

```
T[s[1, 1]]
```

```
T[s[1, 1]]
```

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  {2, 4, 6, 8, 11, 14, 17, 19, 21, 22, 24, 25, 27, 29, 32, 35, 38, 40, 42, 44, 47, 49, 51, 53},
  {3, 7, 9, 12, 13, 15, 16, 18, 28, 30, 31, 33, 34, 36, 37, 39, 43, 45, 46, 48, 54},
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```

```
MoveCount[i_, i_] := 0;
```

```
MoveCount[i_, j_] := T[s[i, j]][[3]];
```

```
Return[]
```

```
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```

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{46}, {47}, {48}, {49}, {50}, {51}, {52}, {53}, {54}}, 156105796449}
```

```
newgens = Generators[[{1, 2, 3, 5, 4, 6}]]
```

```
M[{18, 27, 36, 4, 5, 6, 7, 8, 9, 3, 11, 12, 13, 14, 15, 16, 17, 45, 2,
  20, 21, 22, 23, 24, 25, 26, 44, 1, 29, 30, 31, 32, 33, 34, 35, 43, 37, 38, 39,
  40, 41, 42, 10, 19, 28, 52, 49, 46, 53, 50, 47, 54, 51, 48}, {BottomFace}, 1],
M[{1, 2, 3, 4, 5, 6, 16, 25, 34, 10, 11, 9, 15, 24, 33, 39, 17, 18, 19, 20, 8,
  14, 23, 32, 38, 26, 27, 28, 29, 7, 13, 22, 31, 37, 35, 36, 12, 21, 30, 40,
  41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54}, {TopFace}, 1],
M[{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22,
  23, 24, 25, 26, 27, 31, 32, 33, 34, 35, 36, 48, 47, 46, 39, 42, 45, 38,
  41, 44, 37, 40, 43, 30, 29, 28, 49, 50, 51, 52, 53, 54}, {FrontFace}, 1],
M[{13, 2, 3, 22, 5, 6, 31, 8, 9, 12, 21, 30, 37, 14, 15, 16, 17, 18, 11, 20, 29,
  40, 23, 24, 25, 26, 27, 10, 19, 28, 43, 32, 33, 34, 35, 36, 46, 38, 39,
  49, 41, 42, 52, 44, 45, 1, 47, 48, 4, 50, 51, 7, 53, 54}, {LeftFace}, 1],
M[{3, 6, 9, 2, 5, 8, 1, 4, 7, 54, 53, 52, 10, 11, 12, 13, 14, 15, 19, 20, 21, 22,
  23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40,
  41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 18, 17, 16}, {BackFace}, 1],
M[{1, 2, 48, 4, 5, 51, 7, 8, 54, 10, 11, 12, 13, 14, 3, 18, 27, 36, 19, 20, 21,
  22, 23, 6, 17, 26, 35, 28, 29, 30, 31, 32, 9, 16, 25, 34, 37, 38, 15, 40,
  41, 24, 43, 44, 33, 46, 47, 39, 49, 50, 42, 52, 53, 45}, {RightFace}, 1]}
```

```
gens = Rest[Generators];
g = 0;
Print[Timing[
  (++g; Feed[#]; Product[Length[Images[i]], {i, n}]) & /@ newgens
]];
Print[tmc = TMC[]];
While[
  Last[opt = Optimize[]] ≠ tmc,
  tmc = Last[opt];
  Print[opt]
]
{135.143,
 {4, 16, 159993501696000, 1802166803103744000, 43252003274489856000, 43252003274489856000}}
13540
{96.252, 1992}
{92.977, 1836}
{87.704, 1834}
```

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## Recycling