

Enter desired solution depth (2-20): 2

Solving Puzzle 1 at Depth 2:

1 4 2

3 0 5

6 7 8

Solution Found using H1:

Step 1:

1 4 2

3 0 5

6 7 8

Step 2:

1 0 2

3 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 7

H1 Time: 0.0014 seconds

Solution Found using H2:

Step 1:

1 4 2

3 0 5

6 7 8

Step 2:

1 0 2

3 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 7

H2 Time: 0.0014 seconds

Solving Puzzle 2 at Depth 2:

1 2 0

3 4 5

6 7 8

Solution Found using H1:

Step 1:

1 2 0

3 4 5

6 7 8

Step 2:

1 0 2

3 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 5

H1 Time: 0.0006 seconds

Solution Found using H2:

Step 1:

1 2 0

3 4 5

6 7 8

Step 2:

1 0 2

3 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 5

H2 Time: 0.0012 seconds

Solving Puzzle 3 at Depth 2:

1 2 0

3 4 5

6 7 8

Solution Found using H1:

Step 1:

1 2 0

3 4 5

6 7 8

Step 2:

1 0 2

3 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 5

H1 Time: 0.0006 seconds

Solution Found using H2:

Step 1:

1 2 0

3 4 5

6 7 8

Step 2:

1 0 2

3 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 5

H2 Time: 0.0008 seconds

Solving Puzzle 4 at Depth 2:

3 1 2

4 0 5

6 7 8

Solution Found using H1:

Step 1:

3 1 2

4 0 5

6 7 8

Step 2:

3 1 2

0 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 7

H1 Time: 0.0006 seconds

Solution Found using H2:

Step 1:

3 1 2

4 0 5

6 7 8

Step 2:

3 1 2

0 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 7

H2 Time: 0.0009 seconds

Solving Puzzle 5 at Depth 2:

1 2 0

3 4 5

6 7 8

Solution Found using H1:

Step 1:

1 2 0

3 4 5

6 7 8

Step 2:

1 0 2

3 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 5

H1 Time: 0.0007 seconds

Solution Found using H2:

Step 1:

1 2 0

3 4 5

6 7 8

Step 2:

1 0 2

3 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 5

H2 Time: 0.0007 seconds

Solving Puzzle 6 at Depth 2:

1 4 2

3 0 5

6 7 8

Solution Found using H1:

Step 1:

1 4 2

3 0 5

6 7 8

Step 2:

1 0 2

3 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 7

H1 Time: 0.0007 seconds

Solution Found using H2:

Step 1:

1 4 2

3 0 5

6 7 8

Step 2:

1 0 2

3 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 7

H2 Time: 0.0009 seconds

Solving Puzzle 7 at Depth 2:

3 1 2

6 4 5

0 7 8

Solution Found using H1:

Step 1:

3 1 2

6 4 5

0 7 8

Step 2:

3 1 2

0 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 5

H1 Time: 0.0007 seconds

Solution Found using H2:

Step 1:

3 1 2

6 4 5

0 7 8

Step 2:

3 1 2

0 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 5

H2 Time: 0.0008 seconds

Solving Puzzle 8 at Depth 2:

3 1 2

6 4 5

0 7 8

Solution Found using H1:

Step 1:

3 1 2

6 4 5

0 7 8

Step 2:

3 1 2

0 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 5

H1 Time: 0.0006 seconds

Solution Found using H2:

Step 1:

3 1 2

6 4 5

0 7 8

Step 2:

3 1 2

0 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 5

H2 Time: 0.0008 seconds

Solving Puzzle 9 at Depth 2:

3 1 2

6 4 5

0 7 8

Solution Found using H1:

Step 1:

3 1 2

6 4 5

0 7 8

Step 2:

3 1 2

0 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 5

H1 Time: 0.0007 seconds

Solution Found using H2:

Step 1:

3 1 2

6 4 5

0 7 8

Step 2:

3 1 2

0 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 5

H2 Time: 0.0007 seconds

Solving Puzzle 10 at Depth 2:

1 2 0

3 4 5

6 7 8

Solution Found using H1:

Step 1:

1 2 0

3 4 5

6 7 8

Step 2:

1 0 2

3 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 5

H1 Time: 0.0005 seconds

Solution Found using H2:

Step 1:

1 2 0

3 4 5

6 7 8

Step 2:

1 0 2

3 4 5

6 7 8

Step 3:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 5

H2 Time: 0.0007 seconds

Process finished with exit code 0

Enter desired solution depth (2-20): 4

Solving Puzzle 1 at Depth 4:

3 1 2

6 0 5

7 4 8

Solution Found using H1:

Step 1:

3 1 2

6 0 5

7 4 8

Step 2:

3 1 2

6 4 5

7 0 8

Step 3:

3 1 2

6 4 5

0 7 8

Step 4:

3 1 2

0 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 10

H1 Time: 0.0006 seconds

Solution Found using H2:

Step 1:

3 1 2

6 0 5

7 4 8

Step 2:

3 1 2

6 4 5

7 0 8

Step 3:

3 1 2

6 4 5

0 7 8

Step 4:

3 1 2

0 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 10

H2 Time: 0.0006 seconds

Solving Puzzle 2 at Depth 4:

3 1 2

6 0 5

7 4 8

Solution Found using H1:

Step 1:

3 1 2

6 0 5

7 4 8

Step 2:

3 1 2

6 4 5

7 0 8

Step 3:

3 1 2

6 4 5

0 7 8

Step 4:

3 1 2

0 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 10

H1 Time: 0.0005 seconds

Solution Found using H2:

Step 1:

3 1 2

6 0 5

7 4 8

Step 2:

3 1 2

6 4 5

7 0 8

Step 3:

3 1 2

6 4 5

0 7 8

Step 4:

3 1 2

0 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 10

H2 Time: 0.0005 seconds

Solving Puzzle 3 at Depth 4:

1 2 5

3 0 4

6 7 8

Solution Found using H1:

Step 1:

1 2 5

3 0 4

6 7 8

Step 2:

1 2 5

3 4 0

6 7 8

Step 3:

1 2 0

3 4 5

6 7 8

Step 4:

1 0 2

3 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 10

H1 Time: 0.0003 seconds

Solution Found using H2:

Step 1:

1 2 5

3 0 4

6 7 8

Step 2:

1 2 5

3 4 0

6 7 8

Step 3:

1 2 0

3 4 5

6 7 8

Step 4:

1 0 2

3 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 10

H2 Time: 0.0004 seconds

Solving Puzzle 4 at Depth 4:

0 3 2

4 1 5

6 7 8

Solution Found using H1:

Step 1:

0 3 2

4 1 5

6 7 8

Step 2:

3 0 2

4 1 5

6 7 8

Step 3:

3 1 2

4 0 5

6 7 8

Step 4:

3 1 2

0 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 12

H1 Time: 0.0003 seconds

Solution Found using H2:

Step 1:

0 3 2

4 1 5

6 7 8

Step 2:

3 0 2
4 1 5
6 7 8

Step 3:

3 1 2
4 0 5
6 7 8

Step 4:

3 1 2
0 4 5
6 7 8

Step 5:

0 1 2
3 4 5
6 7 8

H2 Search Cost: 10

H2 Time: 0.0003 seconds

Solving Puzzle 5 at Depth 4:

3 1 2
4 7 5
0 6 8

Solution Found using H1:

Step 1:

3 1 2
4 7 5
0 6 8

Step 2:

3 1 2
4 7 5
6 0 8

Step 3:

3 1 2
4 0 5
6 7 8

Step 4:

3 1 2
0 4 5
6 7 8

Step 5:

0 1 2
3 4 5
6 7 8

H1 Search Cost: 10

H1 Time: 0.0003 seconds

Solution Found using H2:

Step 1:

3 1 2
4 7 5
0 6 8

Step 2:

3 1 2

4 7 5

6 0 8

Step 3:

3 1 2

4 0 5

6 7 8

Step 4:

3 1 2

0 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 10

H2 Time: 0.0003 seconds

Solving Puzzle 6 at Depth 4:

3 1 0

4 5 2

6 7 8

Solution Found using H1:

Step 1:

3 1 0

4 5 2

6 7 8

Step 2:

3 1 2

4 5 0

6 7 8

Step 3:

3 1 2

4 0 5

6 7 8

Step 4:

3 1 2

0 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 10

H1 Time: 0.0002 seconds

Solution Found using H2:

Step 1:

3 1 0

4 5 2

6 7 8

Step 2:

3 1 2

4 5 0

6 7 8

Step 3:

3 1 2

4 0 5

6 7 8

Step 4:

3 1 2

0 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 10

H2 Time: 0.0004 seconds

Solving Puzzle 7 at Depth 4:

1 2 5

3 4 8

6 7 0

Solution Found using H1:

Step 1:

1 2 5

3 4 8

6 7 0

Step 2:

1 2 5

3 4 0

6 7 8

Step 3:

1 2 0

3 4 5

6 7 8

Step 4:

1 0 2

3 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 8

H1 Time: 0.0002 seconds

Solution Found using H2:

Step 1:

1 2 5

3 4 8
6 7 0
Step 2:

1 2 5
3 4 0
6 7 8

Step 3:
1 2 0
3 4 5

6 7 8
Step 4:
1 0 2

3 4 5
6 7 8
Step 5:

0 1 2
3 4 5
6 7 8

H2 Search Cost: 8

H2 Time: 0.0003 seconds

Solving Puzzle 8 at Depth 4:

3 1 2
4 7 5
0 6 8

Solution Found using H1:

Step 1:
3 1 2
4 7 5
0 6 8

Step 2:
3 1 2
4 7 5
6 0 8

Step 3:
3 1 2
4 0 5
6 7 8

Step 4:
3 1 2
0 4 5
6 7 8

Step 5:
0 1 2
3 4 5
6 7 8

H1 Search Cost: 10

H1 Time: 0.0003 seconds

Solution Found using H2:

Step 1:

3 1 2
4 7 5
0 6 8

Step 2:

3 1 2
4 7 5
6 0 8

Step 3:

3 1 2
4 0 5
6 7 8

Step 4:

3 1 2
0 4 5
6 7 8

Step 5:

0 1 2
3 4 5
6 7 8

H2 Search Cost: 10

H2 Time: 0.0003 seconds

Solving Puzzle 9 at Depth 4:

3 1 2
6 4 5
7 8 0

Solution Found using H1:

Step 1:

3 1 2
6 4 5
7 8 0

Step 2:

3 1 2
6 4 5
7 0 8

Step 3:

3 1 2
6 4 5
0 7 8

Step 4:

3 1 2
0 4 5
6 7 8

Step 5:

0 1 2
3 4 5
6 7 8

H1 Search Cost: 8

H1 Time: 0.0002 seconds

Solution Found using H2:

Step 1:

3 1 2

6 4 5

7 8 0

Step 2:

3 1 2

6 4 5

7 0 8

Step 3:

3 1 2

6 4 5

0 7 8

Step 4:

3 1 2

0 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 8

H2 Time: 0.0003 seconds

Solving Puzzle 10 at Depth 4:

3 1 2

6 0 5

7 4 8

Solution Found using H1:

Step 1:

3 1 2

6 0 5

7 4 8

Step 2:

3 1 2

6 4 5

7 0 8

Step 3:

3 1 2

6 4 5

0 7 8

Step 4:

3 1 2

0 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 10

H1 Time: 0.0003 seconds

Solution Found using H2:

Step 1:

3 1 2

6 0 5

7 4 8

Step 2:

3 1 2

6 4 5

7 0 8

Step 3:

3 1 2

6 4 5

0 7 8

Step 4:

3 1 2

0 4 5

6 7 8

Step 5:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 10

H2 Time: 0.0003 seconds

Process finished with exit code 0

Enter desired solution depth (2-20): 6

Solving Puzzle 1 at Depth 6:

3 1 2

6 5 8

7 4 0

Solution Found using H1:

Step 1:

3 1 2

6 5 8

7 4 0

Step 2:

3 1 2

6 5 0

7 4 8

Step 3:

3 1 2

6 0 5

7 4 8

Step 4:

3 1 2

6 4 5

7 0 8

Step 5:

3 1 2

6 4 5

0 7 8

Step 6:

3 1 2

0 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 13

H1 Time: 0.0026 seconds

Solution Found using H2:

Step 1:

3 1 2

6 5 8

7 4 0

Step 2:

3 1 2

6 5 0

7 4 8

Step 3:

3 1 2

6 0 5

7 4 8

Step 4:

3 1 2

6 4 5

7 0 8

Step 5:

3 1 2

6 4 5

0 7 8

Step 6:

3 1 2

0 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 13

H2 Time: 0.0031 seconds

Solving Puzzle 2 at Depth 6:

0 1 5

3 2 4

6 7 8

Solution Found using H1:

Step 1:

0 1 5

3 2 4

6 7 8

Step 2:

1 0 5

3 2 4

6 7 8

Step 3:

1 2 5

3 0 4

6 7 8

Step 4:

1 2 5

3 4 0

6 7 8

Step 5:

1 2 0

3 4 5

6 7 8

Step 6:

1 0 2

3 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 22

H1 Time: 0.0029 seconds

Solution Found using H2:

Step 1:

0 1 5

3 2 4

6 7 8

Step 2:

1 0 5

3 2 4

6 7 8

Step 3:

1 2 5

3 0 4

6 7 8

Step 4:

1 2 5

3 4 0

6 7 8

Step 5:

1 2 0

3 4 5

6 7 8

Step 6:

1 0 2

3 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 15

H2 Time: 0.0025 seconds

Solving Puzzle 3 at Depth 6:

3 2 0

6 1 5

7 4 8

Solution Found using H1:

Step 1:

3 2 0

6 1 5

7 4 8

Step 2:

3 0 2

6 1 5

7 4 8

Step 3:

3 1 2

6 0 5

7 4 8

Step 4:

3 1 2

6 4 5

7 0 8

Step 5:

3 1 2

6 4 5

0 7 8

Step 6:

3 1 2

0 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 14

H1 Time: 0.0017 seconds

Solution Found using H2:

Step 1:

3 2 0

6 1 5

7 4 8

Step 2:

3 0 2

6 1 5

7 4 8

Step 3:

3 1 2

6 0 5

7 4 8

Step 4:

3 1 2

6 4 5

7 0 8

Step 5:

3 1 2

6 4 5

0 7 8

Step 6:

3 1 2

0 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 13

H2 Time: 0.0021 seconds

Solving Puzzle 4 at Depth 6:

3 1 2

6 0 4

7 8 5

Solution Found using H1:

Step 1:

3 1 2

6 0 4

7 8 5

Step 2:

3 1 2

6 4 0

7 8 5

Step 3:

3 1 2

6 4 5

7 8 0

Step 4:

3 1 2

6 4 5

7 0 8

Step 5:

3 1 2

6 4 5

0 7 8

Step 6:

3 1 2

0 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 13

H1 Time: 0.0016 seconds

Solution Found using H2:

Step 1:

3 1 2

6 0 4

7 8 5

Step 2:

3 1 2

6 4 0

7 8 5

Step 3:

3 1 2

6 4 5

7 8 0

Step 4:

3 1 2

6 4 5

7 0 8

Step 5:

3 1 2

6 4 5

0 7 8

Step 6:

3 1 2

0 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 13

H2 Time: 0.0021 seconds

Solving Puzzle 5 at Depth 6:

3 2 5

4 0 1

6 7 8

Solution Found using H1:

Step 1:

3 2 5
4 0 1
6 7 8

Step 2:

3 2 5
4 1 0
6 7 8

Step 3:

3 2 0
4 1 5
6 7 8

Step 4:

3 0 2
4 1 5
6 7 8

Step 5:

3 1 2
4 0 5
6 7 8

Step 6:

3 1 2
0 4 5
6 7 8

Step 7:

0 1 2
3 4 5
6 7 8

H1 Search Cost: 24

H1 Time: 0.0030 seconds

Solution Found using H2:

Step 1:

3 2 5
4 0 1
6 7 8

Step 2:

3 2 5
4 1 0
6 7 8

Step 3:

3 2 0
4 1 5
6 7 8

Step 4:

3 0 2
4 1 5
6 7 8

Step 5:

3 1 2
4 0 5
6 7 8

Step 6:

3 1 2

0 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 18

H2 Time: 0.0020 seconds

Solving Puzzle 6 at Depth 6:

1 2 5

6 3 4

0 7 8

Solution Found using H1:

Step 1:

1 2 5

6 3 4

0 7 8

Step 2:

1 2 5

0 3 4

6 7 8

Step 3:

1 2 5

3 0 4

6 7 8

Step 4:

1 2 5

3 4 0

6 7 8

Step 5:

1 2 0

3 4 5

6 7 8

Step 6:

1 0 2

3 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 14

H1 Time: 0.0012 seconds

Solution Found using H2:

Step 1:

1 2 5

6 3 4

0 7 8

Step 2:

1 2 5

0 3 4

6 7 8

Step 3:

1 2 5

3 0 4

6 7 8

Step 4:

1 2 5

3 4 0

6 7 8

Step 5:

1 2 0

3 4 5

6 7 8

Step 6:

1 0 2

3 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 13

H2 Time: 0.0013 seconds

Solving Puzzle 7 at Depth 6:

3 1 2

6 0 4

7 8 5

Solution Found using H1:

Step 1:

3 1 2

6 0 4

7 8 5

Step 2:

3 1 2

6 4 0

7 8 5

Step 3:

3 1 2

6 4 5

7 8 0

Step 4:

3 1 2

6 4 5

7 0 8

Step 5:

3 1 2

6 4 5

0 7 8

Step 6:

3 1 2

0 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 13

H1 Time: 0.0008 seconds

Solution Found using H2:

Step 1:

3 1 2

6 0 4

7 8 5

Step 2:

3 1 2

6 4 0

7 8 5

Step 3:

3 1 2

6 4 5

7 8 0

Step 4:

3 1 2

6 4 5

7 0 8

Step 5:

3 1 2

6 4 5

0 7 8

Step 6:

3 1 2

0 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 13

H2 Time: 0.0011 seconds

Solving Puzzle 8 at Depth 6:

