.00	0.01	0.01
6-2	1	3	0.25	554.00	554.00	554.00	0.00	0.01	0.01
6-3	1	3	0.25	428.70	428.70	428.70	0.00	0.01	0.01
8-1	3	15	0.25	309.21	309.21	309.21	0.00	0.02	0.91
8-2	3	15	0.25	353.85	353.85	353.69	0.47	0.02	0.11
8-3	3	15	0.25	541.57	541.57	541.57	0.00	0.03	0.03
15-1	1	3	0.25	91.54	91.54	91.54	0.00	0.01	0.32
15-2	1	3	0.25	306.38	306.38	306.38	0.00	0.01	0.02
15-3	1	3	0.25	75.62	75.62	75.45	0.33	0.09	0.37
18-1	1	3	1.00	5387.70	5387.70	5387.70	0.00	0.01	0.01
18-2	1	3	1.00	8551.08	8551.08	8551.08	0.00	0.00	0.00
18-3	1	3	1.00	7760.51	7760.51	7760.51	0.00	0.00	0.00
20-1	1	15	1.00	1599.85	1599.85	1599.85	0.00	0.01	0.01
20-2	1	15	1.00	925.59	925.59	925.59	0.00	0.01	0.01
20-3	1	15	1.00	931.33	931.33	931.33	0.00	0.00	0.01
22-1	3	3	0.25	1923.61	1904.86	1904.86	0.00	0.02	0.02
22-2	3	3	0.25	1314.09	1314.09	1314.09	0.00	0.01	0.01
22-3	3	3	0.25	1734.09	1799.09*	1799.09	0.00	0.02	0.02
23-1	3	3	1.00	471.00	471.00	471.00	0.00	0.02	0.02
23-2	3	3	1.00	955.70	959.70*	959.70	0.00	0.02	0.06
23-3	3	3	1.00	1241.00	1241.00	1241.00	0.00	0.04	0.32
25-1	3	15	1.00	2118.33	2118.33	2118.33	0.00	0.13	1.52
25-2	3	15	1.00	4262.64	4262.64	4195.05	30.84	1.10	1.66
25-3	3	15	1.00	2951.90	2962.06*	2962.06	0.00	0.03	1.03
26-1	1	15	1.00	1747.60	1747.60	1747.60	0.00	0.01	0.01
26-2	1	15	1.00	2433.60	2433.60	2433.60	0.00	0.01	0.01
26-3	1	15	1.00	2293.20	2293.20	2293.20	0.00	0.01	0.01
27-1	1	15	0.25	2247.95	2247.95	2247.95	0.00	0.01	0.01
27-2	1	15	0.25	1966.52	1966.52	1966.52	0.00	0.01	0.01
27-3	1	15	0.25	1383.49	1383.49	1383.49	0.00	0.01	0.01
28-1	1	15	0.25	978.80	978.80	978.07	1.04	0.01	0.12
28-2	1	15	0.25	4024.70	4036.00*	4035.62	2.03	0.01	0.04
28-3	1	15	0.25	2634.00	2634.00	2634.00	0.00	0.01	0.01
29-1	3	3	0.25	1935.80	1567.60	1520.33	87.24	0.13	0.19
29-2	3	3	0.25	2820.00	2782.00	2782.00	0.00	0.01	0.10
29-3	3	3	0.25	3283.60	3285.60*	3285.60	0.00	0.01	0.05
30-1	3	3	1.00	721.39	721.39	717.27	1.84	0.31	0.40
30-2	3	3	1.00	612.59	612.59	612.59	0.00	0.03	0.03
30-3	3	3	1.00	1032.35	1032.35	1032.35	0.00	0.03	0.04
31-1	3	15	0.25	491.90	491.90	491.90	0.00	0.04	1.52
31-2	3	15	0.25	594.00	640.00*	640.00	0.00	0.06	0.49
31-3	3	15	0.25	508.60	526.10*	526.10	0.00	0.26	5.37
32-1	1	3	1.00	11425.20	11425.20	11271.90	51.09	0.07	0.02
32-2	1	3	1.00	15914.20	15914.20	15914.20	0.00	0.00	0.00
32-3	1	3	1.00	19273.50	19273.50	19273.50	0.00	0.00	0.00

TABLE A2: Computational results of MAGQMK on the 48 large-sized instances of Set II with a short time limit (100 generations) and a long time limit (500 generations). A value in bold indicates a best known lower bound. A starred value indicates an improved best lower bound. The best result of MAGQMK (500 Gens) is underlined if it is better than that of MAGQMK (100 Gens).

