heuristic analysis

1. Base on the result table below.:

Problem 1 's optimal plan is **#7 greedy best first graph search**

Problem 2 's optimal plan is **#7 greedy best first graph search**

Problem 3 's optimal plan is **#3 depth first graph search**

2. Compare and contrast non-heuristic search result metrics: **#3 depth first graph search** is the best search methods.
3. Compare and contrast heuristic search result metrics: **#7 greedy best first graph search .**
4. The best heuristic is **#7 greedy best first graph search.** In problem1 and problem 2, the **#7 greedy best first graph search** better than all non-heuristic search. But in problem3 is not better than non-heuristic search "#3 depth first graph search". Because #7 greedy best first graph search almost create 8 times nodes of #3 depth first graph search, spend 7 times of time to finished the searching.

Number of search method		Search Methods	Air Cargo Problem 1				
			Plan Length	Expansions	Goal Test	New Nodes	Time elapsed
1	**non-heuristic search**	Breadth first search	6	43	56	180	0.1092
2		breadth first tree search	6	1458	1459	5960	1.144
3		depth first graph search	20	21	22	84	0.0160
4		depth limited search	50	101	271	414	0.1188
5		uniform cost search	6	55	57	224	0.0426
6	**heuristic search**	recursive best first search h 1	6	4229	4230	17023	3.1435
7		greedy best first graph search h 1	6	7	9	28	0.0061
8		A* search h 1	6	55	57	224	0.0429
9		A*search h ignore preconditions	6	55	57	224	0.0431
10		A* search h pg levelsum	6	45	47	188	0.9550

Problem 1

Number of search method		Search Methods	Air Cargo Problem 2				
			Plan Length	Expansions	Goal Test	New Nodes	Time elapsed
1	**non-heuristic search**	Breadth first search	9	3343	4609	30509	14.165
2		breadth first tree search					Too long
3		depth first graph search	619	624	625	5602	3.8188
4		depth limited search	50	222719	2053741	2054119	1087.97
5		uniform cost search	9	4853	4855	44041	13.324
6	**heuristic search**	recursive best first search h 1					Too long
7		greedy best first graph search h 1	21	988	1000	8982	2.71867
8		A* search h 1	9	4853	4855	44041	12.829
9		A*search h ignore preconditions	9	4853	4855	44041	14.9858
10		A* search h pg levelsum	9	1643	1645	15414	328.664

Problem 2

Number of search method		Search Methods	Air Cargo Problem 3				
			Plan Length	Expansions	Goal Test	New Nodes	Time elapsed
1	**non-heuristic search**	Breadth first search	12	14663	18098	129631	99.284
2		breadth first tree search					Too long
3		depth first graph search	392	408	409	3364	1.884
4		depth limited search					Too long
5		uniform cost search	12	18083	18085	158465	58.207
6	**heuristic search**	recursive best first search h 1					Too long
7		greedy best first graph search h 1	26	3377	3379	29735	10.185
8		A* search h 1	12	18083	18085	158465	55.129
9		A*search h ignore preconditions	12	18083	18085	158465	57.235
10		A* search h pg levelsum	12	2757	2759	26202	1234.71

Problem 3

✧ Note: Time elapsed ‘s unit is second or Not result: too long.