| search   | cost | frontier       | expanded       |       |          |                                 | Cost                  |  |  |  |  |
|----------|------|----------------|----------------|-------|----------|---------------------------------|-----------------------|--|--|--|--|
| bfs      | 379  | 49493          | 34257          |       |          | Breadth First Search            | 388                   |  |  |  |  |
|          | 431  | 97185          |                |       |          |                                 | 369.4                 |  |  |  |  |
| bfs      |      |                | 74128          |       |          | Uniform Cost Search             |                       |  |  |  |  |
| bfs      | 323  | 59681          | 42154          |       |          | Greedy Best First Search        |                       |  |  |  |  |
| bfs      | 416  | 97172          | 74118          |       |          | A* Search                       | 369.4                 |  |  |  |  |
| bfs      | 417  | 47302          | 32807          |       |          |                                 |                       |  |  |  |  |
| bfs      | 349  | 32351          | 21268          |       |          |                                 | Frontier Nodes        |  |  |  |  |
| bfs      | 376  | 86053          | 64453          |       |          | Breadth First Search            | 58223.8               |  |  |  |  |
| bfs      | 537  | 50110          | 35848          |       |          | Uniform Cost Search             | 22707.1               |  |  |  |  |
| bfs      | 299  | 20514          | 13542          |       |          | Greedy Best First Search        |                       |  |  |  |  |
| bfs      | 353  | 42377          | 28490          |       |          | A* Search                       | 267.4                 |  |  |  |  |
| ucost    | 379  | 18057          | 12137          |       |          |                                 |                       |  |  |  |  |
| ucost    | 431  | 50049          | 36536          |       |          |                                 | <b>Expanded Nodes</b> |  |  |  |  |
| ucost    | 323  | 10808          | 7155           |       |          | Breadth First Search            | 42106.5               |  |  |  |  |
| ucost    | 416  | 42930          | 30876          |       |          | Uniform Cost Search             | 15823.7               |  |  |  |  |
| ucost    | 417  | 32702          | 22747          |       |          | <b>Greedy Best First Search</b> | 182.5                 |  |  |  |  |
| ucost    | 349  | 16598          | 11334          |       |          | A* Search                       | 164.7                 |  |  |  |  |
| ucost    | 376  | 18612          | 12431          |       |          |                                 |                       |  |  |  |  |
| ucost    | 351  | 14955          | 10002          |       |          |                                 |                       |  |  |  |  |
| ucost    | 299  | 5176           | 3256           |       |          |                                 |                       |  |  |  |  |
| ucost    | 353  | 17184          | 11763          |       |          |                                 |                       |  |  |  |  |
| greedy   | 1083 | 524            | 319            |       |          |                                 |                       |  |  |  |  |
| greedy   | 815  | 665            | 393            |       |          |                                 |                       |  |  |  |  |
| greedy   | 615  | 120            | 64             |       |          |                                 |                       |  |  |  |  |
| greedy   | 832  | 665            | 393            |       |          |                                 |                       |  |  |  |  |
| greedy   | 737  | 142            | 78             |       |          |                                 |                       |  |  |  |  |
|          | 399  | 471            | 280            |       |          |                                 |                       |  |  |  |  |
| greedy   | 718  | 142            | 78             |       |          |                                 |                       |  |  |  |  |
| greedy   | 611  | 133            | 78             |       |          |                                 |                       |  |  |  |  |
| greedy   |      | 130            |                |       |          |                                 |                       |  |  |  |  |
| greedy   | 559  |                | 71             |       |          |                                 |                       |  |  |  |  |
| greedy   | 673  | 141            | 77             |       |          |                                 |                       |  |  |  |  |
| astar    | 379  | 228            | 138            |       |          |                                 |                       |  |  |  |  |
| astar    | 431  | 755            | 480            |       |          |                                 |                       |  |  |  |  |
| astar    | 323  | 115            | 69             |       |          |                                 |                       |  |  |  |  |
| astar    | 416  | 566            | 357            |       |          |                                 |                       |  |  |  |  |
| astar    | 417  | 184            | 110            |       |          |                                 |                       |  |  |  |  |
| astar    | 349  | 167            | 99             |       |          |                                 |                       |  |  |  |  |
| astar    | 376  | 138            | 85             |       |          |                                 |                       |  |  |  |  |
| astar    | 351  | 265            | 158            |       |          |                                 |                       |  |  |  |  |
| astar    | 299  | 89             | 52             |       |          |                                 |                       |  |  |  |  |
| astar    | 353  | 167            | 99             |       |          |                                 |                       |  |  |  |  |
|          |      |                |                |       |          |                                 |                       |  |  |  |  |
|          |      | astar nowei    | ght            |       |          | weight                          |                       |  |  |  |  |
| search   |      | Frontier Nodes | Expanded Nodes |       | frontier | expanded                        |                       |  |  |  |  |
| astar    | 20   | 505            | 322            |       | 228      | 138                             |                       |  |  |  |  |
| astar    | 22   | 1707           | 1081           | 431   | 755      | 480                             |                       |  |  |  |  |
| astar    | 20   | 413            | 252            | 323   | 115      | 69                              |                       |  |  |  |  |
| astar    | 22   | 1453           | 906            |       | 566      | 357                             |                       |  |  |  |  |
| astar    | 20   | 342            | 212            | 417   | 184      | 110                             |                       |  |  |  |  |
| astar    | 18   | 287            | 177            | 349   | 167      | 99                              |                       |  |  |  |  |
| astar    | 22   | 716            | 449            | 376   | 138      | 85                              |                       |  |  |  |  |
| astar    | 20   | 951            | 601            | 351   | 265      | 158                             |                       |  |  |  |  |
| astar    | 18   | 326            | 200            |       | 89       | 52                              |                       |  |  |  |  |
| astar    | 19   | 316            | 196            |       | 167      | 99                              |                       |  |  |  |  |
| Averages | 20.1 | 701.6          | 439.6          |       | 267.4    | 164.7                           |                       |  |  |  |  |
|          | 20.1 | ,01.0          | .55.0          | 303.4 | _0,.4    | 254.7                           |                       |  |  |  |  |
|          |      |                |                |       |          |                                 |                       |  |  |  |  |
|          |      |                |                |       |          |                                 |                       |  |  |  |  |
|          |      |                |                |       |          |                                 |                       |  |  |  |  |
|          |      |                |                |       |          |                                 |                       |  |  |  |  |
|          |      |                |                |       |          |                                 |                       |  |  |  |  |
|          |      |                |                |       |          |                                 |                       |  |  |  |  |
|          |      |                |                |       |          |                                 |                       |  |  |  |  |
|          |      |                |                |       |          |                                 |                       |  |  |  |  |
|          |      |                |                |       |          |                                 |                       |  |  |  |  |