Instance					MAGQMK (100 Gens)					MAGQMK (500 Gens)				
No.	k	r	d	f_{bk}	f_{best}	f_{avg}	sd	t_{best}	t_{avg}	f_{best}	f_{avg}	sd	t_{best}	t_{avg}
1-1	10	30	0.25	4978.47	5082.97*	5060.21	11.30	218.77	1620.36	<u>5093.06</u>	5074.50	6.53	6347.48	7419.16
1-2	10	30	0.25	4889.58	4845.33	4817.11	8.97	272.15	1636.17	<u>4848.58</u>	4830.20	7.93	6798.71	8101.91
1-3	10	30	0.25	5675.36	5881.10*	5861.97	8.39	2148.42	1712.68	<u>5896.01</u>	5876.05	10.08	9063.85	6823.41
2-1	30	150	0.25	2524.39	2604.31*	2598.32	3.40	615.57	900.21	<u>2607.84</u>	2601.31	3.34	3798.73	3530.13
2-2	30	150	0.25	2193.87	2282.24*	2278.67	1.83	958.83	870.25	<u>2285.32</u>	2281.63	1.83	2755.29	3570.48
2-3	30	150	0.25	2507.89	2578.14*	2570.96	2.80	1228.02	624.71	<u>2578.14</u>	2573.40	1.79	1224.14	2946.75
3-1	10	150	0.25	31873.80	32177.00*	32105.60	70.47	881.95	603.21	<u>32189.10</u>	32147.30	20.13	2196.66	2693.57
3-2	10	150	0.25	39356.00	40302.40*	40141.80	73.68	65.94	321.64	40302.40	40169.70	54.30	64.47	1437.15
3-3	10	150	0.25	32236.40	32766.70*	32715.80	22.25	507.15	518.10	<u>32766.70</u>	32749.40	21.33	685.41	3414.05
4-1	10	150	1.00	8172.40	9038.00*	9017.74	8.94	1603.88	861.67	<u>9045.80</u>	9027.86	7.12	2266.82	4323.70
4-2	10	150	1.00	7457.80	8455.60*	8438.70	7.26	368.27	860.73	<u>8465.00</u>	8448.00	6.16	7807.56	4871.10
4-3	10	150	1.00	8333.80	8488.90*	8465.64	6.68	794.59	741.01	<u>8491.30</u>	8475.10	6.69	5303.34	4467.05
7-1	10	30	1.00	67020.40	68087.90*	67947.20	76.96	473.73	640.13	<u>68129.00</u>	68029.40	53.16	1567.43	3314.59
7-2	10	30	1.00	64591.70	65616.80*	65493.30	58.76	115.21	519.41	<u>65616.80</u>	65546.20	37.39	116.33	2542.84
7-3	10	30	1.00	64905.60	69302.40*	69172.80	60.31	180.16	617.98	<u>69397.60</u>	69279.30	64.40	4021.47	3104.20
9-1	30	30	0.25	9098.78	9252.47*	9241.18	3.01	445.36	426.97	<u>9252.47</u>	9242.60	2.70	450.35	1485.96
9-2	30	30	0.25	12440.80	13007.30*	12973.20	14.86	1036.27	806.14	<u>13007.30</u>	12988.90	8.92	1044.40	3120.53
9-3	30	30	0.25	15612.84	16369.00*	16347.20	10.60	672.41	606.42	<u>16372.00</u>	16359.20	7.32	3051.59	2822.24
10-1	30	30	1.00	12849.05	13060.50*	12872.40	117.68	722.25	780.42	<u>13196.30</u>	13125.80	31.06	4602.17	3761.90
10-2	30	30	1.00	12776.99	12853.80*	12461.40	159.61	1066.29	789.26	<u>13003.30</u>	12779.20	153.43	5131.88	3799.61
10-3	30	30	1.00	12353.05	13056.50*	12807.40	96.64	720.78	796.05	<u>13057.00</u>	13008.60	48.75	4175.74	4114.58