3 2 5

4 1 8

6 7 0

Solution Found using H1:

Step 1:

3 2 5

4 1 8

6 7 0

Step 2:

3 2 5

4 1 0

6 7 8

Step 3:

3 2 0

4 1 5

6 7 8

Step 4:

3 0 2

4 1 5

6 7 8

Step 5:

3 1 2

4 0 5

6 7 8

Step 6:

3 1 2

0 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 14

H1 Time: 0.0009 seconds

Solution Found using H2:

Step 1:

3 2 5

4 1 8

6 7 0

Step 2:

3 2 5

4 1 0

6 7 8

Step 3:

3 2 0

4 1 5

6 7 8

Step 4:

3 0 2

4 1 5

6 7 8

Step 5:

3 1 2

4 0 5

6 7 8

Step 6:

3 1 2

0 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 13

H2 Time: 0.0009 seconds

Solving Puzzle 9 at Depth 6:

1 5 4

3 0 2

6 7 8

Solution Found using H1:

Step 1:

1 5 4

3 0 2

6 7 8

Step 2:

1 0 4

3 5 2

6 7 8

Step 3:

1 4 0

3 5 2

6 7 8

Step 4:

1 4 2

3 5 0

6 7 8

Step 5:

1 4 2

3 0 5

6 7 8

Step 6:

1 0 2

3 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 24

H1 Time: 0.0013 seconds

Solution Found using H2:

Step 1:

1 5 4

3 0 2

6 7 8

Step 2:

1 0 4
3 5 2
6 7 8

Step 3:

1 4 0
3 5 2
6 7 8

Step 4:

1 4 2
3 5 0
6 7 8

Step 5:

1 4 2
3 0 5
6 7 8

Step 6:

1 0 2
3 4 5
6 7 8

Step 7:

0 1 2
3 4 5
6 7 8

H2 Search Cost: 16

H2 Time: 0.0011 seconds

Solving Puzzle 10 at Depth 6:

3 1 2
4 5 8
0 6 7

Solution Found using H1:

Step 1:

3 1 2
4 5 8
0 6 7

Step 2:

3 1 2
4 5 8
6 0 7

Step 3:

3 1 2
4 5 8
6 7 0

Step 4:

3 1 2
4 5 0
6 7 8

Step 5:

3 1 2
4 0 5
6 7 8

Step 6:

3 1 2

0 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 13

H1 Time: 0.0007 seconds

Solution Found using H2:

Step 1:

3 1 2

4 5 8

0 6 7

Step 2:

3 1 2

4 5 8

6 0 7

Step 3:

3 1 2

4 5 8

6 7 0

Step 4:

3 1 2

4 5 0

6 7 8

Step 5:

3 1 2

4 0 5

6 7 8

Step 6:

3 1 2

0 4 5

6 7 8

Step 7:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 13

H2 Time: 0.0008 seconds

Process finished with exit code 0

Enter desired solution depth (2-20): 8

Solving Puzzle 1 at Depth 8:

4 3 2

6 1 5

7 8 0

Solution Found using H1:

Step 1:

4 3 2

6 1 5

7 8 0

Step 2:

4 3 2

6 1 5

7 0 8

Step 3:

4 3 2

6 1 5

0 7 8

Step 4:

4 3 2

0 1 5

6 7 8

Step 5:

0 3 2

4 1 5

6 7 8

Step 6:

3 0 2

4 1 5

6 7 8

Step 7:

3 1 2

4 0 5

6 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 33

H1 Time: 0.0054 seconds

Solution Found using H2:

Step 1:

4 3 2

6 1 5

7 8 0

Step 2:

4 3 2

6 1 5

7 0 8

Step 3:

4 3 2

6 1 5

0 7 8

Step 4:

4 3 2

0 1 5

6 7 8

Step 5:

0 3 2

4 1 5

6 7 8

Step 6:

3 0 2

4 1 5

6 7 8

Step 7:

3 1 2

4 0 5

6 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 16

H2 Time: 0.0032 seconds

Solving Puzzle 2 at Depth 8:

3 2 0

4 1 8

6 5 7

Solution Found using H1:

Step 1:

3 2 0

4 1 8

6 5 7

Step 2:

3 0 2

4 1 8

6 5 7

Step 3:

3 1 2

4 0 8

6 5 7

Step 4:

3 1 2

4 5 8

6 0 7

Step 5:

3 1 2

4 5 8

6 7 0

Step 6:

3 1 2

4 5 0

6 7 8

Step 7:

3 1 2

4 0 5

6 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 26

H1 Time: 0.0036 seconds

Solution Found using H2:

Step 1:

3 2 0

4 1 8

6 5 7

Step 2:

3 0 2

4 1 8

6 5 7

Step 3:

3 1 2

4 0 8

6 5 7

Step 4:

3 1 2

4 5 8

6 0 7

Step 5:

3 1 2

4 5 8

6 7 0

Step 6:

3 1 2

4 5 0

6 7 8

Step 7:

3 1 2

4 0 5

6 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 21

H2 Time: 0.0047 seconds

Solving Puzzle 3 at Depth 8:

0 1 2

3 6 4

7 8 5

Solution Found using H1:

Step 1:

0 1 2

3 6 4

7 8 5

Step 2:

3 1 2

0 6 4

7 8 5

Step 3:

3 1 2

6 0 4

7 8 5

Step 4:

3 1 2

6 4 0

7 8 5

Step 5:

3 1 2

6 4 5

7 8 0

Step 6:

3 1 2

6 4 5

7 0 8

Step 7:

3 1 2

6 4 5

0 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 28

H1 Time: 0.0039 seconds

Solution Found using H2:

Step 1:

0 1 2

3 6 4

7 8 5

Step 2:

3 1 2

0 6 4

7 8 5

Step 3:

3 1 2

6 0 4

7 8 5

Step 4:

3 1 2

6 4 0

7 8 5

Step 5:

3 1 2

6 4 5

7 8 0

Step 6:

3 1 2

6 4 5

7 0 8

Step 7:

3 1 2

6 4 5

0 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 18

H2 Time: 0.0033 seconds

Solving Puzzle 4 at Depth 8:

1 7 2

3 0 5

4 6 8

Solution Found using H1:

Step 1:

1 7 2

3 0 5

4 6 8

Step 2:

1 0 2

3 7 5

4 6 8

Step 3:

0 1 2

3 7 5

4 6 8

Step 4:

3 1 2

0 7 5

4 6 8

Step 5:

3 1 2

4 7 5

0 6 8

Step 6:

3 1 2

4 7 5

6 0 8

Step 7:

3 1 2

4 0 5

6 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 47

H1 Time: 0.0046 seconds

Solution Found using H2:

Step 1:

1 7 2

3 0 5

4 6 8

Step 2:

1 0 2

3 7 5

4 6 8

Step 3:

0 1 2

3 7 5

4 6 8

Step 4:

3 1 2

0 7 5

4 6 8

Step 5:

3 1 2

4 7 5

0 6 8

Step 6:

3 1 2

4 7 5

6 0 8

Step 7:

3 1 2

4 0 5

6 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 29

H2 Time: 0.0027 seconds

Solving Puzzle 5 at Depth 8:

3 2 5

4 1 8

0 6 7

Solution Found using H1:

Step 1:

3 2 5

4 1 8

0 6 7

Step 2:

3 2 5

4 1 8

6 0 7

Step 3:

3 2 5

4 1 8

6 7 0

Step 4:

3 2 5

4 1 0

6 7 8

Step 5:

3 2 0

4 1 5

6 7 8

Step 6:

3 0 2

4 1 5

6 7 8

Step 7:

3 1 2

4 0 5

6 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 17

H1 Time: 0.0012 seconds

Solution Found using H2:

Step 1:

3 2 5

4 1 8

0 6 7

Step 2:

3 2 5

4 1 8

6 0 7

Step 3:

3 2 5

4 1 8

6 7 0

Step 4:

3 2 5

4 1 0

6 7 8

Step 5:

3 2 0

4 1 5

6 7 8

Step 6:

3 0 2

4 1 5

6 7 8

Step 7:

3 1 2

4 0 5

6 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 16

H2 Time: 0.0012 seconds

Solving Puzzle 6 at Depth 8:

0 2 5

1 4 8

3 6 7

Solution Found using H1:

Step 1:

0 2 5

1 4 8

3 6 7

Step 2:

1 2 5

0 4 8

3 6 7

Step 3:

1 2 5

3 4 8

0 6 7

Step 4:

1 2 5

3 4 8

6 0 7

Step 5:

1 2 5

3 4 8

6 7 0

Step 6:

1 2 5

3 4 0

6 7 8

Step 7:

1 2 0

3 4 5

6 7 8

Step 8:

1 0 2

3 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 16

H1 Time: 0.0010 seconds

Solution Found using H2:

Step 1:

0 2 5

1 4 8

3 6 7

Step 2:

1 2 5

0 4 8

3 6 7

Step 3:

1 2 5

3 4 8

0 6 7

Step 4:

1 2 5

3 4 8

6 0 7

Step 5:

1 2 5

3 4 8

6 7 0

Step 6:

1 2 5

3 4 0

6 7 8

Step 7:

1 2 0

3 4 5

6 7 8

Step 8:

1 0 2

3 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 14

H2 Time: 0.0011 seconds

Solving Puzzle 7 at Depth 8:

3 7 1

4 0 2

6 8 5

Solution Found using H1:

Step 1:

3 7 1

4 0 2

6 8 5

Step 2:

3 0 1

4 7 2

6 8 5

Step 3:

3 1 0

4 7 2

6 8 5

Step 4:

3 1 2

4 7 0

6 8 5

Step 5:

3 1 2

4 7 5

6 8 0

Step 6:

3 1 2

4 7 5

6 0 8

Step 7:

3 1 2

4 0 5

6 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 37

H1 Time: 0.0019 seconds

Solution Found using H2:

Step 1:

3 7 1

4 0 2

6 8 5

Step 2:

3 0 1

4 7 2

6 8 5

Step 3:

3 1 0

4 7 2

6 8 5

Step 4:

3 1 2

4 7 0

6 8 5

Step 5:

3 1 2

4 7 5

6 8 0

Step 6:

3 1 2

4 7 5

6 0 8

Step 7:

3 1 2

4 0 5

6 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 21

H2 Time: 0.0013 seconds

Solving Puzzle 8 at Depth 8:

4 3 2

1 5 8

6 7 0

Solution Found using H1:

Step 1:

4 3 2

1 5 8

6 7 0

Step 2:

4 3 2

1 5 0

6 7 8

Step 3:

4 3 2

1 0 5

6 7 8

Step 4:

4 0 2

1 3 5

6 7 8

Step 5:

0 4 2

1 3 5

6 7 8

Step 6:

1 4 2

0 3 5

6 7 8

Step 7:

1 4 2

3 0 5

6 7 8

Step 8:

1 0 2

3 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 39

H1 Time: 0.0017 seconds

Solution Found using H2:

Step 1:

4 3 2

1 5 8

6 7 0

Step 2:

4 3 2

1 5 0

6 7 8

Step 3:

4 3 2

1 0 5

6 7 8

Step 4:

4 0 2

1 3 5

6 7 8

Step 5:

0 4 2

1 3 5

6 7 8

Step 6:

1 4 2

0 3 5

6 7 8

Step 7:

1 4 2

3 0 5

6 7 8

Step 8:

1 0 2

3 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 28

H2 Time: 0.0018 seconds

Solving Puzzle 9 at Depth 8:

4 7 2

1 0 5

3 6 8

Solution Found using H1:

Step 1:

4 7 2

1 0 5

3 6 8

Step 2:

4 0 2

1 7 5

3 6 8

Step 3:

0 4 2

1 7 5

3 6 8

Step 4:

1 4 2

0 7 5

3 6 8

Step 5:

1 4 2

3 7 5

0 6 8

Step 6:

1 4 2

3 7 5

6 0 8

Step 7:

1 4 2

3 0 5

6 7 8

Step 8:

1 0 2

3 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 50

H1 Time: 0.0021 seconds

Solution Found using H2:

Step 1:

4 7 2

1 0 5

3 6 8

Step 2:

4 0 2

1 7 5
3 6 8
Step 3:
0 4 2
1 7 5
3 6 8

Step 4:
1 4 2
0 7 5
3 6 8

Step 5:
1 4 2
3 7 5
0 6 8

Step 6:
1 4 2
3 7 5
6 0 8

Step 7:
1 4 2
3 0 5
6 7 8

Step 8:
1 0 2
3 4 5
6 7 8

Step 9:
0 1 2
3 4 5
6 7 8

H2 Search Cost: 24

H2 Time: 0.0011 seconds

Solving Puzzle 10 at Depth 8:

1 2 5
7 0 4
3 6 8

Solution Found using H1:

Step 1:
1 2 5
7 0 4
3 6 8

Step 2:
1 2 5
0 7 4
3 6 8

Step 3:
1 2 5
3 7 4
0 6 8

Step 4:

1 2 5
3 7 4
6 0 8

Step 5:

1 2 5
3 0 4
6 7 8

Step 6:

1 2 5
3 4 0
6 7 8

Step 7:

1 2 0
3 4 5
6 7 8

Step 8:

1 0 2
3 4 5
6 7 8

Step 9:

0 1 2
3 4 5
6 7 8

H1 Search Cost: 35

H1 Time: 0.0012 seconds

Solution Found using H2:

Step 1:

1 2 5
7 0 4
3 6 8

Step 2:

1 2 5
0 7 4
3 6 8

Step 3:

1 2 5
3 7 4
0 6 8

Step 4:

1 2 5
3 7 4
6 0 8

Step 5:

1 2 5
3 0 4
6 7 8

Step 6:

1 2 5
3 4 0
6 7 8

Step 7:

1 2 0

3 4 5

6 7 8

Step 8:

1 0 2

3 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 24

H2 Time: 0.0011 seconds

Process finished with exit code 0

Enter desired solution depth (2-20): 10

Solving Puzzle 1 at Depth 10:

3 1 2

5 6 8

4 7 0

Solution Found using H1:

Step 1:

3 1 2

5 6 8

4 7 0

Step 2:

3 1 2

5 6 8

4 0 7

Step 3:

3 1 2

5 0 8

4 6 7

Step 4:

3 1 2

0 5 8

4 6 7

Step 5:

3 1 2

4 5 8

0 6 7

Step 6:

3 1 2

4 5 8

6 0 7

Step 7:

3 1 2

4 5 8

6 7 0

Step 8:

3 1 2

4 5 0

6 7 8

Step 9:

3 1 2

4 0 5

6 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 76

H1 Time: 0.0138 seconds

Solution Found using H2:

Step 1:

3 1 2

5 6 8

4 7 0

Step 2:

3 1 2

5 6 8

4 0 7

Step 3:

3 1 2

5 0 8

4 6 7

Step 4:

3 1 2

0 5 8

4 6 7

Step 5:

3 1 2

4 5 8

0 6 7

Step 6:

3 1 2

4 5 8

6 0 7

Step 7:

3 1 2

4 5 8

6 7 0

Step 8:

3 1 2

4 5 0

6 7 8

Step 9:

3 1 2

4 0 5

6 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 33

H2 Time: 0.0060 seconds

Solving Puzzle 2 at Depth 10:

3 5 1

4 2 8

6 7 0

Solution Found using H1:

Step 1:

3 5 1

4 2 8

6 7 0

Step 2:

3 5 1

4 2 0

6 7 8

Step 3:

3 5 1

4 0 2

6 7 8

Step 4:

3 0 1

4 5 2

6 7 8

Step 5:

3 1 0

4 5 2

6 7 8

Step 6:

3 1 2

4 5 0

6 7 8

Step 7:

3 1 2

4 0 5

6 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 33

H1 Time: 0.0032 seconds

Solution Found using H2:

Step 1:

3 5 1

4 2 8

6 7 0

Step 2:

3 5 1

4 2 0

6 7 8

Step 3:

3 5 1

4 0 2

6 7 8

Step 4:

3 0 1

4 5 2

6 7 8

Step 5:

3 1 0

4 5 2

6 7 8

Step 6:

3 1 2

4 5 0

6 7 8

Step 7:

3 1 2

4 0 5

6 7 8

Step 8:

3 1 2

0 4 5

6 7 8

Step 9:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 21

H2 Time: 0.0019 seconds

Solving Puzzle 3 at Depth 10:

3 1 5

2 4 8

6 7 0

Solution Found using H1:

Step 1:

3 1 5

2 4 8

6 7 0

Step 2:

3 1 5

2 4 0

6 7 8

Step 3:

3 1 5

2 0 4

6 7 8

Step 4:

3 1 5

0 2 4

6 7 8

Step 5:

0 1 5

3 2 4

6 7 8

Step 6:

1 0 5

3 2 4

6 7 8

Step 7:

1 2 5

3 0 4

6 7 8

Step 8:

1 2 5

3 4 0

6 7 8

Step 9:

1 2 0

3 4 5

6 7 8

Step 10:

1 0 2

3 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 77

H1 Time: 0.0055 seconds

Solution Found using H2:

Step 1:

3 1 5
2 4 8
6 7 0

Step 2:

3 1 5
2 4 0
6 7 8

Step 3:

3 1 5
2 0 4
6 7 8

Step 4:

3 1 5
0 2 4
6 7 8

Step 5:

0 1 5
3 2 4
6 7 8

Step 6:

1 0 5
3 2 4
6 7 8

Step 7:

1 2 5
3 0 4
6 7 8

Step 8:

1 2 5
3 4 0
6 7 8

Step 9:

1 2 0
3 4 5
6 7 8

Step 10:

1 0 2
3 4 5
6 7 8

Step 11:

0 1 2
3 4 5
6 7 8

H2 Search Cost: 47

H2 Time: 0.0033 seconds

Solving Puzzle 4 at Depth 10:

0 1 2
3 8 7
4 6 5

Solution Found using H1:

Step 1:

0 1 2

3 8 7

4 6 5

Step 2:

3 1 2

0 8 7

4 6 5

Step 3:

3 1 2

4 8 7

0 6 5

Step 4:

3 1 2

4 8 7

6 0 5

Step 5:

3 1 2

4 0 7

6 8 5

Step 6:

3 1 2

4 7 0

6 8 5

Step 7:

3 1 2

4 7 5

6 8 0

Step 8:

3 1 2

4 7 5

6 0 8

Step 9:

3 1 2

4 0 5

6 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 69

H1 Time: 0.0033 seconds

Solution Found using H2:

Step 1:

0 1 2

3 8 7

4 6 5

Step 2:

3 1 2

0 8 7

4 6 5

Step 3:

3 1 2

4 8 7

0 6 5

Step 4:

3 1 2

4 8 7

6 0 5

Step 5:

3 1 2

4 0 7

6 8 5

Step 6:

3 1 2

4 7 0

6 8 5

Step 7:

3 1 2

4 7 5

6 8 0

Step 8:

3 1 2

4 7 5

6 0 8

Step 9:

3 1 2

4 0 5

6 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 26

H2 Time: 0.0014 seconds

Solving Puzzle 5 at Depth 10:

4 5 3

1 0 2

6 7 8

Solution Found using H1:

Step 1:

4 5 3

1 0 2

6 7 8

Step 2:

4 0 3

1 5 2

6 7 8

Step 3:

4 3 0

1 5 2

6 7 8

Step 4:

4 3 2

1 5 0

6 7 8

Step 5:

4 3 2

1 0 5

6 7 8

Step 6:

4 0 2

1 3 5

6 7 8

Step 7:

0 4 2

1 3 5

6 7 8

Step 8:

1 4 2

0 3 5

6 7 8

Step 9:

1 4 2

3 0 5

6 7 8

Step 10:

1 0 2

3 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 104

H1 Time: 0.0044 seconds

Solution Found using H2:

Step 1:

4 5 3

1 0 2

6 7 8

Step 2:

4 0 3

1 5 2

6 7 8

Step 3:

4 3 0

1 5 2

6 7 8

Step 4:

4 3 2

1 5 0

6 7 8

Step 5:

4 3 2

1 0 5

6 7 8

Step 6:

4 0 2

1 3 5

6 7 8

Step 7:

0 4 2

1 3 5

6 7 8

Step 8:

1 4 2

0 3 5

6 7 8

Step 9:

1 4 2

3 0 5

6 7 8

Step 10:

1 0 2

3 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 39

H2 Time: 0.0018 seconds

Solving Puzzle 6 at Depth 10:

1 4 2

5 8 7

3 6 0

Solution Found using H1:

Step 1:

1 4 2

5 8 7

3 6 0

Step 2:

1 4 2

5 8 0

3 6 7

Step 3:

1 4 2

5 0 8

3 6 7

Step 4:

1 4 2

0 5 8

3 6 7

Step 5:

1 4 2

3 5 8

0 6 7

Step 6:

1 4 2

3 5 8

6 0 7

Step 7:

1 4 2

3 5 8

6 7 0

Step 8:

1 4 2

3 5 0

6 7 8

Step 9:

1 4 2

3 0 5

6 7 8

Step 10:

1 0 2

3 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 60

H1 Time: 0.0021 seconds

Solution Found using H2:

Step 1:

1 4 2

5 8 7

3 6 0

Step 2:

1 4 2

5 8 0

3 6 7

Step 3:

1 4 2

5 0 8

3 6 7

Step 4:

1 4 2

0 5 8

3 6 7

Step 5:

1 4 2

3 5 8

0 6 7

Step 6:

1 4 2

3 5 8

6 0 7

Step 7:

1 4 2

3 5 8

6 7 0

Step 8:

1 4 2

3 5 0

6 7 8

Step 9:

1 4 2

3 0 5

6 7 8

Step 10:

1 0 2

3 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 24

H2 Time: 0.0010 seconds

Solving Puzzle 7 at Depth 10:

2 5 0

1 4 8

3 6 7

Solution Found using H1:

Step 1:

2 5 0

1 4 8

3 6 7

Step 2:

2 0 5

1 4 8

3 6 7

Step 3:

0 2 5

1 4 8

3 6 7

Step 4:

1 2 5

0 4 8

3 6 7

Step 5:

1 2 5

3 4 8

0 6 7

Step 6:

1 2 5

3 4 8

6 0 7

Step 7:

1 2 5

3 4 8

6 7 0

Step 8:

1 2 5

3 4 0

6 7 8

Step 9:

1 2 0

3 4 5

6 7 8

Step 10:

1 0 2

3 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 28

H1 Time: 0.0009 seconds

Solution Found using H2:

Step 1:

2 5 0

1 4 8

3 6 7

Step 2:

2 0 5

1 4 8

3 6 7

Step 3:

0 2 5

1 4 8

3 6 7

Step 4:

1 2 5
0 4 8
3 6 7

Step 5:

1 2 5
3 4 8
0 6 7

Step 6:

1 2 5
3 4 8
6 0 7

Step 7:

1 2 5
3 4 8
6 7 0

Step 8:

1 2 5
3 4 0
6 7 8

Step 9:

1 2 0
3 4 5
6 7 8

Step 10:

1 0 2
3 4 5
6 7 8

Step 11:

0 1 2
3 4 5
6 7 8

H2 Search Cost: 17

H2 Time: 0.0008 seconds

Solving Puzzle 8 at Depth 10:

1 2 5
3 0 6
7 4 8

Solution Found using H1:

Step 1:

1 2 5
3 0 6
7 4 8

Step 2:

1 2 5
3 6 0
7 4 8

Step 3:

1 2 0
3 6 5
7 4 8

Step 4:

1 0 2

3 6 5

7 4 8

Step 5:

0 1 2

3 6 5

7 4 8

Step 6:

3 1 2

0 6 5

7 4 8

Step 7:

3 1 2

6 0 5

7 4 8

Step 8:

3 1 2

6 4 5

7 0 8

Step 9:

3 1 2

6 4 5

0 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 88

H1 Time: 0.0027 seconds

Solution Found using H2:

Step 1:

1 2 5

3 0 6

7 4 8

Step 2:

1 2 5

3 6 0

7 4 8

Step 3:

1 2 0

3 6 5

7 4 8

Step 4:

1 0 2

3 6 5

7 4 8

Step 5:

0 1 2

3 6 5

7 4 8

Step 6:

3 1 2

0 6 5

7 4 8

Step 7:

3 1 2

6 0 5

7 4 8

Step 8:

3 1 2

6 4 5

7 0 8

Step 9:

3 1 2

6 4 5

0 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 45

H2 Time: 0.0018 seconds

Solving Puzzle 9 at Depth 10:

6 3 1

7 4 2

0 8 5

Solution Found using H1:

Step 1:

6 3 1

7 4 2

0 8 5

Step 2:

6 3 1

0 4 2

7 8 5

Step 3:

0 3 1

6 4 2

7 8 5

Step 4:

3 0 1

6 4 2

7 8 5

Step 5:

3 1 0

6 4 2

7 8 5

Step 6:

3 1 2

6 4 0

7 8 5

Step 7:

3 1 2

6 4 5

7 8 0

Step 8:

3 1 2

6 4 5

7 0 8

Step 9:

3 1 2

6 4 5

0 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 28

H1 Time: 0.0008 seconds

Solution Found using H2:

Step 1:

6 3 1

7 4 2

0 8 5

Step 2:

6 3 1

0 4 2

7 8 5

Step 3:

0 3 1

6 4 2

7 8 5

Step 4:

3 0 1

6 4 2

7 8 5

Step 5:

3 1 0

6 4 2

7 8 5

Step 6:

3 1 2

6 4 0

7 8 5

Step 7:

3 1 2

6 4 5

7 8 0

Step 8:

3 1 2

6 4 5

7 0 8

Step 9:

3 1 2

6 4 5

0 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 17

H2 Time: 0.0007 seconds

Solving Puzzle 10 at Depth 10:

3 2 5

1 0 8

4 6 7

Solution Found using H1:

Step 1:

3 2 5

1 0 8

4 6 7

Step 2:

3 2 5

0 1 8

4 6 7

Step 3:

3 2 5

4 1 8

0 6 7

Step 4:

3 2 5

4 1 8

6 0 7

Step 5:

3 2 5

4 1 8

6 7 0

Step 6:

3 2 5

4 1 0

6 7 8

Step 7:

3 2 0

4 1 5

6 7 8

Step 8:

3 0 2

4 1 5

6 7 8

Step 9:

3 1 2

4 0 5

6 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 58

H1 Time: 0.0021 seconds

Solution Found using H2:

Step 1:

3 2 5

1 0 8

4 6 7

Step 2:

3 2 5

0 1 8

4 6 7

Step 3:

3 2 5

4 1 8

0 6 7

Step 4:

3 2 5

4 1 8

6 0 7

Step 5:

3 2 5

4 1 8

6 7 0

Step 6:

3 2 5

4 1 0
6 7 8
Step 7:

3 2 0
4 1 5
6 7 8

Step 8:
3 0 2
4 1 5

6 7 8
Step 9:
3 1 2

4 0 5
6 7 8
Step 10:

3 1 2
0 4 5
6 7 8

Step 11:
0 1 2
3 4 5

6 7 8
H2 Search Cost: 22
H2 Time: 0.0009 seconds

Process finished with exit code 0

Enter desired solution depth (2-20): 12

Solving Puzzle 1 at Depth 12:

1 5 0
6 2 8
4 3 7

Solution Found using H1:

Step 1:
1 5 0
6 2 8
4 3 7

Step 2:
1 0 5
6 2 8
4 3 7

Step 3:
1 2 5
6 0 8
4 3 7

Step 4:
1 2 5
6 3 8
4 0 7

Step 5:

1 2 5

6 3 8

0 4 7

Step 6:

1 2 5

0 3 8

6 4 7

Step 7:

1 2 5

3 0 8

6 4 7

Step 8:

1 2 5

3 4 8

6 0 7

Step 9:

1 2 5

3 4 8

6 7 0

Step 10:

1 2 5

3 4 0

6 7 8

Step 11:

1 2 0

3 4 5

6 7 8

Step 12:

1 0 2

3 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 122

H1 Time: 0.0269 seconds

Solution Found using H2:

Step 1:

1 5 0

6 2 8

4 3 7

Step 2:

1 0 5

6 2 8

4 3 7

Step 3:

1 2 5

6 0 8

4 3 7

Step 4:

1 2 5

6 3 8

4 0 7

Step 5:

1 2 5

6 3 8

0 4 7

Step 6:

1 2 5

0 3 8

6 4 7

Step 7:

1 2 5

3 0 8

6 4 7

Step 8:

1 2 5

3 4 8

6 0 7

Step 9:

1 2 5

3 4 8

6 7 0

Step 10:

1 2 5

3 4 0

6 7 8

Step 11:

1 2 0

3 4 5

6 7 8

Step 12:

1 0 2

3 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 32

H2 Time: 0.0032 seconds

Solving Puzzle 2 at Depth 12:

3 1 4

7 6 2

0 5 8

Solution Found using H1:

Step 1:

3 1 4

7 6 2

0 5 8

Step 2:

3 1 4

0 6 2

7 5 8

Step 3:

3 1 4

6 0 2

7 5 8

Step 4:

3 1 4

6 5 2

7 0 8

Step 5:

3 1 4

6 5 2

0 7 8

Step 6:

3 1 4

0 5 2

6 7 8

Step 7:

0 1 4

3 5 2

6 7 8

Step 8:

1 0 4

3 5 2

6 7 8

Step 9:

1 4 0

3 5 2

6 7 8

Step 10:

1 4 2

3 5 0

6 7 8

Step 11:

1 4 2

3 0 5

6 7 8

Step 12:

1 0 2

3 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 152

H1 Time: 0.0090 seconds

Solution Found using H2:

Step 1:

3 1 4

7 6 2

0 5 8

Step 2:

3 1 4

0 6 2

7 5 8

Step 3:

3 1 4

6 0 2

7 5 8

Step 4:

3 1 4

6 5 2

7 0 8

Step 5:

3 1 4

6 5 2

0 7 8

Step 6:

3 1 4

0 5 2

6 7 8

Step 7:

0 1 4

3 5 2

6 7 8

Step 8:

1 0 4

3 5 2

6 7 8

Step 9:

1 4 0

3 5 2

6 7 8

Step 10:

1 4 2

3 5 0

6 7 8

Step 11:

1 4 2

3 0 5

6 7 8

Step 12:

1 0 2

3 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 52

H2 Time: 0.0032 seconds

Solving Puzzle 3 at Depth 12:

4 2 5

6 1 3

7 8 0

Solution Found using H1:

Step 1:

4 2 5

6 1 3

7 8 0

Step 2:

4 2 5

6 1 3

7 0 8

Step 3:

4 2 5

6 1 3

0 7 8

Step 4:

4 2 5

0 1 3

6 7 8

Step 5:

4 2 5

1 0 3

6 7 8

Step 6:

4 2 5

1 3 0

6 7 8

Step 7:

4 2 0

1 3 5

6 7 8

Step 8:

4 0 2

1 3 5

6 7 8

Step 9:

0 4 2

1 3 5

6 7 8

Step 10:

1 4 2

0 3 5

6 7 8

Step 11:

1 4 2

3 0 5

6 7 8

Step 12:

1 0 2

3 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 159

H1 Time: 0.0066 seconds

Solution Found using H2:

Step 1:

4 2 5

6 1 3

7 8 0

Step 2:

4 2 5

6 1 3

7 0 8

Step 3:

4 2 5

6 1 3

0 7 8

Step 4:

4 2 5

0 1 3

6 7 8

Step 5:

4 2 5

1 0 3

6 7 8

Step 6:

4 2 5

1 3 0

6 7 8

Step 7:

4 2 0

1 3 5

6 7 8

Step 8:

4 0 2

1 3 5

6 7 8

Step 9:

0 4 2

1 3 5

6 7 8

Step 10:

1 4 2

0 3 5

6 7 8

Step 11:

1 4 2

3 0 5

6 7 8

Step 12:

1 0 2

3 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 53

H2 Time: 0.0043 seconds

Solving Puzzle 4 at Depth 12:

6 3 1

7 4 2

8 5 0

Solution Found using H1:

Step 1:

6 3 1

7 4 2

8 5 0

Step 2:

6 3 1

7 4 2

8 0 5

Step 3:

6 3 1

7 4 2

0 8 5

Step 4:

6 3 1

0 4 2

7 8 5

Step 5:

0 3 1

6 4 2

7 8 5

Step 6:

3 0 1

6 4 2

7 8 5

Step 7:

3 1 0

6 4 2

7 8 5

Step 8:

3 1 2

6 4 0

7 8 5

Step 9:

3 1 2

6 4 5

7 8 0

Step 10:

3 1 2

6 4 5

7 0 8

Step 11:

3 1 2

6 4 5

0 7 8

Step 12:

3 1 2

0 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 78

H1 Time: 0.0025 seconds

Solution Found using H2:

Step 1:

6 3 1

7 4 2

8 5 0

Step 2:

6 3 1

7 4 2

8 0 5

Step 3:

6 3 1

7 4 2

0 8 5

Step 4:

6 3 1

0 4 2

7 8 5

Step 5:

0 3 1

6 4 2

7 8 5

Step 6:

3 0 1

6 4 2

7 8 5

Step 7:

3 1 0

6 4 2

7 8 5

Step 8:

3 1 2

6 4 0

7 8 5

Step 9:

3 1 2

6 4 5

7 8 0

Step 10:

3 1 2

6 4 5

7 0 8

Step 11:

3 1 2

6 4 5

0 7 8

Step 12:

3 1 2

0 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 20

H2 Time: 0.0008 seconds

Solving Puzzle 5 at Depth 12:

5 1 2

4 0 8

3 6 7

Solution Found using H1:

Step 1:

5 1 2

4 0 8

3 6 7

Step 2:

5 1 2

0 4 8

3 6 7

Step 3:

0 1 2

5 4 8

3 6 7

Step 4:

1 0 2

5 4 8

3 6 7

Step 5:

1 4 2

5 0 8

3 6 7

Step 6:

1 4 2

0 5 8

3 6 7

Step 7:

1 4 2

3 5 8

0 6 7

Step 8:

1 4 2

3 5 8

6 0 7

Step 9:

1 4 2

3 5 8

6 7 0

Step 10:

1 4 2

3 5 0

6 7 8

Step 11:

1 4 2

3 0 5

6 7 8

Step 12:

1 0 2

3 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 243

H1 Time: 0.0085 seconds

Solution Found using H2:

Step 1:

5 1 2

4 0 8

3 6 7

Step 2:

5 1 2

0 4 8

3 6 7

Step 3:

0 1 2

5 4 8

3 6 7

Step 4:

1 0 2

5 4 8

3 6 7

Step 5:

1 4 2

5 0 8

3 6 7

Step 6:

1 4 2

0 5 8

3 6 7

Step 7:

1 4 2

3 5 8

0 6 7

Step 8:

1 4 2

3 5 8

6 0 7

Step 9:

1 4 2

3 5 8

6 7 0

Step 10:

1 4 2

3 5 0

6 7 8

Step 11:

1 4 2

3 0 5

6 7 8

Step 12:

1 0 2

3 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 89

H2 Time: 0.0037 seconds

Solving Puzzle 6 at Depth 12:

1 6 2

7 3 5

4 8 0

Solution Found using H1:

Step 1:

1 6 2

7 3 5

4 8 0

Step 2:

1 6 2

7 3 5

4 0 8

Step 3:

1 6 2

7 3 5

0 4 8

Step 4:

1 6 2

0 3 5

7 4 8

Step 5:

1 6 2

3 0 5

7 4 8

Step 6:

1 0 2

3 6 5

7 4 8

Step 7:

0 1 2

3 6 5

7 4 8

Step 8:

3 1 2

0 6 5

7 4 8

Step 9:

3 1 2

6 0 5

7 4 8

Step 10:

3 1 2

6 4 5

7 0 8

Step 11:

3 1 2

6 4 5

0 7 8

Step 12:

3 1 2

0 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 180

H1 Time: 0.0056 seconds

Solution Found using H2:

Step 1:

1 6 2

7 3 5

4 8 0

Step 2:

1 6 2

7 3 5

4 0 8

Step 3:

1 6 2

7 3 5

0 4 8

Step 4:

1 6 2

0 3 5

7 4 8

Step 5:

1 6 2

3 0 5

7 4 8

Step 6:

1 0 2

3 6 5

7 4 8

Step 7:

0 1 2

3 6 5

7 4 8

Step 8:

3 1 2

0 6 5

7 4 8

Step 9:

3 1 2

6 0 5

7 4 8

Step 10:

3 1 2

6 4 5

7 0 8

Step 11:

3 1 2

6 4 5

0 7 8

Step 12:

3 1 2

0 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 53

H2 Time: 0.0022 seconds

Solving Puzzle 7 at Depth 12:

4 5 0

1 2 3

6 7 8

Solution Found using H1:

Step 1:

4 5 0

1 2 3

6 7 8

Step 2:

4 0 5

1 2 3

6 7 8

Step 3:

4 2 5

1 0 3

6 7 8

Step 4:

4 2 5

1 3 0

6 7 8

Step 5:

4 2 0

1 3 5

6 7 8

Step 6:

4 0 2

1 3 5

6 7 8

Step 7:

0 4 2

1 3 5

6 7 8

Step 8:

1 4 2

0 3 5

6 7 8

Step 9:

1 4 2

3 0 5

6 7 8

Step 10:

1 0 2

3 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 82

H1 Time: 0.0025 seconds

Solution Found using H2:

Step 1:

4 5 0

1 2 3

6 7 8

Step 2:

4 0 5

1 2 3

6 7 8

Step 3:

4 2 5

1 0 3

6 7 8

Step 4:

4 2 5

1 3 0

6 7 8

Step 5:

4 2 0

1 3 5

6 7 8

Step 6:

4 0 2

1 3 5

6 7 8

Step 7:

0 4 2

1 3 5

6 7 8

Step 8:

1 4 2

0 3 5

6 7 8

Step 9:

1 4 2

3 0 5

6 7 8

Step 10:

1 0 2

3 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 27

H2 Time: 0.0011 seconds

Solving Puzzle 8 at Depth 12:

3 1 2

8 0 7

4 6 5

Solution Found using H1:

Step 1:

3 1 2

8 0 7

4 6 5

Step 2:

3 1 2

0 8 7

4 6 5

Step 3:

3 1 2

4 8 7

0 6 5

Step 4:

3 1 2

4 8 7

6 0 5

Step 5:

3 1 2

4 0 7

6 8 5

Step 6:

3 1 2

4 7 0

6 8 5

Step 7:

3 1 2

4 7 5

6 8 0

Step 8:

3 1 2

4 7 5

6 0 8

Step 9:

3 1 2

4 0 5

6 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 80

H1 Time: 0.0023 seconds

Solution Found using H2:

Step 1:

3 1 2

8 0 7

4 6 5

Step 2:

3 1 2

0 8 7

4 6 5

Step 3:

3 1 2

4 8 7

0 6 5

Step 4:

3 1 2

4 8 7

6 0 5

Step 5:

3 1 2

4 0 7

6 8 5

Step 6:

3 1 2

4 7 0

6 8 5

Step 7:

3 1 2

4 7 5

6 8 0

Step 8:

3 1 2

4 7 5

6 0 8

Step 9:

3 1 2

4 0 5

6 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 30

H2 Time: 0.0011 seconds

Solving Puzzle 9 at Depth 12:

3 2 5

6 0 4

7 8 1

Solution Found using H1:

Step 1:

3 2 5

6 0 4

7 8 1

Step 2:

3 2 5

6 4 0

7 8 1

Step 3:

3 2 5

6 4 1

7 8 0

Step 4:

3 2 5

6 4 1

7 0 8

Step 5:

3 2 5

6 4 1

0 7 8

Step 6:

3 2 5

0 4 1

6 7 8

Step 7:

3 2 5

4 0 1

6 7 8

Step 8:

3 2 5

4 1 0

6 7 8

Step 9:

3 2 0

4 1 5

6 7 8

Step 10:

3 0 2

4 1 5

6 7 8

Step 11:

3 1 2

4 0 5

6 7 8

Step 12:

3 1 2

0 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 208

H1 Time: 0.0063 seconds

Solution Found using H2:

Step 1:

3 2 5

6 0 4

7 8 1

Step 2:

3 2 5

6 4 0

7 8 1

Step 3:

3 2 5

6 4 1

7 8 0

Step 4:

3 2 5

6 4 1

7 0 8

Step 5:

3 2 5

6 4 1

0 7 8

Step 6:

3 2 5

0 4 1

6 7 8

Step 7:

3 2 5

4 0 1

6 7 8

Step 8:

3 2 5

4 1 0

6 7 8

Step 9:

3 2 0

4 1 5

6 7 8

Step 10:

3 0 2

4 1 5

6 7 8

Step 11:

3 1 2

4 0 5

6 7 8

Step 12:

3 1 2

0 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 61

H2 Time: 0.0027 seconds

Solving Puzzle 10 at Depth 12:

7 3 2

1 5 8

4 6 0

Solution Found using H1:

Step 1:

7 3 2

1 5 8

4 6 0

Step 2:

7 3 2

1 5 0

4 6 8

Step 3:

7 3 2

1 0 5

4 6 8

Step 4:

7 3 2

0 1 5

4 6 8

Step 5:

0 3 2

7 1 5

4 6 8

Step 6:

3 0 2

7 1 5

4 6 8

Step 7:

3 1 2

7 0 5

4 6 8

Step 8:

3 1 2

0 7 5

4 6 8

Step 9:

3 1 2

4 7 5

0 6 8

Step 10:

3 1 2

4 7 5

6 0 8

Step 11:

3 1 2

4 0 5

6 7 8

Step 12:

3 1 2

0 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 162

H1 Time: 0.0051 seconds

Solution Found using H2:

Step 1:

7 3 2

1 5 8

4 6 0

Step 2:

7 3 2

1 5 0

4 6 8

Step 3:

7 3 2

1 0 5

4 6 8

Step 4:

7 3 2

0 1 5

4 6 8

Step 5:

0 3 2

7 1 5

4 6 8

Step 6:

3 0 2

7 1 5

4 6 8

Step 7:

3 1 2

7 0 5

4 6 8

Step 8:

3 1 2

0 7 5

4 6 8

Step 9:

3 1 2

4 7 5

0 6 8

Step 10:

3 1 2

4 7 5

6 0 8

Step 11:

3 1 2

4 0 5

6 7 8

Step 12:

3 1 2

0 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 42

H2 Time: 0.0017 seconds

Process finished with exit code 0

Enter desired solution depth (2-20): 14

Solving Puzzle 1 at Depth 14:

2 4 7

3 0 1

6 8 5

Solution Found using H1:

Step 1:

2 4 7

3 0 1

6 8 5

Step 2:

2 0 7

3 4 1

6 8 5

Step 3:

0 2 7

3 4 1

6 8 5

Step 4:

3 2 7

0 4 1

6 8 5

Step 5:

3 2 7

4 0 1

6 8 5

Step 6:

3 2 7

4 1 0

6 8 5

Step 7:

3 2 0

4 1 7

6 8 5

Step 8:

3 0 2

4 1 7

6 8 5

Step 9:

3 1 2

4 0 7

6 8 5

Step 10:

3 1 2

4 7 0

6 8 5

Step 11:

3 1 2

4 7 5

6 8 0

Step 12:

3 1 2

4 7 5

6 0 8

Step 13:

3 1 2

4 0 5

6 7 8

Step 14:

3 1 2

0 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 493

H1 Time: 0.0470 seconds

Solution Found using H2:

Step 1:

2 4 7

3 0 1

6 8 5

Step 2:

2 0 7

3 4 1

6 8 5

Step 3:

0 2 7

3 4 1

6 8 5

Step 4:

3 2 7

0 4 1

6 8 5

Step 5:

3 2 7

4 0 1

6 8 5

Step 6:

3 2 7

4 1 0

6 8 5

Step 7:

3 2 0

4 1 7

6 8 5

Step 8:

3 0 2

4 1 7

6 8 5

Step 9:

3 1 2

4 0 7

6 8 5

Step 10:

3 1 2

4 7 0

6 8 5

Step 11:

3 1 2

4 7 5

6 8 0

Step 12:

3 1 2

4 7 5

6 0 8

Step 13:

3 1 2

4 0 5

6 7 8

Step 14:

3 1 2

0 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 137

H2 Time: 0.0068 seconds

Solving Puzzle 2 at Depth 14:

3 1 0

7 6 2

5 4 8

Solution Found using H1:

Step 1:

3 1 0

7 6 2

5 4 8

Step 2:

3 1 2

7 6 0

5 4 8

Step 3:

3 1 2

7 6 8

5 4 0

Step 4:

3 1 2

7 6 8

5 0 4

Step 5:

3 1 2

7 6 8

0 5 4

Step 6:

3 1 2

0 6 8

7 5 4

Step 7:

3 1 2

6 0 8

7 5 4

Step 8:

3 1 2

6 5 8

7 0 4

Step 9:

3 1 2

6 5 8

7 4 0

Step 10:

3 1 2

6 5 0

7 4 8

Step 11:

3 1 2

6 0 5

7 4 8

Step 12:

3 1 2

6 4 5

7 0 8

Step 13:

3 1 2

6 4 5

0 7 8

Step 14:

3 1 2

0 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 430

H1 Time: 0.0142 seconds

Solution Found using H2:

Step 1:

3 1 0

7 6 2

5 4 8

Step 2:

3 1 2

7 6 0

5 4 8

Step 3:

3 1 2

7 6 8

5 4 0

Step 4:

3 1 2

7 6 8

5 0 4

Step 5:

3 1 2

7 6 8

0 5 4

Step 6:

3 1 2

0 6 8

7 5 4

Step 7:

3 1 2

6 0 8

7 5 4

Step 8:

3 1 2
6 5 8
7 0 4

Step 9:

3 1 2
6 5 8
7 4 0

Step 10:

3 1 2
6 5 0
7 4 8

Step 11:

3 1 2
6 0 5
7 4 8

Step 12:

3 1 2
6 4 5
7 0 8

Step 13:

3 1 2
6 4 5
0 7 8

Step 14:

3 1 2
0 4 5
6 7 8

Step 15:

0 1 2
3 4 5
6 7 8

H2 Search Cost: 113

H2 Time: 0.0049 seconds

Solving Puzzle 3 at Depth 14:

4 2 0
1 5 8
7 3 6

Solution Found using H1:

Step 1:

4 2 0
1 5 8
7 3 6

Step 2:

4 0 2
1 5 8
7 3 6

Step 3:

0 4 2
1 5 8
7 3 6

Step 4:

1 4 2

0 5 8

7 3 6

Step 5:

1 4 2

7 5 8

0 3 6

Step 6:

1 4 2

7 5 8

3 0 6

Step 7:

1 4 2

7 5 8

3 6 0

Step 8:

1 4 2

7 5 0

3 6 8

Step 9:

1 4 2

7 0 5

3 6 8

Step 10:

1 4 2

0 7 5

3 6 8

Step 11:

1 4 2

3 7 5

0 6 8

Step 12:

1 4 2

3 7 5

6 0 8

Step 13:

1 4 2

3 0 5

6 7 8

Step 14:

1 0 2

3 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 366

H1 Time: 0.0116 seconds

Solution Found using H2:

Step 1:

4 2 0

1 5 8

7 3 6

Step 2:

4 0 2

1 5 8

7 3 6

Step 3:

0 4 2

1 5 8

7 3 6

Step 4:

1 4 2

0 5 8

7 3 6

Step 5:

1 4 2

7 5 8

0 3 6

Step 6:

1 4 2

7 5 8

3 0 6

Step 7:

1 4 2

7 5 8

3 6 0

Step 8:

1 4 2

7 5 0

3 6 8

Step 9:

1 4 2

7 0 5

3 6 8

Step 10:

1 4 2

0 7 5

3 6 8

Step 11:

1 4 2

3 7 5

0 6 8

Step 12:

1 4 2

3 7 5

6 0 8

Step 13:

1 4 2

3 0 5

6 7 8

Step 14:

1 0 2

3 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 66

H2 Time: 0.0028 seconds

Solving Puzzle 4 at Depth 14:

3 1 5

2 0 7

6 8 4

Solution Found using H1:

Step 1:

3 1 5

2 0 7

6 8 4

Step 2:

3 1 5

2 7 0

6 8 4

Step 3:

3 1 5

2 7 4

6 8 0

Step 4:

3 1 5

2 7 4

6 0 8

Step 5:

3 1 5

2 0 4

6 7 8

Step 6:

3 1 5

0 2 4

6 7 8

Step 7:

0 1 5

3 2 4

6 7 8

Step 8:

1 0 5

3 2 4

6 7 8

Step 9:

1 2 5

3 0 4

6 7 8

Step 10:

1 2 5

3 4 0

6 7 8

Step 11:

1 2 0

3 4 5

6 7 8

Step 12:

1 0 2

3 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 209

H1 Time: 0.0063 seconds

Solution Found using H2:

Step 1:

3 1 5

2 0 7

6 8 4

Step 2:

3 1 5

2 7 0

6 8 4

Step 3:

3 1 5

2 7 4

6 8 0

Step 4:

3 1 5

2 7 4

6 0 8

Step 5:

3 1 5

2 0 4

6 7 8

Step 6:

3 1 5

0 2 4

6 7 8

Step 7:

0 1 5

3 2 4

6 7 8

Step 8:

1 0 5

3 2 4

6 7 8

Step 9:

1 2 5

3 0 4

6 7 8

Step 10:

1 2 5

3 4 0

6 7 8

Step 11:

1 2 0

3 4 5

6 7 8

Step 12:

1 0 2

3 4 5

6 7 8

Step 13:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 71

H2 Time: 0.0030 seconds

Solving Puzzle 5 at Depth 14:

0 1 2

3 6 8

7 5 4

Solution Found using H1:

Step 1:

0 1 2

3 6 8

7 5 4

Step 2:

3 1 2

0 6 8

7 5 4

Step 3:

3 1 2

6 0 8

7 5 4

Step 4:

3 1 2

6 5 8

7 0 4

Step 5:

3 1 2

6 5 8

7 4 0

Step 6:

3 1 2

6 5 0

7 4 8

Step 7:

3 1 2

6 0 5

7 4 8

Step 8:

3 1 2

6 4 5

7 0 8

Step 9:

3 1 2

6 4 5

0 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 69

H1 Time: 0.0021 seconds

Solution Found using H2:

Step 1:

0 1 2

3 6 8

7 5 4

Step 2:

3 1 2

0 6 8

7 5 4

Step 3:

3 1 2

6 0 8

7 5 4

Step 4:

3 1 2

6 5 8

7 0 4

Step 5:

3 1 2

6 5 8

7 4 0

Step 6:

3 1 2

6 5 0

7 4 8

Step 7:

3 1 2

6 0 5

7 4 8

Step 8:

3 1 2

6 4 5

7 0 8

Step 9:

3 1 2

6 4 5

0 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 27

H2 Time: 0.0010 seconds

Solving Puzzle 6 at Depth 14:

1 5 4

6 2 8

7 3 0

Solution Found using H1:

Step 1:

1 5 4

6 2 8

7 3 0

Step 2:

1 5 4

6 2 0

7 3 8

Step 3:

1 5 4

6 0 2

7 3 8

Step 4:

1 5 4

6 3 2

7 0 8

Step 5:

1 5 4

6 3 2

0 7 8

Step 6:

1 5 4

0 3 2

6 7 8

Step 7:

1 5 4
3 0 2
6 7 8

Step 8:

1 0 4
3 5 2
6 7 8

Step 9:

1 4 0
3 5 2
6 7 8

Step 10:

1 4 2
3 5 0
6 7 8

Step 11:

1 4 2
3 0 5
6 7 8

Step 12:

1 0 2
3 4 5
6 7 8

Step 13:

0 1 2
3 4 5
6 7 8

H1 Search Cost: 145

H1 Time: 0.0044 seconds

Solution Found using H2:

Step 1:

1 5 4
6 2 8
7 3 0

Step 2:

1 5 4
6 2 0
7 3 8

Step 3:

1 5 0
6 2 4
7 3 8

Step 4:

1 0 5
6 2 4
7 3 8

Step 5:

1 2 5
6 0 4
7 3 8

Step 6:

1 2 5
6 3 4
7 0 8

Step 7:

1 2 5
6 3 4
0 7 8

Step 8:

1 2 5
0 3 4
6 7 8

Step 9:

1 2 5
3 0 4
6 7 8

Step 10:

1 2 5
3 4 0
6 7 8

Step 11:

1 2 0
3 4 5
6 7 8

Step 12:

1 0 2
3 4 5
6 7 8

Step 13:

0 1 2
3 4 5
6 7 8

H2 Search Cost: 68

H2 Time: 0.0031 seconds

Solving Puzzle 7 at Depth 14:

3 2 0
6 4 5
1 7 8

Solution Found using H1:

Step 1:

3 2 0
6 4 5
1 7 8

Step 2:

3 0 2
6 4 5
1 7 8

Step 3:

0 3 2
6 4 5
1 7 8

Step 4:

6 3 2

0 4 5

1 7 8

Step 5:

6 3 2

1 4 5

0 7 8

Step 6:

6 3 2

1 4 5

7 0 8

Step 7:

6 3 2

1 0 5

7 4 8

Step 8:

6 3 2

0 1 5

7 4 8

Step 9:

0 3 2

6 1 5

7 4 8

Step 10:

3 0 2

6 1 5

7 4 8

Step 11:

3 1 2

6 0 5

7 4 8

Step 12:

3 1 2

6 4 5

7 0 8

Step 13:

3 1 2

6 4 5

0 7 8

Step 14:

3 1 2

0 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 466

H1 Time: 0.0147 seconds

Solution Found using H2:

Step 1:

3 2 0

6 4 5

1 7 8

Step 2:

3 0 2

6 4 5

1 7 8

Step 3:

0 3 2

6 4 5

1 7 8

Step 4:

6 3 2

0 4 5

1 7 8

Step 5:

6 3 2

1 4 5

0 7 8

Step 6:

6 3 2

1 4 5

7 0 8

Step 7:

6 3 2

1 0 5

7 4 8

Step 8:

6 3 2

0 1 5

7 4 8

Step 9:

0 3 2

6 1 5

7 4 8

Step 10:

3 0 2

6 1 5

7 4 8

Step 11:

3 1 2

6 0 5

7 4 8

Step 12:

3 1 2

6 4 5

7 0 8

Step 13:

3 1 2

6 4 5

0 7 8

Step 14:

3 1 2

0 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 183

H2 Time: 0.0078 seconds

Solving Puzzle 8 at Depth 14:

2 1 5

3 8 7

4 6 0

Solution Found using H1:

Step 1:

2 1 5

3 8 7

4 6 0

Step 2:

2 1 5

3 8 0

4 6 7

Step 3:

2 1 5

3 0 8

4 6 7

Step 4:

2 0 5

3 1 8

4 6 7

Step 5:

0 2 5

3 1 8

4 6 7

Step 6:

3 2 5

0 1 8

4 6 7

Step 7:

3 2 5

4 1 8

0 6 7

Step 8:

3 2 5

4 1 8

6 0 7

Step 9:

3 2 5

4 1 8

6 7 0

Step 10:

3 2 5

4 1 0

6 7 8

Step 11:

3 2 0

4 1 5

6 7 8

Step 12:

3 0 2

4 1 5

6 7 8

Step 13:

3 1 2

4 0 5

6 7 8

Step 14:

3 1 2

0 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 338

H1 Time: 0.0107 seconds

Solution Found using H2:

Step 1:

2 1 5

3 8 7

4 6 0

Step 2:

2 1 5

3 8 0

4 6 7

Step 3:

2 1 5

3 0 8

4 6 7

Step 4:

2 0 5

3 1 8

4 6 7

Step 5:

0 2 5

3 1 8

4 6 7

Step 6:

3 2 5

0 1 8

4 6 7

Step 7:

3 2 5

4 1 8

0 6 7

Step 8:

3 2 5

4 1 8

6 0 7

Step 9:

3 2 5

4 1 8

6 7 0

Step 10:

3 2 5

4 1 0

6 7 8

Step 11:

3 2 0

4 1 5

6 7 8

Step 12:

3 0 2

4 1 5

6 7 8

Step 13:

3 1 2

4 0 5

6 7 8

Step 14:

3 1 2

0 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 117

H2 Time: 0.0049 seconds

Solving Puzzle 9 at Depth 14:

0 6 3

4 2 1

7 8 5

Solution Found using H1:

Step 1:

0 6 3

4 2 1

7 8 5

Step 2:

6 0 3

4 2 1

7 8 5

Step 3:

6 3 0

4 2 1

7 8 5

Step 4:

6 3 1

4 2 0

7 8 5

Step 5:

6 3 1

4 0 2

7 8 5

Step 6:

6 3 1

0 4 2

7 8 5

Step 7:

0 3 1

6 4 2

7 8 5

Step 8:

3 0 1

6 4 2

7 8 5

Step 9:

3 1 0

6 4 2

7 8 5

Step 10:

3 1 2

6 4 0

7 8 5

Step 11:

3 1 2

6 4 5

7 8 0

Step 12:

3 1 2

6 4 5

7 0 8

Step 13:

3 1 2

6 4 5

0 7 8

Step 14:

3 1 2

0 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 342

H1 Time: 0.0104 seconds

Solution Found using H2:

Step 1:

0 6 3

4 2 1

7 8 5

Step 2:

6 0 3

4 2 1

7 8 5

Step 3:

6 3 0

4 2 1

7 8 5

Step 4:

6 3 1

4 2 0

7 8 5

Step 5:

6 3 1

4 0 2

7 8 5

Step 6:

6 3 1

0 4 2

7 8 5

Step 7:

0 3 1

6 4 2

7 8 5

Step 8:

3 0 1

6 4 2

7 8 5

Step 9:

3 1 0

6 4 2

7 8 5

Step 10:

3 1 2

6 4 0

7 8 5

Step 11:

3 1 2

6 4 5

7 8 0

Step 12:

3 1 2

6 4 5

7 0 8

Step 13:

3 1 2

6 4 5

0 7 8

Step 14:

3 1 2

0 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 63

H2 Time: 0.0028 seconds

Solving Puzzle 10 at Depth 14:

1 2 0

6 4 3

8 5 7

Solution Found using H1:

Step 1:

1 2 0

6 4 3

8 5 7

Step 2:

1 0 2

6 4 3

8 5 7

Step 3:

1 4 2

6 0 3

8 5 7

Step 4:

1 4 2

6 3 0

8 5 7

Step 5:

1 4 2

6 3 7

8 5 0

Step 6:

1 4 2

6 3 7

8 0 5

Step 7:

1 4 2

6 3 7

0 8 5

Step 8:

1 4 2

0 3 7

6 8 5

Step 9:

1 4 2

3 0 7

6 8 5

Step 10:

1 4 2

3 7 0

6 8 5

Step 11:

1 4 2

3 7 5

6 8 0

Step 12:

1 4 2

3 7 5

6 0 8

Step 13:

1 4 2

3 0 5

6 7 8

Step 14:

1 0 2

3 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 375

H1 Time: 0.0115 seconds

Solution Found using H2:

Step 1:

1 2 0

6 4 3

8 5 7

Step 2:

1 0 2

6 4 3

8 5 7

Step 3:

1 4 2

6 0 3

8 5 7

Step 4:

1 4 2

6 3 0

8 5 7

Step 5:

1 4 2
6 3 7
8 5 0

Step 6:

1 4 2
6 3 7
8 0 5

Step 7:

1 4 2
6 3 7
0 8 5

Step 8:

1 4 2
0 3 7
6 8 5

Step 9:

1 4 2
3 0 7
6 8 5

Step 10:

1 4 2
3 7 0
6 8 5

Step 11:

1 4 2
3 7 5
6 8 0

Step 12:

1 4 2
3 7 5
6 0 8

Step 13:

1 4 2
3 0 5
6 7 8

Step 14:

1 0 2
3 4 5
6 7 8

Step 15:

0 1 2
3 4 5
6 7 8

H2 Search Cost: 88

H2 Time: 0.0035 seconds

Process finished with exit code 0

Enter desired solution depth (2-20): 16

Solving Puzzle 1 at Depth 16:

4 3 1

6 0 8

2 5 7

Solution Found using H1:

Step 1:

4 3 1

6 0 8

2 5 7

Step 2:

4 3 1

6 5 8

2 0 7

Step 3:

4 3 1

6 5 8

0 2 7

Step 4:

4 3 1

0 5 8

6 2 7

Step 5:

4 3 1

5 0 8

6 2 7

Step 6:

4 3 1

5 2 8

6 0 7

Step 7:

4 3 1

5 2 8

6 7 0

Step 8:

4 3 1

5 2 0

6 7 8

Step 9:

4 3 1

5 0 2

6 7 8

Step 10:

4 3 1

0 5 2

6 7 8

Step 11:

0 3 1

4 5 2

6 7 8

Step 12:

3 0 1

4 5 2

6 7 8

Step 13:

3 1 0

4 5 2

6 7 8

Step 14:

3 1 2

4 5 0

6 7 8

Step 15:

3 1 2

4 0 5

6 7 8

Step 16:

3 1 2

0 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 1251

H1 Time: 0.0671 seconds

Solution Found using H2:

Step 1:

4 3 1

6 0 8

2 5 7

Step 2:

4 3 1

6 5 8

2 0 7

Step 3:

4 3 1

6 5 8

0 2 7

Step 4:

4 3 1

0 5 8

6 2 7

Step 5:

0 3 1

4 5 8

6 2 7

Step 6:

3 0 1

4 5 8

6 2 7

Step 7:

3 5 1

4 0 8

6 2 7

Step 8:

3 5 1

4 2 8

6 0 7

Step 9:

3 5 1

4 2 8

6 7 0

Step 10:

3 5 1

4 2 0

6 7 8

Step 11:

3 5 1

4 0 2

6 7 8

Step 12:

3 0 1

4 5 2

6 7 8

Step 13:

3 1 0

4 5 2

6 7 8

Step 14:

3 1 2

4 5 0

6 7 8

Step 15:

3 1 2

4 0 5

6 7 8

Step 16:

3 1 2

0 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 142

H2 Time: 0.0062 seconds

Solving Puzzle 2 at Depth 16:

0 1 2

6 4 5

8 7 3

Solution Found using H1:

Step 1:

0 1 2

6 4 5

8 7 3

Step 2:

1 0 2

6 4 5

8 7 3

Step 3:

1 4 2

6 0 5

8 7 3

Step 4:

1 4 2

6 7 5

8 0 3

Step 5:

1 4 2

6 7 5

8 3 0

Step 6:

1 4 2

6 7 0

8 3 5

Step 7:

1 4 2

6 0 7

8 3 5

Step 8:

1 4 2

6 3 7

8 0 5

Step 9:

1 4 2

6 3 7

0 8 5

Step 10:

1 4 2

0 3 7

6 8 5

Step 11:

1 4 2

3 0 7

6 8 5

Step 12:

1 4 2

3 7 0

6 8 5

Step 13:

1 4 2

3 7 5

6 8 0

Step 14:

1 4 2

3 7 5

6 0 8

Step 15:

1 4 2

3 0 5

6 7 8

Step 16:

1 0 2

3 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 941

H1 Time: 0.0297 seconds

Solution Found using H2:

Step 1:

0 1 2

6 4 5

8 7 3

Step 2:

1 0 2

6 4 5

8 7 3

Step 3:

1 4 2

6 0 5

8 7 3

Step 4:

1 4 2

6 7 5

8 0 3

Step 5:

1 4 2

6 7 5

8 3 0

Step 6:

1 4 2

6 7 0

8 3 5

Step 7:

1 4 2

6 0 7

8 3 5

Step 8:

1 4 2

6 3 7

8 0 5

Step 9:

1 4 2

6 3 7

0 8 5

Step 10:

1 4 2

0 3 7

6 8 5

Step 11:

1 4 2

3 0 7

6 8 5

Step 12:

1 4 2

3 7 0

6 8 5

Step 13:

1 4 2

3 7 5

6 8 0

Step 14:

1 4 2

3 7 5

6 0 8

Step 15:

1 4 2

3 0 5

6 7 8

Step 16:

1 0 2

3 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 245

H2 Time: 0.0103 seconds

Solving Puzzle 3 at Depth 16:

3 8 0

6 5 2

7 1 4

Solution Found using H1:

Step 1:

3 8 0

6 5 2

7 1 4

Step 2:

3 8 2

6 5 0
7 1 4
Step 3:
3 8 2
6 0 5
7 1 4
Step 4:
3 0 2
6 8 5
7 1 4
Step 5:
3 2 0
6 8 5
7 1 4
Step 6:
3 2 5
6 8 0
7 1 4
Step 7:
3 2 5
6 0 8
7 1 4
Step 8:
3 2 5
6 1 8
7 0 4
Step 9:
3 2 5
6 1 8
7 4 0
Step 10:
3 2 5
6 1 0
7 4 8
Step 11:
3 2 0
6 1 5
7 4 8
Step 12:
3 0 2
6 1 5
7 4 8
Step 13:
3 1 2
6 0 5
7 4 8
Step 14:
3 1 2
6 4 5
7 0 8
Step 15:
3 1 2

6 4 5

0 7 8

Step 16:

3 1 2

0 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 1013

H1 Time: 0.0361 seconds

Solution Found using H2:

Step 1:

3 8 0

6 5 2

7 1 4

Step 2:

3 8 2

6 5 0

7 1 4

Step 3:

3 8 2

6 0 5

7 1 4

Step 4:

3 0 2

6 8 5

7 1 4

Step 5:

3 2 0

6 8 5

7 1 4

Step 6:

3 2 5

6 8 0

7 1 4

Step 7:

3 2 5

6 0 8

7 1 4

Step 8:

3 2 5

6 1 8

7 0 4

Step 9:

3 2 5

6 1 8

7 4 0

Step 10:

3 2 5

6 1 0
7 4 8
Step 11:
3 2 0
6 1 5
7 4 8

Step 12:
3 0 2
6 1 5
7 4 8

Step 13:
3 1 2
6 0 5
7 4 8

Step 14:
3 1 2
6 4 5
7 0 8

Step 15:
3 1 2
6 4 5
0 7 8

Step 16:
3 1 2
0 4 5
6 7 8

Step 17:
0 1 2
3 4 5
6 7 8

H2 Search Cost: 179

H2 Time: 0.0074 seconds

Solving Puzzle 4 at Depth 16:

3 8 2
4 0 1
6 7 5

Solution Found using H1:

Step 1:
3 8 2
4 0 1
6 7 5

Step 2:
3 0 2
4 8 1
6 7 5

Step 3:
0 3 2
4 8 1
6 7 5

Step 4:

4 3 2
0 8 1
6 7 5
Step 5:
4 3 2
6 8 1
0 7 5
Step 6:
4 3 2
6 8 1
7 0 5
Step 7:
4 3 2
6 0 1
7 8 5
Step 8:
4 3 2
6 1 0
7 8 5
Step 9:
4 3 2
6 1 5
7 8 0
Step 10:
4 3 2
6 1 5
7 0 8
Step 11:
4 3 2
6 1 5
0 7 8
Step 12:
4 3 2
0 1 5
6 7 8
Step 13:
0 3 2
4 1 5
6 7 8
Step 14:
3 0 2
4 1 5
6 7 8
Step 15:
3 1 2
4 0 5
6 7 8
Step 16:
3 1 2
0 4 5
6 7 8
Step 17:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 1445

H1 Time: 0.0492 seconds

Solution Found using H2:

Step 1:

3 8 2

4 0 1

6 7 5

Step 2:

3 8 2

4 1 0

6 7 5

Step 3:

3 8 2

4 1 5

6 7 0

Step 4:

3 8 2

4 1 5

6 0 7

Step 5:

3 8 2

4 0 5

6 1 7

Step 6:

3 0 2

4 8 5

6 1 7

Step 7:

3 2 0

4 8 5

6 1 7

Step 8:

3 2 5

4 8 0

6 1 7

Step 9:

3 2 5

4 0 8

6 1 7

Step 10:

3 2 5

4 1 8

6 0 7

Step 11:

3 2 5

4 1 8

6 7 0

Step 12:

3 2 5
4 1 0
6 7 8
Step 13:

3 2 0
4 1 5
6 7 8
Step 14:

3 0 2
4 1 5
6 7 8
Step 15:

3 1 2
4 0 5
6 7 8
Step 16:

3 1 2
0 4 5
6 7 8
Step 17:

0 1 2
3 4 5
6 7 8
H2 Search Cost: 402
H2 Time: 0.0264 seconds

Solving Puzzle 5 at Depth 16:

6 3 0
7 8 2
4 5 1

Solution Found using H1:

Step 1:
6 3 0
7 8 2
4 5 1

Step 2:
6 3 2
7 8 0
4 5 1

Step 3:
6 3 2
7 0 8
4 5 1

Step 4:
6 3 2
7 5 8
4 0 1

Step 5:
6 3 2
7 5 8
4 1 0

Step 6:

6 3 2

7 5 0

4 1 8

Step 7:

6 3 2

7 0 5

4 1 8

Step 8:

6 3 2

7 1 5

4 0 8

Step 9:

6 3 2

7 1 5

0 4 8

Step 10:

6 3 2

0 1 5

7 4 8

Step 11:

0 3 2

6 1 5

7 4 8

Step 12:

3 0 2

6 1 5

7 4 8

Step 13:

3 1 2

6 0 5

7 4 8

Step 14:

3 1 2

6 4 5

7 0 8

Step 15:

3 1 2

6 4 5

0 7 8

Step 16:

3 1 2

0 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 795

H1 Time: 0.0267 seconds

Solution Found using H2:

Step 1:

6 3 0

7 8 2

4 5 1

Step 2:

6 3 2

7 8 0

4 5 1

Step 3:

6 3 2

7 8 1

4 5 0

Step 4:

6 3 2

7 8 1

4 0 5

Step 5:

6 3 2

7 0 1

4 8 5

Step 6:

6 3 2

7 1 0

4 8 5

Step 7:

6 3 2

7 1 5

4 8 0

Step 8:

6 3 2

7 1 5

4 0 8

Step 9:

6 3 2

7 1 5

0 4 8

Step 10:

6 3 2

0 1 5

7 4 8

Step 11:

0 3 2

6 1 5

7 4 8

Step 12:

3 0 2

6 1 5

7 4 8

Step 13:

3 1 2

6 0 5

7 4 8

Step 14:

3 1 2

6 4 5

7 0 8

Step 15:

3 1 2

6 4 5

0 7 8

Step 16:

3 1 2

0 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 91

H2 Time: 0.0038 seconds

Solving Puzzle 6 at Depth 16:

7 1 5

3 0 4

6 2 8

Solution Found using H1:

Step 1:

7 1 5

3 0 4

6 2 8

Step 2:

7 1 5

3 2 4

6 0 8

Step 3:

7 1 5

3 2 4

0 6 8

Step 4:

7 1 5

0 2 4

3 6 8

Step 5:

0 1 5

7 2 4

3 6 8

Step 6:

1 0 5

7 2 4

3 6 8

Step 7:

1 2 5

7 0 4

3 6 8

Step 8:

1 2 5

0 7 4

3 6 8

Step 9:

1 2 5

3 7 4

0 6 8

Step 10:

1 2 5

3 7 4

6 0 8

Step 11:

1 2 5

3 0 4

6 7 8

Step 12:

1 2 5

3 4 0

6 7 8

Step 13:

1 2 0

3 4 5

6 7 8

Step 14:

1 0 2

3 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 538

H1 Time: 0.0234 seconds

Solution Found using H2:

Step 1:

7 1 5

3 0 4

6 2 8

Step 2:

7 1 5

3 2 4

6 0 8

Step 3:

7 1 5

3 2 4

0 6 8

Step 4:

7 1 5

0 2 4

3 6 8

Step 5:

0 1 5

7 2 4

3 6 8

Step 6:

1 0 5

7 2 4

3 6 8

Step 7:

1 2 5

7 0 4

3 6 8

Step 8:

1 2 5

0 7 4

3 6 8

Step 9:

1 2 5

3 7 4

0 6 8

Step 10:

1 2 5

3 7 4

6 0 8

Step 11:

1 2 5

3 0 4

6 7 8

Step 12:

1 2 5

3 4 0

6 7 8

Step 13:

1 2 0

3 4 5

6 7 8

Step 14:

1 0 2

3 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 148

H2 Time: 0.0074 seconds

Solving Puzzle 7 at Depth 16:

3 1 2

5 0 6

7 8 4

Solution Found using H1:

Step 1:

3 1 2

5 0 6

7 8 4

Step 2:

3 1 2

5 8 6

7 0 4

Step 3:

3 1 2

5 8 6

7 4 0

Step 4:

3 1 2

5 8 0

7 4 6

Step 5:

3 1 2

5 0 8

7 4 6

Step 6:

3 1 2

0 5 8

7 4 6

Step 7:

3 1 2

7 5 8

0 4 6

Step 8:

3 1 2

7 5 8

4 0 6

Step 9:

3 1 2

7 5 8

4 6 0

Step 10:

3 1 2

7 5 0

4 6 8

Step 11:

3 1 2

7 0 5

4 6 8

Step 12:

3 1 2

0 7 5

4 6 8

Step 13:

3 1 2

4 7 5

0 6 8

Step 14:

3 1 2

4 7 5

6 0 8

Step 15:

3 1 2

4 0 5

6 7 8

Step 16:

3 1 2

0 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 1350

H1 Time: 0.0459 seconds

Solution Found using H2:

Step 1:

3 1 2

5 0 6

7 8 4

Step 2:

3 1 2

5 8 6

7 0 4

Step 3:

3 1 2

5 8 6

7 4 0

Step 4:

3 1 2

5 8 0

7 4 6

Step 5:

3 1 2

5 0 8

7 4 6

Step 6:

3 1 2

0 5 8

7 4 6

Step 7:

3 1 2

7 5 8

0 4 6

Step 8:

3 1 2

7 5 8

4 0 6

Step 9:

3 1 2

7 5 8

4 6 0

Step 10:

3 1 2

7 5 0

4 6 8

Step 11:

3 1 2

7 0 5

4 6 8

Step 12:

3 1 2

0 7 5

4 6 8

Step 13:

3 1 2

4 7 5

0 6 8

Step 14:

3 1 2

4 7 5

6 0 8

Step 15:

3 1 2

4 0 5

6 7 8

Step 16:

3 1 2

0 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 329

H2 Time: 0.0144 seconds

Solving Puzzle 8 at Depth 16:

3 1 5

7 0 6

2 8 4

Solution Found using H1:

Step 1:

3 1 5

7 0 6

2 8 4

Step 2:

3 1 5
7 6 0
2 8 4
Step 3:
3 1 5
7 6 4
2 8 0
Step 4:
3 1 5
7 6 4
2 0 8
Step 5:
3 1 5
7 0 4
2 6 8
Step 6:
3 1 5
0 7 4
2 6 8
Step 7:
3 1 5
2 7 4
0 6 8
Step 8:
3 1 5
2 7 4
6 0 8
Step 9:
3 1 5
2 0 4
6 7 8
Step 10:
3 1 5
0 2 4
6 7 8
Step 11:
0 1 5
3 2 4
6 7 8
Step 12:
1 0 5
3 2 4
6 7 8
Step 13:
1 2 5
3 0 4
6 7 8
Step 14:
1 2 5
3 4 0
6 7 8
Step 15:

1 2 0

3 4 5

6 7 8

Step 16:

1 0 2

3 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 1112

H1 Time: 0.0357 seconds

Solution Found using H2:

Step 1:

3 1 5

7 0 6

2 8 4

Step 2:

3 1 5

7 6 0

2 8 4

Step 3:

3 1 5

7 6 4

2 8 0

Step 4:

3 1 5

7 6 4

2 0 8

Step 5:

3 1 5

7 0 4

2 6 8

Step 6:

3 1 5

0 7 4

2 6 8

Step 7:

3 1 5

2 7 4

0 6 8

Step 8:

3 1 5

2 7 4

6 0 8

Step 9:

3 1 5

2 0 4

6 7 8

Step 10:

3 1 5
0 2 4
6 7 8
Step 11:

0 1 5
3 2 4
6 7 8
Step 12:

1 0 5
3 2 4
6 7 8
Step 13:

1 2 5
3 0 4
6 7 8
Step 14:

1 2 5
3 4 0
6 7 8
Step 15:

1 2 0
3 4 5
6 7 8
Step 16:

1 0 2
3 4 5
6 7 8
Step 17:

0 1 2
3 4 5
6 7 8

H2 Search Cost: 138

H2 Time: 0.0058 seconds

Solving Puzzle 9 at Depth 16:

0 6 5
2 1 8
4 3 7

Solution Found using H1:

Step 1:
0 6 5
2 1 8
4 3 7

Step 2:
6 0 5
2 1 8
4 3 7

Step 3:
6 1 5
2 0 8
4 3 7

Step 4:

6 1 5

0 2 8

4 3 7

Step 5:

0 1 5

6 2 8

4 3 7

Step 6:

1 0 5

6 2 8

4 3 7

Step 7:

1 2 5

6 0 8

4 3 7

Step 8:

1 2 5

6 3 8

4 0 7

Step 9:

1 2 5

6 3 8

0 4 7

Step 10:

1 2 5

0 3 8

6 4 7

Step 11:

1 2 5

3 0 8

6 4 7

Step 12:

1 2 5

3 4 8

6 0 7

Step 13:

1 2 5

3 4 8

6 7 0

Step 14:

1 2 5

3 4 0

6 7 8

Step 15:

1 2 0

3 4 5

6 7 8

Step 16:

1 0 2

3 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 927

H1 Time: 0.0325 seconds

Solution Found using H2:

Step 1:

0 6 5

2 1 8

4 3 7

Step 2:

6 0 5

2 1 8

4 3 7

Step 3:

6 1 5

2 0 8

4 3 7

Step 4:

6 1 5

0 2 8

4 3 7

Step 5:

0 1 5

6 2 8

4 3 7

Step 6:

1 0 5

6 2 8

4 3 7

Step 7:

1 2 5

6 0 8

4 3 7

Step 8:

1 2 5

6 3 8

4 0 7

Step 9:

1 2 5

6 3 8

0 4 7

Step 10:

1 2 5

0 3 8

6 4 7

Step 11:

1 2 5

3 0 8

6 4 7

Step 12:

1 2 5

3 4 8

6 0 7

Step 13:

1 2 5

3 4 8

6 7 0

Step 14:

1 2 5

3 4 0

6 7 8

Step 15:

1 2 0

3 4 5

6 7 8

Step 16:

1 0 2

3 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 173

H2 Time: 0.0100 seconds

Solving Puzzle 10 at Depth 16:

0 7 1

3 4 2

6 8 5

Solution Found using H1:

Step 1:

0 7 1

3 4 2

6 8 5

Step 2:

3 7 1

0 4 2

6 8 5

Step 3:

3 7 1

4 0 2

6 8 5

Step 4:

3 0 1

4 7 2

6 8 5

Step 5:

3 1 0

4 7 2

6 8 5

Step 6:

3 1 2

4 7 0

6 8 5

Step 7:

3 1 2

4 7 5

6 8 0

Step 8:

3 1 2

4 7 5

6 0 8

Step 9:

3 1 2

4 0 5

6 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 89

H1 Time: 0.0032 seconds

Solution Found using H2:

Step 1:

0 7 1

3 4 2

6 8 5

Step 2:

3 7 1

0 4 2

6 8 5

Step 3:

3 7 1

4 0 2

6 8 5

Step 4:

3 0 1

4 7 2

6 8 5

Step 5:

3 1 0

4 7 2

6 8 5

Step 6:

3 1 2

4 7 0

6 8 5

Step 7:

3 1 2

4 7 5

6 8 0

Step 8:

3 1 2

4 7 5

6 0 8

Step 9:

3 1 2

4 0 5

6 7 8

Step 10:

3 1 2

0 4 5

6 7 8

Step 11:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 40

H2 Time: 0.0015 seconds

Process finished with exit code 0

Enter desired solution depth (2-20): 18

Solving Puzzle 1 at Depth 18:

1 4 7

8 0 2

3 5 6

Solution Found using H1:

Step 1:

1 4 7

8 0 2

3 5 6

Step 2:

1 4 7

0 8 2

3 5 6

Step 3:

0 4 7

1 8 2

3 5 6

Step 4:

4 0 7

1 8 2

3 5 6

Step 5:

4 7 0

1 8 2
3 5 6
Step 6:
4 7 2
1 8 0
3 5 6
Step 7:
4 7 2
1 0 8
3 5 6
Step 8:
4 7 2
1 5 8
3 0 6
Step 9:
4 7 2
1 5 8
3 6 0
Step 10:
4 7 2
1 5 0
3 6 8
Step 11:
4 7 2
1 0 5
3 6 8
Step 12:
4 0 2
1 7 5
3 6 8
Step 13:
0 4 2
1 7 5
3 6 8
Step 14:
1 4 2
0 7 5
3 6 8
Step 15:
1 4 2
3 7 5
0 6 8
Step 16:
1 4 2
3 7 5
6 0 8
Step 17:
1 4 2
3 0 5
6 7 8
Step 18:
1 0 2

3 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 2861

H1 Time: 0.1350 seconds

Solution Found using H2:

Step 1:

1 4 7

8 0 2

3 5 6

Step 2:

1 4 7

0 8 2

3 5 6

Step 3:

0 4 7

1 8 2

3 5 6

Step 4:

4 0 7

1 8 2

3 5 6

Step 5:

4 7 0

1 8 2

3 5 6

Step 6:

4 7 2

1 8 0

3 5 6

Step 7:

4 7 2

1 0 8

3 5 6

Step 8:

4 7 2

1 5 8

3 0 6

Step 9:

4 7 2

1 5 8

3 6 0

Step 10:

4 7 2

1 5 0

3 6 8

Step 11:

4 7 2

1 0 5

3 6 8

Step 12:

4 0 2

1 7 5

3 6 8

Step 13:

0 4 2

1 7 5

3 6 8

Step 14:

1 4 2

0 7 5

3 6 8

Step 15:

1 4 2

3 7 5

0 6 8

Step 16:

1 4 2

3 7 5

6 0 8

Step 17:

1 4 2

3 0 5

6 7 8

Step 18:

1 0 2

3 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 285

H2 Time: 0.0124 seconds

Solving Puzzle 2 at Depth 18:

3 2 7

6 0 4

8 5 1

Solution Found using H1:

Step 1:

3 2 7

6 0 4

8 5 1

Step 2:

3 2 7

6 4 0

8 5 1

Step 3:

3 2 7

6 4 1

8 5 0

Step 4:

3 2 7

6 4 1

8 0 5

Step 5:

3 2 7

6 4 1

0 8 5

Step 6:

3 2 7

0 4 1

6 8 5

Step 7:

3 2 7

4 0 1

6 8 5

Step 8:

3 2 7

4 1 0

6 8 5

Step 9:

3 2 0

4 1 7

6 8 5

Step 10:

3 0 2

4 1 7

6 8 5

Step 11:

3 1 2

4 0 7

6 8 5

Step 12:

3 1 2

4 7 0

6 8 5

Step 13:

3 1 2

4 7 5

6 8 0

Step 14:

3 1 2

4 7 5

6 0 8

Step 15:

3 1 2

4 0 5

6 7 8

Step 16:

3 1 2

0 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 1112

H1 Time: 0.0348 seconds

Solution Found using H2:

Step 1:

3 2 7

6 0 4

8 5 1

Step 2:

3 2 7

6 4 0

8 5 1

Step 3:

3 2 7

6 4 1

8 5 0

Step 4:

3 2 7

6 4 1

8 0 5

Step 5:

3 2 7

6 4 1

0 8 5

Step 6:

3 2 7

0 4 1

6 8 5

Step 7:

3 2 7

4 0 1

6 8 5

Step 8:

3 2 7

4 1 0

6 8 5

Step 9:

3 2 0

4 1 7

6 8 5

Step 10:

3 0 2

4 1 7

6 8 5

Step 11:

3 1 2

4 0 7

6 8 5

Step 12:

3 1 2

4 7 0

6 8 5

Step 13:

3 1 2

4 7 5

6 8 0

Step 14:

3 1 2

4 7 5

6 0 8

Step 15:

3 1 2

4 0 5

6 7 8

Step 16:

3 1 2

0 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 149

H2 Time: 0.0064 seconds

Solving Puzzle 3 at Depth 18:

7 4 1

3 8 2

0 6 5

Solution Found using H1:

Step 1:

7 4 1

3 8 2

0 6 5

Step 2:

7 4 1

3 8 2

6 0 5

Step 3:

7 4 1

3 0 2

6 8 5

Step 4:

7 0 1

3 4 2

6 8 5

Step 5:

0 7 1

3 4 2

6 8 5

Step 6:

3 7 1

0 4 2

6 8 5

Step 7:

3 7 1

4 0 2

6 8 5

Step 8:

3 0 1

4 7 2

6 8 5

Step 9:

3 1 0

4 7 2

6 8 5

Step 10:

3 1 2

4 7 0

6 8 5

Step 11:

3 1 2

4 7 5

6 8 0

Step 12:

3 1 2

4 7 5

6 0 8

Step 13:

3 1 2

4 0 5

6 7 8

Step 14:

3 1 2

0 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 435

H1 Time: 0.0138 seconds

Solution Found using H2:

Step 1:

7 4 1

3 8 2

0 6 5

Step 2:

7 4 1

3 8 2

6 0 5

Step 3:

7 4 1

3 0 2

6 8 5

Step 4:

7 0 1

3 4 2

6 8 5

Step 5:

0 7 1

3 4 2

6 8 5

Step 6:

3 7 1

0 4 2

6 8 5

Step 7:

3 7 1

4 0 2

6 8 5

Step 8:

3 0 1

4 7 2

6 8 5

Step 9:

3 1 0

4 7 2

6 8 5

Step 10:

3 1 2

4 7 0

6 8 5

Step 11:

3 1 2

4 7 5

6 8 0

Step 12:

3 1 2

4 7 5

6 0 8

Step 13:

3 1 2

4 0 5

6 7 8

Step 14:

3 1 2

0 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 131

H2 Time: 0.0054 seconds

Solving Puzzle 4 at Depth 18:

4 2 1

6 0 3

5 7 8

Solution Found using H1:

Step 1:

4 2 1

6 0 3

5 7 8

Step 2:

4 2 1

6 3 0

5 7 8

Step 3:

4 2 0

6 3 1

5 7 8

Step 4:

4 0 2

6 3 1

5 7 8

Step 5:

4 3 2

6 0 1

5 7 8

Step 6:

4 3 2

6 1 0

5 7 8

Step 7:

4 3 2

6 1 8

5 7 0

Step 8:

4 3 2

6 1 8

5 0 7

Step 9:

4 3 2

6 1 8

0 5 7

Step 10:

4 3 2

0 1 8

6 5 7

Step 11:

0 3 2

4 1 8

6 5 7

Step 12:

3 0 2

4 1 8

6 5 7

Step 13:

3 1 2

4 0 8

6 5 7

Step 14:

3 1 2

4 5 8

6 0 7

Step 15:

3 1 2

4 5 8

6 7 0

Step 16:

3 1 2

4 5 0

6 7 8

Step 17:

3 1 2

4 0 5

6 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 3392

H1 Time: 0.1155 seconds

Solution Found using H2:

Step 1:

4 2 1

6 0 3

5 7 8

Step 2:

4 2 1

6 3 0

5 7 8

Step 3:

4 2 0

6 3 1

5 7 8
Step 4:
4 0 2
6 3 1
5 7 8
Step 5:
4 3 2
6 0 1
5 7 8
Step 6:
4 3 2
6 1 0
5 7 8
Step 7:
4 3 2
6 1 8
5 7 0
Step 8:
4 3 2
6 1 8
5 0 7
Step 9:
4 3 2
6 1 8
0 5 7
Step 10:
4 3 2
0 1 8
6 5 7
Step 11:
0 3 2
4 1 8
6 5 7
Step 12:
3 0 2
4 1 8
6 5 7
Step 13:
3 1 2
4 0 8
6 5 7
Step 14:
3 1 2
4 5 8
6 0 7
Step 15:
3 1 2
4 5 8
6 7 0
Step 16:
3 1 2
4 5 0

6 7 8

Step 17:

3 1 2

4 0 5

6 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 569

H2 Time: 0.0255 seconds

Solving Puzzle 5 at Depth 18:

0 6 2

1 7 5

3 8 4

Solution Found using H1:

Step 1:

0 6 2

1 7 5

3 8 4

Step 2:

1 6 2

0 7 5

3 8 4

Step 3:

1 6 2

7 0 5

3 8 4

Step 4:

1 0 2

7 6 5

3 8 4

Step 5:

1 2 0

7 6 5

3 8 4

Step 6:

1 2 5

7 6 0

3 8 4

Step 7:

1 2 5

7 6 4

3 8 0

Step 8:

1 2 5

7 6 4

3 0 8

Step 9:

1 2 5

7 0 4

3 6 8

Step 10:

1 2 5

0 7 4

3 6 8

Step 11:

1 2 5

3 7 4

0 6 8

Step 12:

1 2 5

3 7 4

6 0 8

Step 13:

1 2 5

3 0 4

6 7 8

Step 14:

1 2 5

3 4 0

6 7 8

Step 15:

1 2 0

3 4 5

6 7 8

Step 16:

1 0 2

3 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 1061

H1 Time: 0.0364 seconds

Solution Found using H2:

Step 1:

0 6 2

1 7 5

3 8 4

Step 2:

1 6 2

0 7 5

3 8 4

Step 3:

1 6 2

7 0 5
3 8 4
Step 4:
1 0 2
7 6 5
3 8 4
Step 5:
1 2 0
7 6 5
3 8 4
Step 6:
1 2 5
7 6 0
3 8 4
Step 7:
1 2 5
7 6 4
3 8 0
Step 8:
1 2 5
7 6 4
3 0 8
Step 9:
1 2 5
7 0 4
3 6 8
Step 10:
1 2 5
0 7 4
3 6 8
Step 11:
1 2 5
3 7 4
0 6 8
Step 12:
1 2 5
3 7 4
6 0 8
Step 13:
1 2 5
3 0 4
6 7 8
Step 14:
1 2 5
3 4 0
6 7 8
Step 15:
1 2 0
3 4 5
6 7 8
Step 16:
1 0 2

3 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 271

H2 Time: 0.0117 seconds

Solving Puzzle 6 at Depth 18:

6 3 0

7 4 2

8 1 5

Solution Found using H1:

Step 1:

6 3 0

7 4 2

8 1 5

Step 2:

6 3 2

7 4 0

8 1 5

Step 3:

6 3 2

7 0 4

8 1 5

Step 4:

6 3 2

7 1 4

8 0 5

Step 5:

6 3 2

7 1 4

0 8 5

Step 6:

6 3 2

0 1 4

7 8 5

Step 7:

0 3 2

6 1 4

7 8 5

Step 8:

3 0 2

6 1 4

7 8 5

Step 9:

3 1 2

6 0 4

7 8 5

Step 10:

3 1 2

6 4 0

7 8 5

Step 11:

3 1 2

6 4 5

7 8 0

Step 12:

3 1 2

6 4 5

7 0 8

Step 13:

3 1 2

6 4 5

0 7 8

Step 14:

3 1 2

0 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 307

H1 Time: 0.0099 seconds

Solution Found using H2:

Step 1:

6 3 0

7 4 2

8 1 5

Step 2:

6 3 2

7 4 0

8 1 5

Step 3:

6 3 2

7 0 4

8 1 5

Step 4:

6 3 2

7 1 4

8 0 5

Step 5:

6 3 2

7 1 4

0 8 5

Step 6:

6 3 2

0 1 4

7 8 5

Step 7:

0 3 2

6 1 4

7 8 5

Step 8:

3 0 2

6 1 4

7 8 5

Step 9:

3 1 2

6 0 4

7 8 5

Step 10:

3 1 2

6 4 0

7 8 5

Step 11:

3 1 2

6 4 5

7 8 0

Step 12:

3 1 2

6 4 5

7 0 8

Step 13:

3 1 2

6 4 5

0 7 8

Step 14:

3 1 2

0 4 5

6 7 8

Step 15:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 45

H2 Time: 0.0018 seconds

Solving Puzzle 7 at Depth 18:

6 2 5

1 8 4

7 3 0

Solution Found using H1:

Step 1:

6 2 5

1 8 4

7 3 0

Step 2:

6 2 5

1 8 0

7 3 4

Step 3:

6 2 5

1 0 8

7 3 4

Step 4:

6 2 5

1 3 8

7 0 4

Step 5:

6 2 5

1 3 8

7 4 0

Step 6:

6 2 5

1 3 0

7 4 8

Step 7:

6 2 0

1 3 5

7 4 8

Step 8:

6 0 2

1 3 5

7 4 8

Step 9:

6 3 2

1 0 5

7 4 8

Step 10:

6 3 2

0 1 5

7 4 8

Step 11:

0 3 2

6 1 5

7 4 8

Step 12:

3 0 2

6 1 5

7 4 8

Step 13:

3 1 2

6 0 5

7 4 8

Step 14:

3 1 2

6 4 5

7 0 8

Step 15:

3 1 2

6 4 5

0 7 8

Step 16:

3 1 2

0 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 975

H1 Time: 0.0320 seconds

Solution Found using H2:

Step 1:

6 2 5

1 8 4

7 3 0

Step 2:

6 2 5

1 8 0

7 3 4

Step 3:

6 2 5

1 0 8

7 3 4

Step 4:

6 2 5

1 3 8

7 0 4

Step 5:

6 2 5

1 3 8

7 4 0

Step 6:

6 2 5

1 3 0

7 4 8

Step 7:

6 2 0

1 3 5

7 4 8

Step 8:

6 0 2

1 3 5

7 4 8

Step 9:

6 3 2

1 0 5

7 4 8

Step 10:

6 3 2

0 1 5

7 4 8

Step 11:

0 3 2

6 1 5

7 4 8

Step 12:

3 0 2

6 1 5

7 4 8

Step 13:

3 1 2

6 0 5

7 4 8

Step 14:

3 1 2

6 4 5

7 0 8

Step 15:

3 1 2

6 4 5

0 7 8

Step 16:

3 1 2

0 4 5

6 7 8

Step 17:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 170

H2 Time: 0.0070 seconds

Solving Puzzle 8 at Depth 18:

7 5 0

1 2 8

4 3 6

Solution Found using H1:

Step 1:

7 5 0

1 2 8

4 3 6

Step 2:

7 0 5

1 2 8

4 3 6

Step 3:

7 2 5

1 0 8

4 3 6

Step 4:

7 2 5

1 3 8

4 0 6

Step 5:

7 2 5

1 3 8

4 6 0

Step 6:

7 2 5

1 3 0

4 6 8

Step 7:

7 2 0

1 3 5

4 6 8

Step 8:

7 0 2

1 3 5

4 6 8

Step 9:

0 7 2

1 3 5

4 6 8

Step 10:

1 7 2

0 3 5

4 6 8

Step 11:

1 7 2

3 0 5

4 6 8

Step 12:

1 0 2

3 7 5

4 6 8

Step 13:

0 1 2

3 7 5

4 6 8

Step 14:

3 1 2

0 7 5

4 6 8

Step 15:

3 1 2

4 7 5

0 6 8

Step 16:

3 1 2

4 7 5

6 0 8

Step 17:

3 1 2

4 0 5

6 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 2263

H1 Time: 0.0764 seconds

Solution Found using H2:

Step 1:

7 5 0

1 2 8

4 3 6

Step 2:

7 0 5

1 2 8

4 3 6

Step 3:

7 2 5

1 0 8

4 3 6

Step 4:

7 2 5

1 3 8

4 0 6

Step 5:

7 2 5

1 3 8

4 6 0

Step 6:

7 2 5

1 3 0

4 6 8

Step 7:

7 2 0

1 3 5

4 6 8

Step 8:

7 0 2

1 3 5

4 6 8

Step 9:

0 7 2

1 3 5

4 6 8

Step 10:

1 7 2

0 3 5

4 6 8

Step 11:

1 7 2

3 0 5

4 6 8

Step 12:

1 0 2

3 7 5

4 6 8

Step 13:

0 1 2

3 7 5

4 6 8

Step 14:

3 1 2

0 7 5

4 6 8

Step 15:

3 1 2

4 7 5

0 6 8

Step 16:

3 1 2

4 7 5

6 0 8

Step 17:

3 1 2

4 0 5

6 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 275

H2 Time: 0.0114 seconds

Solving Puzzle 9 at Depth 18:

2 6 4

3 0 8

7 5 1

Solution Found using H1:

Step 1:

2 6 4

3 0 8

7 5 1

Step 2:

2 6 4

3 8 0
7 5 1
Step 3:
2 6 4
3 8 1
7 5 0
Step 4:
2 6 4
3 8 1
7 0 5
Step 5:
2 6 4
3 0 1
7 8 5
Step 6:
2 0 4
3 6 1
7 8 5
Step 7:
0 2 4
3 6 1
7 8 5
Step 8:
3 2 4
0 6 1
7 8 5
Step 9:
3 2 4
6 0 1
7 8 5
Step 10:
3 2 4
6 1 0
7 8 5
Step 11:
3 2 0
6 1 4
7 8 5
Step 12:
3 0 2
6 1 4
7 8 5
Step 13:
3 1 2
6 0 4
7 8 5
Step 14:
3 1 2
6 4 0
7 8 5
Step 15:
3 1 2

6 4 5

7 8 0

Step 16:

3 1 2

6 4 5

7 0 8

Step 17:

3 1 2

6 4 5

0 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 2844

H1 Time: 0.0993 seconds

Solution Found using H2:

Step 1:

2 6 4

3 0 8

7 5 1

Step 2:

2 6 4

3 8 0

7 5 1

Step 3:

2 6 4

3 8 1

7 5 0

Step 4:

2 6 4

3 8 1

7 0 5

Step 5:

2 6 4

3 0 1

7 8 5

Step 6:

2 0 4

3 6 1

7 8 5

Step 7:

0 2 4

3 6 1

7 8 5

Step 8:

3 2 4

0 6 1

7 8 5

Step 9:

3 2 4

6 0 1

7 8 5

Step 10:

3 2 4

6 1 0

7 8 5

Step 11:

3 2 0

6 1 4

7 8 5

Step 12:

3 0 2

6 1 4

7 8 5

Step 13:

3 1 2

6 0 4

7 8 5

Step 14:

3 1 2

6 4 0

7 8 5

Step 15:

3 1 2

6 4 5

7 8 0

Step 16:

3 1 2

6 4 5

7 0 8

Step 17:

3 1 2

6 4 5

0 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 333

H2 Time: 0.0154 seconds

Solving Puzzle 10 at Depth 18:

5 1 0

8 3 2

6 7 4

Solution Found using H1:

Step 1:

5 1 0

8 3 2

6 7 4

Step 2:

5 0 1

8 3 2

6 7 4

Step 3:

5 3 1

8 0 2

6 7 4

Step 4:

5 3 1

0 8 2

6 7 4

Step 5:

0 3 1

5 8 2

6 7 4

Step 6:

3 0 1

5 8 2

6 7 4

Step 7:

3 1 0

5 8 2

6 7 4

Step 8:

3 1 2

5 8 0

6 7 4

Step 9:

3 1 2

5 0 8

6 7 4

Step 10:

3 1 2

0 5 8

6 7 4

Step 11:

3 1 2

6 5 8

0 7 4

Step 12:

3 1 2

6 5 8

7 0 4

Step 13:

3 1 2

6 5 8

7 4 0

Step 14:

3 1 2

6 5 0

7 4 8

Step 15:

3 1 2

6 0 5

7 4 8

Step 16:

3 1 2

6 4 5

7 0 8

Step 17:

3 1 2

6 4 5

0 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 2621

H1 Time: 0.0873 seconds

Solution Found using H2:

Step 1:

5 1 0

8 3 2

6 7 4

Step 2:

5 0 1

8 3 2

6 7 4

Step 3:

5 3 1

8 0 2

6 7 4

Step 4:

5 3 1

0 8 2

6 7 4

Step 5:

0 3 1

5 8 2

6 7 4

Step 6:

3 0 1

5 8 2

6 7 4

Step 7:

3 1 0

5 8 2

6 7 4

Step 8:

3 1 2

5 8 0

6 7 4

Step 9:

3 1 2

5 0 8

6 7 4

Step 10:

3 1 2

0 5 8

6 7 4

Step 11:

3 1 2

6 5 8

0 7 4

Step 12:

3 1 2

6 5 8

7 0 4

Step 13:

3 1 2

6 5 8

7 4 0

Step 14:

3 1 2

6 5 0

7 4 8

Step 15:

3 1 2

6 0 5

7 4 8

Step 16:

3 1 2

6 4 5

7 0 8

Step 17:

3 1 2

6 4 5

0 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 419

H2 Time: 0.0182 seconds

Process finished with exit code 0

Enter desired solution depth (2-20): 20

Solving Puzzle 1 at Depth 20:

6 2 4

1 5 8

7 3 0

Solution Found using H1:

Step 1:

6 2 4

1 5 8

7 3 0

Step 2:

6 2 4

1 5 0

7 3 8

Step 3:

6 2 4

1 0 5

7 3 8

Step 4:

6 2 4

1 3 5

7 0 8

Step 5:

6 2 4

1 3 5

7 8 0

Step 6:

6 2 4

1 3 0

7 8 5

Step 7:

6 2 0

1 3 4

7 8 5

Step 8:

6 0 2

1 3 4

7 8 5

Step 9:

6 3 2

1 0 4

7 8 5

Step 10:

6 3 2

0 1 4

7 8 5

Step 11:

0 3 2

6 1 4

7 8 5

Step 12:

3 0 2

6 1 4

7 8 5

Step 13:

3 1 2

6 0 4

7 8 5

Step 14:

3 1 2

6 4 0

7 8 5

Step 15:

3 1 2

6 4 5

7 8 0

Step 16:

3 1 2

6 4 5

7 0 8

Step 17:

3 1 2

6 4 5

0 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 2559

H1 Time: 0.1243 seconds

Solution Found using H2:

Step 1:

6 2 4

1 5 8

7 3 0

Step 2:

6 2 4

1 5 0

7 3 8

Step 3:

6 2 4

1 0 5

7 3 8

Step 4:

6 2 4

1 3 5

7 0 8

Step 5:

6 2 4

1 3 5

7 8 0

Step 6:

6 2 4

1 3 0

7 8 5

Step 7:

6 2 0

1 3 4

7 8 5

Step 8:

6 0 2

1 3 4

7 8 5

Step 9:

6 3 2

1 0 4

7 8 5

Step 10:

6 3 2

0 1 4

7 8 5

Step 11:

0 3 2

6 1 4

7 8 5

Step 12:

3 0 2

6 1 4

7 8 5

Step 13:

3 1 2

6 0 4

7 8 5

Step 14:

3 1 2

6 4 0

7 8 5

Step 15:

3 1 2

6 4 5

7 8 0

Step 16:

3 1 2

6 4 5

7 0 8

Step 17:

3 1 2

6 4 5

0 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 439

H2 Time: 0.0222 seconds

Solving Puzzle 2 at Depth 20:

1 5 8

2 4 6

3 7 0

Solution Found using H1:

Step 1:

1 5 8

2 4 6

3 7 0

Step 2:

1 5 8

2 4 0

3 7 6

Step 3:

1 5 0

2 4 8

3 7 6

Step 4:

1 0 5

2 4 8

3 7 6

Step 5:

1 4 5

2 0 8

3 7 6

Step 6:

1 4 5

0 2 8

3 7 6

Step 7:

0 4 5

1 2 8
3 7 6
Step 8:
4 0 5
1 2 8
3 7 6
Step 9:
4 2 5
1 0 8
3 7 6
Step 10:
4 2 5
1 7 8
3 0 6
Step 11:
4 2 5
1 7 8
3 6 0
Step 12:
4 2 5
1 7 0
3 6 8
Step 13:
4 2 0
1 7 5
3 6 8
Step 14:
4 0 2
1 7 5
3 6 8
Step 15:
0 4 2
1 7 5
3 6 8
Step 16:
1 4 2
0 7 5
3 6 8
Step 17:
1 4 2
3 7 5
0 6 8
Step 18:
1 4 2
3 7 5
6 0 8
Step 19:
1 4 2
3 0 5
6 7 8
Step 20:
1 0 2

3 4 5

6 7 8

Step 21:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 5859

H1 Time: 0.2262 seconds

Solution Found using H2:

Step 1:

1 5 8

2 4 6

3 7 0

Step 2:

1 5 8

2 4 0

3 7 6

Step 3:

1 5 0

2 4 8

3 7 6

Step 4:

1 0 5

2 4 8

3 7 6

Step 5:

1 4 5

2 0 8

3 7 6

Step 6:

1 4 5

0 2 8

3 7 6

Step 7:

0 4 5

1 2 8

3 7 6

Step 8:

4 0 5

1 2 8

3 7 6

Step 9:

4 2 5

1 0 8

3 7 6

Step 10:

4 2 5

1 7 8

3 0 6

Step 11:

4 2 5

1 7 8

3 6 0

Step 12:

4 2 5

1 7 0

3 6 8

Step 13:

4 2 0

1 7 5

3 6 8

Step 14:

4 0 2

1 7 5

3 6 8

Step 15:

0 4 2

1 7 5

3 6 8

Step 16:

1 4 2

0 7 5

3 6 8

Step 17:

1 4 2

3 7 5

0 6 8

Step 18:

1 4 2

3 7 5

6 0 8

Step 19:

1 4 2

3 0 5

6 7 8

Step 20:

1 0 2

3 4 5

6 7 8

Step 21:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 1117

H2 Time: 0.0597 seconds

Solving Puzzle 3 at Depth 20:

1 4 3

7 0 6

8 2 5

Solution Found using H1:

Step 1:

1 4 3
7 0 6
8 2 5
Step 2:
1 4 3
7 2 6
8 0 5
Step 3:
1 4 3
7 2 6
0 8 5
Step 4:
1 4 3
0 2 6
7 8 5
Step 5:
0 4 3
1 2 6
7 8 5
Step 6:
4 0 3
1 2 6
7 8 5
Step 7:
4 2 3
1 0 6
7 8 5
Step 8:
4 2 3
1 6 0
7 8 5
Step 9:
4 2 0
1 6 3
7 8 5
Step 10:
4 0 2
1 6 3
7 8 5
Step 11:
0 4 2
1 6 3
7 8 5
Step 12:
1 4 2
0 6 3
7 8 5
Step 13:
1 4 2
6 0 3
7 8 5
Step 14:

1 4 2

6 3 0

7 8 5

Step 15:

1 4 2

6 3 5

7 8 0

Step 16:

1 4 2

6 3 5

7 0 8

Step 17:

1 4 2

6 3 5

0 7 8

Step 18:

1 4 2

0 3 5

6 7 8

Step 19:

1 4 2

3 0 5

6 7 8

Step 20:

1 0 2

3 4 5

6 7 8

Step 21:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 6982

H1 Time: 0.2627 seconds

Solution Found using H2:

Step 1:

1 4 3

7 0 6

8 2 5

Step 2:

1 4 3

7 2 6

8 0 5

Step 3:

1 4 3

7 2 6

0 8 5

Step 4:

1 4 3

0 2 6

7 8 5

Step 5:

0 4 3

1 2 6

7 8 5

Step 6:

4 0 3

1 2 6

7 8 5

Step 7:

4 2 3

1 0 6

7 8 5

Step 8:

4 2 3

1 6 0

7 8 5

Step 9:

4 2 0

1 6 3

7 8 5

Step 10:

4 0 2

1 6 3

7 8 5

Step 11:

0 4 2

1 6 3

7 8 5

Step 12:

1 4 2

0 6 3

7 8 5

Step 13:

1 4 2

6 0 3

7 8 5

Step 14:

1 4 2

6 3 0

7 8 5

Step 15:

1 4 2

6 3 5

7 8 0

Step 16:

1 4 2

6 3 5

7 0 8

Step 17:

1 4 2

6 3 5

0 7 8

Step 18:

1 4 2
0 3 5
6 7 8
Step 19:

1 4 2
3 0 5
6 7 8

Step 20:
1 0 2
3 4 5
6 7 8

Step 21:
0 1 2
3 4 5
6 7 8

H2 Search Cost: 507

H2 Time: 0.0245 seconds

Solving Puzzle 4 at Depth 20:

0 3 8
5 2 7
1 6 4

Solution Found using H1:

Step 1:
0 3 8
5 2 7
1 6 4

Step 2:
5 3 8
0 2 7
1 6 4

Step 3:
5 3 8
1 2 7
0 6 4

Step 4:
5 3 8
1 2 7
6 0 4

Step 5:
5 3 8
1 0 7
6 2 4

Step 6:
5 0 8
1 3 7
6 2 4

Step 7:
0 5 8
1 3 7
6 2 4

Step 8:

1 5 8

0 3 7

6 2 4

Step 9:

1 5 8

3 0 7

6 2 4

Step 10:

1 5 8

3 2 7

6 0 4

Step 11:

1 5 8

3 2 7

6 4 0

Step 12:

1 5 8

3 2 0

6 4 7

Step 13:

1 5 0

3 2 8

6 4 7

Step 14:

1 0 5

3 2 8

6 4 7

Step 15:

1 2 5

3 0 8

6 4 7

Step 16:

1 2 5

3 4 8

6 0 7

Step 17:

1 2 5

3 4 8

6 7 0

Step 18:

1 2 5

3 4 0

6 7 8

Step 19:

1 2 0

3 4 5

6 7 8

Step 20:

1 0 2

3 4 5

6 7 8

Step 21:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 5823

H1 Time: 0.2197 seconds

Solution Found using H2:

Step 1:

0 3 8

5 2 7

1 6 4

Step 2:

5 3 8

0 2 7

1 6 4

Step 3:

5 3 8

1 2 7

0 6 4

Step 4:

5 3 8

1 2 7

6 0 4

Step 5:

5 3 8

1 2 7

6 4 0

Step 6:

5 3 8

1 2 0

6 4 7

Step 7:

5 3 8

1 0 2

6 4 7

Step 8:

5 0 8

1 3 2

6 4 7

Step 9:

0 5 8

1 3 2

6 4 7

Step 10:

1 5 8

0 3 2

6 4 7

Step 11:

1 5 8

3 0 2

6 4 7

Step 12:

1 5 8

3 2 0

6 4 7

Step 13:

1 5 0

3 2 8

6 4 7

Step 14:

1 0 5

3 2 8

6 4 7

Step 15:

1 2 5

3 0 8

6 4 7

Step 16:

1 2 5

3 4 8

6 0 7

Step 17:

1 2 5

3 4 8

6 7 0

Step 18:

1 2 5

3 4 0

6 7 8

Step 19:

1 2 0

3 4 5

6 7 8

Step 20:

1 0 2

3 4 5

6 7 8

Step 21:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 602

H2 Time: 0.0338 seconds

Solving Puzzle 5 at Depth 20:

6 3 2

7 0 8

1 4 5

Solution Found using H1:

Step 1:

6 3 2

7 0 8

1 4 5

Step 2:

6 3 2

7 8 0

1 4 5

Step 3:

6 3 2

7 8 5

1 4 0

Step 4:

6 3 2

7 8 5

1 0 4

Step 5:

6 3 2

7 8 5

0 1 4

Step 6:

6 3 2

0 8 5

7 1 4

Step 7:

0 3 2

6 8 5

7 1 4

Step 8:

3 0 2

6 8 5

7 1 4

Step 9:

3 2 0

6 8 5

7 1 4

Step 10:

3 2 5

6 8 0

7 1 4

Step 11:

3 2 5

6 0 8

7 1 4

Step 12:

3 2 5

6 1 8

7 0 4

Step 13:

3 2 5

6 1 8

7 4 0

Step 14:

3 2 5

6 1 0

7 4 8

Step 15:

3 2 0

6 1 5

7 4 8

Step 16:

3 0 2

6 1 5

7 4 8

Step 17:

3 1 2

6 0 5

7 4 8

Step 18:

3 1 2

6 4 5

7 0 8

Step 19:

3 1 2

6 4 5

0 7 8

Step 20:

3 1 2

0 4 5

6 7 8

Step 21:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 8123

H1 Time: 0.3153 seconds

Solution Found using H2:

Step 1:

6 3 2

7 0 8

1 4 5

Step 2:

6 3 2

7 8 0

1 4 5

Step 3:

6 3 2

7 8 5

1 4 0

Step 4:

6 3 2

7 8 5

1 0 4

Step 5:

6 3 2

7 8 5

0 1 4

Step 6:

6 3 2

0 8 5

7 1 4

Step 7:

0 3 2

6 8 5

7 1 4

Step 8:

3 0 2

6 8 5

7 1 4

Step 9:

3 2 0

6 8 5

7 1 4

Step 10:

3 2 5

6 8 0

7 1 4

Step 11:

3 2 5

6 0 8

7 1 4

Step 12:

3 2 5

6 1 8

7 0 4

Step 13:

3 2 5

6 1 8

7 4 0

Step 14:

3 2 5

6 1 0

7 4 8

Step 15:

3 2 0

6 1 5

7 4 8

Step 16:

3 0 2

6 1 5

7 4 8

Step 17:

3 1 2

6 0 5

7 4 8

Step 18:

3 1 2

6 4 5

7 0 8

Step 19:

3 1 2

6 4 5

0 7 8

Step 20:

3 1 2

0 4 5

6 7 8

Step 21:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 1421

H2 Time: 0.0701 seconds

Solving Puzzle 6 at Depth 20:

2 5 0

1 3 7

8 4 6

Solution Found using H1:

Step 1:

2 5 0

1 3 7

8 4 6

Step 2:

2 0 5

1 3 7

8 4 6

Step 3:

0 2 5

1 3 7

8 4 6

Step 4:

1 2 5

0 3 7

8 4 6

Step 5:

1 2 5

3 0 7

8 4 6

Step 6:

1 2 5

3 4 7

8 0 6

Step 7:

1 2 5

3 4 7

0 8 6

Step 8:

1 2 5

0 4 7
3 8 6
Step 9:
1 2 5
4 0 7
3 8 6
Step 10:
1 2 5
4 8 7
3 0 6
Step 11:
1 2 5
4 8 7
3 6 0
Step 12:
1 2 5
4 8 0
3 6 7
Step 13:
1 2 5
4 0 8
3 6 7
Step 14:
1 2 5
0 4 8
3 6 7
Step 15:
1 2 5
3 4 8
0 6 7
Step 16:
1 2 5
3 4 8
6 0 7
Step 17:
1 2 5
3 4 8
6 7 0
Step 18:
1 2 5
3 4 0
6 7 8
Step 19:
1 2 0
3 4 5
6 7 8
Step 20:
1 0 2
3 4 5
6 7 8
Step 21:
0 1 2

3 4 5

6 7 8

H1 Search Cost: 5524

H1 Time: 0.2180 seconds

Solution Found using H2:

Step 1:

2 5 0

1 3 7

8 4 6

Step 2:

2 0 5

1 3 7

8 4 6

Step 3:

0 2 5

1 3 7

8 4 6

Step 4:

1 2 5

0 3 7

8 4 6

Step 5:

1 2 5

3 0 7

8 4 6

Step 6:

1 2 5

3 4 7

8 0 6

Step 7:

1 2 5

3 4 7

0 8 6

Step 8:

1 2 5

0 4 7

3 8 6

Step 9:

1 2 5

4 0 7

3 8 6

Step 10:

1 2 5

4 8 7

3 0 6

Step 11:

1 2 5

4 8 7

3 6 0

Step 12:

1 2 5

4 8 0

3 6 7

Step 13:

1 2 5

4 0 8

3 6 7

Step 14:

1 2 5

0 4 8

3 6 7

Step 15:

1 2 5

3 4 8

0 6 7

Step 16:

1 2 5

3 4 8

6 0 7

Step 17:

1 2 5

3 4 8

6 7 0

Step 18:

1 2 5

3 4 0

6 7 8

Step 19:

1 2 0

3 4 5

6 7 8

Step 20:

1 0 2

3 4 5

6 7 8

Step 21:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 519

H2 Time: 0.0288 seconds

Solving Puzzle 7 at Depth 20:

5 1 2

6 0 7

3 4 8

Solution Found using H1:

Step 1:

5 1 2

6 0 7

3 4 8

Step 2:

5 1 2
0 6 7
3 4 8
Step 3:
5 1 2
3 6 7
0 4 8
Step 4:
5 1 2
3 6 7
4 0 8
Step 5:
5 1 2
3 0 7
4 6 8
Step 6:
5 1 2
3 7 0
4 6 8
Step 7:
5 1 0
3 7 2
4 6 8
Step 8:
5 0 1
3 7 2
4 6 8
Step 9:
0 5 1
3 7 2
4 6 8
Step 10:
3 5 1
0 7 2
4 6 8
Step 11:
3 5 1
4 7 2
0 6 8
Step 12:
3 5 1
4 7 2
6 0 8
Step 13:
3 5 1
4 0 2
6 7 8
Step 14:
3 0 1
4 5 2
6 7 8
Step 15:

3 1 0

4 5 2

6 7 8

Step 16:

3 1 2

4 5 0

6 7 8

Step 17:

3 1 2

4 0 5

6 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 3513

H1 Time: 0.1245 seconds

Solution Found using H2:

Step 1:

5 1 2

6 0 7

3 4 8

Step 2:

5 1 2

0 6 7

3 4 8

Step 3:

5 1 2

3 6 7

0 4 8

Step 4:

5 1 2

3 6 7

4 0 8

Step 5:

5 1 2

3 0 7

4 6 8

Step 6:

5 1 2

3 7 0

4 6 8

Step 7:

5 1 0

3 7 2

4 6 8

Step 8:

5 0 1

3 7 2

4 6 8

Step 9:

0 5 1

3 7 2

4 6 8

Step 10:

3 5 1

0 7 2

4 6 8

Step 11:

3 5 1

4 7 2

0 6 8

Step 12:

3 5 1

4 7 2

6 0 8

Step 13:

3 5 1

4 0 2

6 7 8

Step 14:

3 0 1

4 5 2

6 7 8

Step 15:

3 1 0

4 5 2

6 7 8

Step 16:

3 1 2

4 5 0

6 7 8

Step 17:

3 1 2

4 0 5

6 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 795

H2 Time: 0.0377 seconds

Solving Puzzle 8 at Depth 20:

3 1 2

5 0 7

8 6 4

Solution Found using H1:

Step 1:

3 1 2

5 0 7

8 6 4

Step 2:

3 1 2

5 6 7

8 0 4

Step 3:

3 1 2

5 6 7

0 8 4

Step 4:

3 1 2

0 6 7

5 8 4

Step 5:

3 1 2

6 0 7

5 8 4

Step 6:

3 1 2

6 8 7

5 0 4

Step 7:

3 1 2

6 8 7

5 4 0

Step 8:

3 1 2

6 8 0

5 4 7

Step 9:

3 1 2

6 0 8

5 4 7

Step 10:

3 1 2

6 4 8

5 0 7

Step 11:

3 1 2

6 4 8

0 5 7

Step 12:

3 1 2

0 4 8

6 5 7

Step 13:

3 1 2

4 0 8

6 5 7

Step 14:

3 1 2

4 5 8

6 0 7

Step 15:

3 1 2

4 5 8

6 7 0

Step 16:

3 1 2

4 5 0

6 7 8

Step 17:

3 1 2

4 0 5

6 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 3203

H1 Time: 0.1347 seconds

Solution Found using H2:

Step 1:

3 1 2

5 0 7

8 6 4

Step 2:

3 1 2

5 6 7

8 0 4

Step 3:

3 1 2

5 6 7

0 8 4

Step 4:

3 1 2

0 6 7

5 8 4

Step 5:

3 1 2

6 0 7

5 8 4

Step 6:

3 1 2

6 8 7

5 0 4

Step 7:

3 1 2

6 8 7

5 4 0

Step 8:

3 1 2

6 8 0

5 4 7

Step 9:

3 1 2

6 0 8

5 4 7

Step 10:

3 1 2

6 4 8

5 0 7

Step 11:

3 1 2

6 4 8

0 5 7

Step 12:

3 1 2

0 4 8

6 5 7

Step 13:

3 1 2

4 0 8

6 5 7

Step 14:

3 1 2

4 5 8

6 0 7

Step 15:

3 1 2

4 5 8

6 7 0

Step 16:

3 1 2

4 5 0

6 7 8

Step 17:

3 1 2

4 0 5

6 7 8

Step 18:

3 1 2

0 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 638

H2 Time: 0.0310 seconds

Solving Puzzle 9 at Depth 20:

1 8 2

4 7 6

3 5 0

Solution Found using H1:

Step 1:

1 8 2

4 7 6

3 5 0

Step 2:

1 8 2

4 7 6

3 0 5

Step 3:

1 8 2

4 0 6

3 7 5

Step 4:

1 8 2

4 6 0

3 7 5

Step 5:

1 8 2

4 6 5

3 7 0

Step 6:

1 8 2

4 6 5

3 0 7

Step 7:

1 8 2

4 0 5

3 6 7

Step 8:

1 0 2

4 8 5

3 6 7

Step 9:

1 2 0

4 8 5

3 6 7

Step 10:

1 2 5

4 8 0

3 6 7

Step 11:

1 2 5

4 0 8

3 6 7

Step 12:

1 2 5

0 4 8

3 6 7

Step 13:

1 2 5

3 4 8

0 6 7

Step 14:

1 2 5

3 4 8

6 0 7

Step 15:

1 2 5

3 4 8

6 7 0

Step 16:

1 2 5

3 4 0

6 7 8

Step 17:

1 2 0

3 4 5

6 7 8

Step 18:

1 0 2

3 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 2472

H1 Time: 0.1000 seconds

Solution Found using H2:

Step 1:

1 8 2

4 7 6

3 5 0

Step 2:

1 8 2

4 7 6

3 0 5

Step 3:

1 8 2

4 0 6

3 7 5

Step 4:

1 8 2

4 6 0

3 7 5

Step 5:

1 8 2

4 6 5

3 7 0

Step 6:

1 8 2

4 6 5

3 0 7

Step 7:

1 8 2

4 0 5

3 6 7

Step 8:

1 0 2

4 8 5

3 6 7

Step 9:

1 2 0

4 8 5

3 6 7

Step 10:

1 2 5

4 8 0

3 6 7

Step 11:

1 2 5

4 0 8

3 6 7

Step 12:

1 2 5

0 4 8

3 6 7

Step 13:

1 2 5

3 4 8

0 6 7

Step 14:

1 2 5

3 4 8

6 0 7

Step 15:

1 2 5

3 4 8

6 7 0

Step 16:

1 2 5

3 4 0

6 7 8

Step 17:

1 2 0

3 4 5

6 7 8

Step 18:

1 0 2

3 4 5

6 7 8

Step 19:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 477

H2 Time: 0.0221 seconds

Solving Puzzle 10 at Depth 20:

1 8 0

3 5 6

4 2 7

Solution Found using H1:

Step 1:

1 8 0

3 5 6

4 2 7

Step 2:

1 0 8

3 5 6

4 2 7

Step 3:

1 5 8

3 0 6

4 2 7

Step 4:

1 5 8

3 2 6

4 0 7

Step 5:

1 5 8

3 2 6

4 7 0

Step 6:

1 5 8

3 2 0

4 7 6

Step 7:

1 5 0

3 2 8

4 7 6

Step 8:

1 0 5

3 2 8

4 7 6

Step 9:

1 2 5

3 0 8

4 7 6

Step 10:

1 2 5

3 7 8

4 0 6

Step 11:

1 2 5

3 7 8

4 6 0

Step 12:

1 2 5

3 7 0

4 6 8

Step 13:

1 2 0

3 7 5

4 6 8

Step 14:

1 0 2

3 7 5

4 6 8

Step 15:

0 1 2

3 7 5

4 6 8

Step 16:

3 1 2

0 7 5

4 6 8

Step 17:

3 1 2

4 7 5

0 6 8

Step 18:

3 1 2

4 7 5

6 0 8

Step 19:

3 1 2

4 0 5

6 7 8

Step 20:

3 1 2

0 4 5

6 7 8

Step 21:

0 1 2

3 4 5

6 7 8

H1 Search Cost: 5672

H1 Time: 0.2154 seconds

Solution Found using H2:

Step 1:

1 8 0

3 5 6

4 2 7

Step 2:

1 0 8

3 5 6

4 2 7

Step 3:

1 5 8

3 0 6

4 2 7

Step 4:

1 5 8

3 2 6

4 0 7

Step 5:

1 5 8

3 2 6

4 7 0

Step 6:

1 5 8

3 2 0

4 7 6

Step 7:

1 5 0

3 2 8

4 7 6

Step 8:

1 0 5

3 2 8

4 7 6

Step 9:

1 2 5

3 0 8

4 7 6

Step 10:

1 2 5

3 7 8

4 0 6

Step 11:

1 2 5

3 7 8

4 6 0

Step 12:

1 2 5

3 7 0

4 6 8

Step 13:

1 2 0

3 7 5

4 6 8

Step 14:

1 0 2

3 7 5

4 6 8

Step 15:

0 1 2

3 7 5

4 6 8

Step 16:

3 1 2

0 7 5

4 6 8

Step 17:

3 1 2

4 7 5

0 6 8

Step 18:

3 1 2

4 7 5

6 0 8

Step 19:

3 1 2

4 0 5

6 7 8

Step 20:

3 1 2

0 4 5

6 7 8

Step 21:

0 1 2

3 4 5

6 7 8

H2 Search Cost: 642

H2 Time: 0.0305 seconds