11-1	10	30	0.25	7057.00	7115.40*	7091.80	9.45	167.49	156.58	<u>7116.50</u>	7103.55	7.28	1369.48	711.63
11-2	10	30	0.25	6617.00	6771.50*	6747.85	6.91	33.06	117.18	<u>6771.50</u>	6758.19	7.65	32.97	537.44
11-3	10	30	0.25	7677.30	7725.40*	7713.59	5.81	12.80	154.87	<u>7745.10</u>	7726.96	7.61	1161.81	911.53
12-1	30	150	1.00	57789.00	59215.10*	59063.30	83.45	1497.34	1614.41	<u>59234.10</u>	59137.70	51.05	9026.28	6140.09
12-2	30	150	1.00	58729.40	61489.70*	61105.70	122.49	697.56	1262.25	<u>61489.70</u>	61181.70	103.00	695.99	4800.17
12-3	30	150	1.00	58352.20	60841.80*	60661.30	88.64	1841.17	1556.58	<u>60899.30</u>	60749.70	70.38	6800.38	5156.66
13-1	30	150	0.25	4102.40	4194.80*	4171.62	12.96	589.80	493.81	<u>4210.10</u>	4194.59	7.93	2576.37	1901.71
13-2	30	150	0.25	4047.50	4139.90*	4130.71	6.78	299.58	495.30	<u>4139.90</u>	4136.01	5.47	688.10	1318.51
13-3	30	150	0.25	4582.90	4716.70*	4698.23	10.61	638.33	510.59	<u>4734.90</u>	4717.27	8.58	2214.41	2123.22
14-1	10	30	1.00	26456.79	26868.60*	26868.60	0.00	0.55	2.07	<u>26868.60</u>	26868.60	0.00	0.55	4.61
14-2	10	30	1.00	25345.55	25929.60*	25720.00	270.31	240.69	142.03	<u>25929.60</u>	25720.00	270.31	558.06	304.66
14-3	10	30	1.00	30947.20	31448.20*	31448.00	1.27	4.90	79.59	<u>31448.20</u>	31448.20	0.00	26.16	301.21
16-1	30	30	0.25	13408.10	14086.70*	14024.50	22.69	67.14	400.61	<u>14129.10</u>	14060.90	22.68	868.35	1932.42
16-2	30	30	0.25	16059.70	16611.90*	16560.20	13.69	314.56	426.58	<u>16611.90</u>	16577.60	13.85	313.72	1634.65
16-3	30	30	0.25	13646.50	14225.00*	14182.90	19.69	688.46	479.29	<u>14240.80</u>	14210.10	15.79	2365.55	2391.58
17-1	30	30	1.00	4096.90	4157.20*	4156.82	0.30	52.25	240.76	<u>4157.20</u>	4157.09	0.14	51.90	1221.69
17-2	30	30	1.00	3837.70	3901.30*	3887.88	19.32	352.16	305.53	<u>3901.30</u>	3891.48	17.70	681.37	1500.73
17-3	30	30	1.00	3573.80	3767.70*	3764.83	1.85	234.71	314.56	<u>3767.70</u>	3767.67	0.14	236.08	1444.65
19-1	10	150	1.00	6824.12	6869.53*	6863.00	3.71	33.30	192.03	<u>6869.80</u>	6866.33	2.23	1039.10	843.08
19-2	10	150	1.00	7920.00	8026.54*	7743.71	106.78	489.09	323.76	<u>8028.54</u>	7831.85	153.91	1558.62	1847.38
19-3	10	150	1.00	8082.10	8155.05*	8152.37	3.38	22.26	263.73	<u>8155.05</u>	8154.87	0.98	47.12	1410.02
21-1	10	150	0.25	21101.37	22197.70*	22165.40	17.14	1131.24	2016.20	<u>22221.90</u>	22187.00	14.83	10224.00	7570.70
21-2	10	150	0.25	23905.12	25231.60*	25173.80	26.39	1415.72	1648.97	<u>25254.50</u>	25199.70	16.64	8451.74	5544.17
21-3	10	150	0.25	22673.42	24574.10*	24517.10	19.91	1635.39	1905.71	<u>24574.10</u>	24541.20	16.09	1641.63	8984.81
24-1	30	150	1.00	49766.25	52652.70*	52253.30	120.65	77.99	91.24	<u>52652.70</u>	52253.30	120.65	78.65	91.59
24-2	30	150	1.00	53386.40	57689.70*	57377.60	145.22	1158.36	740.29	<u>57771.60</u>	57513.40	121.72	3050.54	2868.01
24-3	30	150	1.00	47810.15	52642.70*	52361.60	118.00	83.67	76.74	<u>52642.70</u>	52361.60	118.00	84.22	77.34

TABLE A3: Comparative results of MAGQMK on the 48 small-sized instances of Set I with respect to 3 state-of-the-art algorithms presented in reference [30] cited in the main paper (T. Saraç and A. Sipahioglu, Generalized quadratic multiple knapsack problem and two solution approaches, Computers & Operations Research, 43: 78–89, 2014). The best results of the three reference algorithms as well as our MAGQMK algorithm are indicated in bold. For GA and MAGQMK, the best solution value is underlined if it matches or is better than the bold value. The results of MAGQMK (3 runs) are not the emphasis of this table, but are displayed only for reference purpose.

INST	GAM (1 run)		Hybrid (1 run)		GA (3 runs)			MAGQMK (30 runs)			MAGQMK (3 runs)		
	f	$t(s)$	f	$t(s)$	f_{avg}	f_{best}	t_{avg}	f_{avg}	f_{best}	t_{avg}	f_{avg}	f_{best}	t_{avg}
5-1	2835.30	< 1	2835.30	4	2768.18	<u>2835.30</u>	< 1	2828.22	<u>2835.30</u>	1.23	2835.30	<u>2835.30</u>	1.51
5-2	3304.80	< 1	3304.80	3	3211.77	<u>3219.90</u>	2	3293.90	<u>3304.80</u>	0.83	3300.23	<u>3304.80</u>	0.76
5-3	1634.20	< 1	1678.00	2	1630.17	<u>1678.00</u>	< 1	1678.00	<u>1678.00</u>	0.01	1678.00	<u>1678.00</u>	0.01
6-1	346.40	< 1	346.40	2	346.40	<u>346.40</u>	< 1	346.40	<u>346.40</u>	0.01	346.40	<u>346.40</u>	0.02
6-2	554.00	< 1	554.00	2	554.00	<u>554.00</u>	< 1	554.00	<u>554.00</u>	0.01	554.00	<u>554.00</u>	0.01
6-3	428.70	< 1	428.70	2	414.03	<u>428.70</u>	< 1	428.70	<u>428.70</u>	0.01	428.70	<u>428.70</u>	0.01
8-1	302.51	< 1	309.21	1	308.85	<u>309.21</u>	3	309.21	<u>309.21</u>	0.91	309.21	<u>309.21</u>	0.44
8-2	351.07	< 1	353.85	4	353.48	<u>353.85</u>	< 1	353.69	<u>353.85</u>	0.11	353.85	<u>353.85</u>	0.20
8-3	539.57	< 1	541.57	2	540.90	<u>541.57</u>	< 1	541.57	<u>541.57</u>	0.03	541.57	<u>541.57</u>	0.04
15-1	91.54	< 1	91.54	1	90.94	<u>91.54</u>	< 1	91.54	<u>91.54</u>	0.32	91.54	<u>91.54</u>	0.23
15-2	302.38	< 1	306.38	2	303.05	<u>306.38</u>	< 1	306.38	<u>306.38</u>	0.02	306.38	<u>306.38</u>	0.01
15-3	74.29	< 1	75.62	2	75.62	<u>75.62</u>	< 1	75.45	<u>75.62</u>	0.37	75.40	<u>75.62</u>	0.52
18-1	5387.70	< 1	5387.70	1	5387.70	<u>5387.70</u>	< 1	5387.70	<u>5387.70</u>	0.01	5387.70	<u>5387.70</u>	0.01
18-2	8551.08	< 1	8551.08	2	8407.48	<u>8505.24</u>	< 1	8551.08	<u>8551.08</u>	0.00	8551.08	<u>8551.08</u>	0.00
18-3	7760.51	< 1	7760.51	1	7760.51	<u>7760.51</u>	< 1	7760.51	<u>7760.51</u>	0.00	7760.51	<u>7760.51</u>	0.01
20-1	1599.85	< 1	1599.85	2	1592.77	<u>1599.85</u>	< 1	1599.85	<u>1599.85</u>	0.01	1599.85	<u>1599.85</u>	0.01
20-2	925.57	< 1	925.59	1	925.59	<u>925.59</u>	< 1	925.59	<u>925.59</u>	0.01	925.59	<u>925.59</u>	0.01
20-3	931.33	< 1	931.00	1	898.25	<u>898.25</u>	< 1	931.33	<u>931.33</u>	0.01	931.33	<u>931.33</u>	0.01
22-1	1923.61	< 1	1923.61	3	1589.02	<u>1923.61</u>	2	1904.86	<u>1904.86</u>	0.02	1904.86	<u>1904.86</u>	0.02
22-2	1314.09	< 1	884.40	1	884.40	<u>884.40</u>	< 1	1314.09	<u>1314.09</u>	0.01	1314.09	<u>1314.09</u>	0.01
22-3	1734.09	< 1	1680.09	2	1656.09	<u>1680.09</u>	< 1	1799.09	<u>1799.09</u>	0.02	1799.09	<u>1799.09</u>	0.03
23-1	471.00	< 1	471.00	2	462.80	<u>471.00</u>	< 1	471.00	<u>471.00</u>	0.02	471.00	<u>471.00</u>	0.02
23-2	955.70	< 1	381.60	1	379.03	<u>379.60</u>	< 1	959.70	<u>959.70</u>	0.06	959.70	<u>959.70</u>	0.05
23-3	1241.00	< 1	550.50	2	504.40	<u>522.60</u>	4	1241.00	<u>1241.00</u>	0.32	1241.00	<u>1241.00</u>	0.22
25-1	2111.63	< 1	2118.33	1	2021.70	<u>2118.33</u>	< 1	2118.33	<u>2118.33</u>	1.52	2118.33	<u>2118.33</u>	2.41
25-2	4262.64	< 1	3253.00	1	3076.18	<u>3076.18</u>	< 1	4195.05	<u>4262.64</u>	1.66	4202.37	<u>4262.64</u>	3.10
25-3	2951.90	< 1	2433.00	2	2054.60	<u>2189.32</u>	< 1	2962.06	<u>2962.06</u>	1.03	2962.06	<u>2962.06</u>	1.43
26-1	1747.60	< 1	1747.60	1	1730.80	<u>1747.60</u>	< 1	1747.60	<u>1747.60</u>	0.01	1747.60	<u>1747.60</u>	0.01
26-2	2433.60	< 1	1686.00	1	1596.53	<u>1650.80</u>	2	2433.60	<u>2433.60</u>	0.01	2433.60	<u>2433.60</u>	0.02
26-3	2293.20	< 1	1457.00	2	1375.07	<u>1379.10</u>	2	2293.20	<u>2293.20</u>	0.01	2293.20	<u>2293.20</u>	0.01
27-1	2245.95	< 1	2247.95	1	2247.95	<u>2247.95</u>	< 1	2247.95	<u>2247.95</u>	0.01	2247.95	<u>2247.95</u>	0.01
27-2	1966.52	< 1	1711.00	2	1711.52	<u>1711.52</u>	< 1	1966.52	<u>1966.52</u>	0.01	1966.52	<u>1966.52</u>	0.01
27-3	1383.49	< 1	1152.00	2	1152.49	<u>1152.49</u>	< 1	1383.49	<u>1383.49</u>	0.01	1383.49	<u>1383.49</u>	0.01
28-1	898.60	< 1	978.80	1	975.96	<u>978.80</u>	< 1	978.07	<u>978.80</u>	0.12	978.07	<u>978.80</u>	0.25
28-2	4024.70	< 1	3038.80	1	2843.17	<u>2891.80</u>	< 1	4035.62	<u>4036.00</u>	0.04	4036.00	<u>4036.00</u>	0.04
28-3	2634.00	< 1	1982.20	2	1867.87	<u>1963.60</u>	< 1	2634.00	<u>2634.00</u>	0.01	2634.00	<u>2634.00</u>	0.01
29-1	1903.80	< 1	1935.80	2	1563.88	<u>1935.80</u>	2	1520.33	<u>1567.60</u>	0.19	1558.27	<u>1567.60</u>	0.19
29-2	2820.00	< 1	2160.00	9	2122.20	<u>2122.60</u>	< 1	2782.00	<u>2782.00</u>	0.10	2782.00	<u>2782.00</u>	0.13
29-3	3283.60	< 1	2029.00	12	2436.20	<u>2535.00</u>	< 1	3285.60	<u>3285.60</u>	0.05	3285.60	<u>3285.60</u>	0.06
30-1	721.39	< 1	721.39	2	721.39	<u>721.39</u>	< 1	717.27	<u>721.39</u>	0.40	716.45	<u>716.45</u>	0.17
30-2	612.59	< 1	453.00	6	416.87	<u>418.71</u>	< 1	612.59	<u>612.59</u>	0.03	612.59	<u>612.59</u>	0.03
30-3	1032.35	< 1	774.99	7	763.19	<u>763.19</u>	< 1	1032.35	<u>1032.35</u>	0.04	1032.35	<u>1032.35</u>	0.03
31-1	477.90	< 1	491.90	2	487.80	<u>491.90</u>	< 1	491.90	<u>491.90</u>	1.52	491.90	<u>491.90</u>	2.44
31-2	594.00	< 1	547.00	4	542.53	<u>544.00</u>	< 1	640.00	<u>640.00</u>	0.49	640.00	<u>640.00</u>	0.20
31-3	508.60	< 1	435.80	3	430.63	<u>435.40</u>	3	526.10	<u>526.10</u>	5.37	526.10	<u>526.10</u>	7.70
32-1	11425.20	< 1	11254.90	1	11254.90	<u>11254.90</u>	< 1	11271.90	<u>11425.20</u>	0.02	11311.70	<u>11425.20</u>	0.04
32-2	15914.20	< 1	10820.80	5	10807.33	<u>10820.80</u>	< 1	15914.20	<u>15914.20</u>	0.00	15914.20	<u>15914.20</u>	0.00
32-3	19273.50	< 1	13087.80	3	12990.50	<u>13087.80</u>	2	19273.50	<u>19273.50</u>	0.00	19273.50	<u>19273.50</u>	0.00
#Bests	29	-	26	-	8	24	-	37	45	-	-	-	-
Avg.	2730.86	-	2299.80	2.48	2254.93	2289.96	-	2723.25	2729.33	0.35	2725.30	2729.23	0.47

TABLE A4: Comparative results of our MAGQMK algorithm on the 48 large-sized instances of Set II with respect to 3 state-of-the-art algorithms presented in reference [30] cited in the main paper (T. Saraç and A. Sipahioglu, Generalized quadratic multiple knapsack problem and two solution approaches, Computers & Operations Research, 43: 78–89, 2014).. The best results of the three reference algorithms as well as MAGQMK (30 runs) are indicated in bold. For GA and MAGQMK, the best solution value is underlined if it is better than the bold value. The results of MAGQMK (3 runs) are not the emphasis of this table, but are displayed only for reference purpose.

INST	GAM (1 run)		Hybrid (1 run)		GA (3 runs)			MAGQMK (30 runs)			MAGQMK (3 runs)		
	f	$t(s)$	f	$t(s)$	f_{avg}	f_{best}	t_{avg}	f_{avg}	f_{best}	t_{avg}	f_{avg}	f_{best}	t_{avg}
1-1	4509.21	436.83	4978.47	3023	4900.98	4948.45	5960	5060.21	<u>5082.97</u>	1620.36	5060.17	5077.13	2678.83
1-2	4492.63	56.54	4889.58	2142	4709.98	<u>4889.58</u>	3431	4817.11	4845.33	1636.17	4818.86	4825.23	1687.80
1-3	5500.44	49.05	5675.36	4821	5322.02	5653.92	7038	5861.97	<u>5881.10</u>	1712.68	5861.45	5865.49	1235.79
2-1	2489.75	6058.47	2524.39	5780	2487.90	2515.16	3780	2598.32	<u>2604.31</u>	900.21	2600.24	2601.24	1082.47
2-2	2098.35	5840.23	2193.87	9741	2167.50	2181.44	3264	2278.67	<u>2282.24</u>	870.25	2279.88	2282.24	648.15
2-3	2395.16	48.25	2507.89	5117	2426.05	2494.78	3274	2570.96	<u>2578.14</u>	624.71	2570.59	2572.31	541.09
3-1	27944.90	67.19	31873.80	7000	31414.50	31854.80	2100	32105.60	<u>32177.00</u>	603.21	31991.20	32147.90	878.28
3-2	37440.40	10.28	39356.00	7333	32688.63	39356.00	1976	40141.80	<u>40302.40</u>	321.64	40087.30	40230.70	774.74
3-3	28050.10	38.69	32236.40	7274	31804.37	31981.50	3212	32715.80	<u>32766.70</u>	518.10	32714.40	32728.80	957.48
4-1	-	13000.11	8172.40	2260	7893.26	8126.80	1680	9017.74	<u>9038.00</u>	861.67	9015.90	9020.10	1365.11
4-2	-	13000.05	7457.80	2265	7135.17	7216.50	1765	8438.70	<u>8455.60</u>	860.73	8445.27	8450.80	365.23
4-3	8333.80	117.37	7214.20	2082	6952.93	7114.70	1347	8465.64	<u>8488.90</u>	741.01	8465.43	8473.50	1011.10
7-1	67020.40	7843.08	64415.40	3040	62929.70	63792.80	1360	67947.20	<u>68087.90</u>	640.13	67914.30	67955.60	769.75
7-2	64591.70	7669.09	61177.40	2684	60574.73	61044.00	1346	65493.30	<u>65616.80</u>	519.41	65469.30	65501.40	657.86
7-3	-	13000.97	64905.60	3879	64313.43	64813.50	1413	69172.80	<u>69302.40</u>	617.98	69150.00	69167.30	718.50
9-1	8954.74	130.70	9098.78	5880	8561.80	8784.74	2320	9241.18	<u>9252.47</u>	426.97	9244.27	9247.80	288.56
9-2	12299.40	1778.74	12440.80	6298	12172.31	12393.32	2945	12973.20	<u>13007.30</u>	806.14	12968.30	12979.30	934.42
9-3	15612.84	1515.52	14806.02	5559	15255.75	15326.97	2941	16347.20	<u>16369.00</u>	606.42	16351.70	16365.20	1057.26
10-1	-	13000.08	12002.24	1080	8541.28	12849.05	825	12872.40	<u>13060.50</u>	780.21	12898.60	12971.00	1088.18
10-2	-	9667.52	11192.08	1897	8297.00	12776.99	1928	12461.40	<u>12853.80</u>	789.26	12488.60	12833.90	1028.73
10-3	-	13000.03	11920.80	1932	12220.50	12353.05	3346	12807.40	<u>13056.50</u>	796.05	12844.30	12943.50	1085.65
11-1	7057.00	1.81	6694.30	2480	6636.74	6740.60	2500	7091.80	<u>7115.40</u>	156.58	7084.87	7097.10	177.13
11-2	6617.00	1.75	6460.90	2942	6465.30	6515.70	1433	6747.85	<u>6771.50</u>	117.18	6751.83	6771.50	166.94
11-3	7677.30	0.89	7227.30	4474	7250.70	7256.10	2445	7713.59	<u>7725.40</u>	154.87	7713.53	7719.00	140.16
12-1	-	13006.01	57789.00	2540	56250.00	56769.50	5280	59063.30	<u>59215.10</u>	1614.41	59120.10	59166.00	1698.69
12-2	-	13000.01	58729.40	2870	56009.37	56371.50	6051	61105.70	<u>61489.70</u>	1262.25	61191.70	61314.40	1195.71
12-3	-	13000.02	58352.20	3940	56331.80	56489.60	4851	60661.30	<u>60841.80</u>	1556.58	60652.00	60673.30	2714.50
13-1	4093.20	90.56	4102.40	960	3941.60	4039.10	620	4171.62	<u>4194.80</u>	493.81	4164.50	4170.00	587.29
13-2	4047.50	242.54	4022.90	983	3950.20	4003.40	742	4130.71	<u>4139.90</u>	495.30	4134.60	4137.90	427.63
13-3	4582.90	1846.65	4339.60	957	4496.57	4563.90	633	4698.23	<u>4716.70</u>	510.59	4705.10	4711.00	690.32
14-1	26456.79	1.29	25663.14	2280	24095.60	25417.99	1500	26868.60	<u>26868.60</u>	2.07	26868.60	26868.60	0.97
14-2	25345.55	17.13	23259.91	4643	23480.47	24345.72	1136	25720.00	<u>25929.60</u>	142.03	25713.40	25900.70	53.66
14-3	30947.20	7.04	30539.18	2559	30329.40	30571.69	1066	31448.00	<u>31448.20</u>	79.59	31448.20	31448.20	188.75
16-1	-	13000.87	13408.10	2580	13233.20	13396.70	820	14024.50	<u>14086.70</u>	400.61	14021.70	14029.40	278.17
16-2	-	13000.08	16059.70	1539	15672.77	16059.70	654	16560.20	<u>16611.90</u>	426.58	16562.30	16579.70	521.21
16-3	-	13000.49	13646.50	1155	13260.37	13646.50	768	14182.90	<u>14225.00</u>	479.29	14198.30	14225.00	396.59
17-1	4096.90	219.13	2722.50	2060	1547.82	2805.10	5740	4156.82	<u>4157.20</u>	240.76	4157.00	4157.20	125.08
17-2	3837.70	243.42	2760.30	3306	2058.70	2395.80	5295	3887.88	<u>3901.30</u>	305.53	3898.23	3899.80	371.33
17-3	3573.80	173.32	2499.20	4642	2176.67	2251.80	4716	3764.83	<u>3767.70</u>	314.56	3765.87	3767.70	517.45
19-1	6824.12	22.40	6548.03	2700	6590.27	6644.54	1480	6863.00	<u>6869.53</u>	192.03	6868.22	6869.53	269.13
19-2	7920.00	185.06	7855.19	2128	7766.54	7842.99	1071	7743.71	<u>8026.54</u>	323.76	7803.27	8010.30	491.54
19-3	8082.10	38.10	8080.79	1602	7994.47	8068.88	1194	8152.37	<u>8155.05</u>	263.73	8152.11	8154.99	386.39
21-1	-	13000.02	21101.37	4240	20373.40	20639.31	2820	22165.40	<u>22197.70</u>	2016.20	22155.00	22173.10	2734.29
21-2	23159.36	8025.94	23905.12	4176	23530.46	23905.12	2629	25173.80	<u>25231.60</u>	1648.97	25187.20	25212.30	2969.05
21-3	22238.50	1422.14	21601.18	4984	22428.85	22673.42	2765	24517.10	<u>24574.10</u>	1905.71	24508.20	24524.70	3751.24
24-1	-	13000.00	49766.25	4960	48373.30	48901.01	3038	52253.30	<u>52652.70</u>	91.24	52205.90	52276.40	105.74
24-2	-	13000.00	53386.40	5321	52526.90	52927.40	2920	57377.60	<u>57689.70</u>	740.29	57216.10	57289.10	1012.81
24-3	-	13000.08	47810.15	5302	45906.30	45992.96	3302	52361.60	<u>52642.70</u>	76.74	52348.20	52445.30	77.11
#Bests	1	-	1	-	0	1	-	46	47	-	-	-	-
Avg.	10172.72	5184.91	20611.88	3612.71	19905.16	20493.83	2598.33	21791.55	21882.41	693.02	21788.25	21829.85	893.83