

Encyclopedia of Life and Death

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August 15, 2024

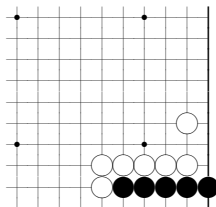
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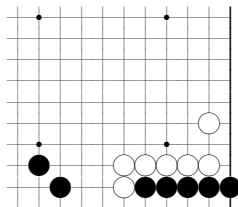
Problems

All problems are White to play.
Determine if the group is Alive, Dead, or decided by a Ko.

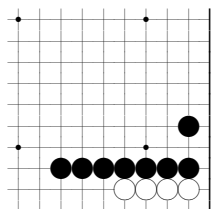
Life and Death on the Second Line



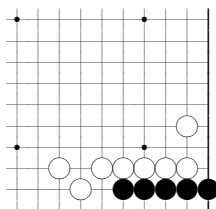
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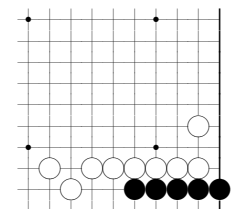
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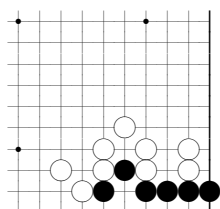
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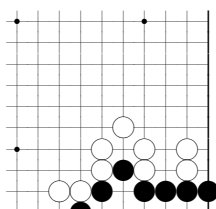
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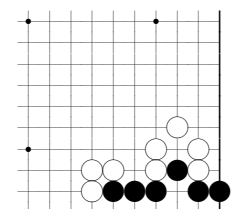
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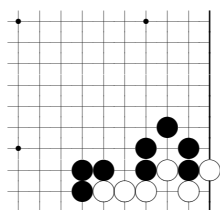
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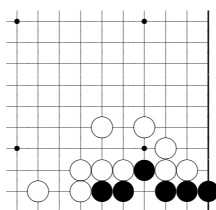
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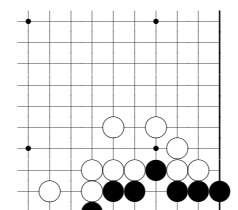
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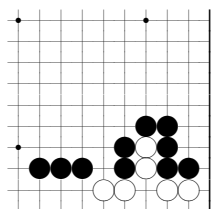
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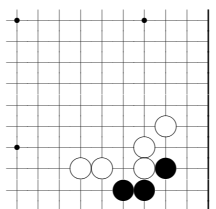
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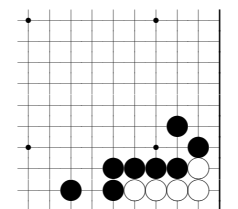
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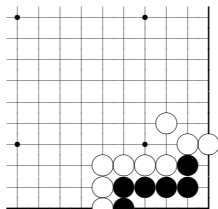
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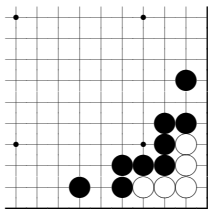
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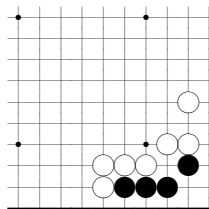
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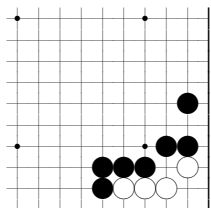
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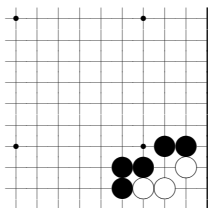
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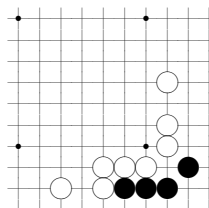
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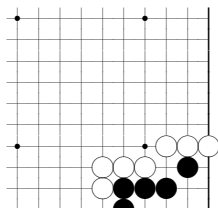
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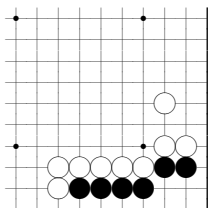
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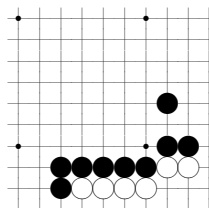
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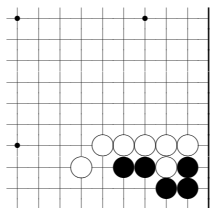
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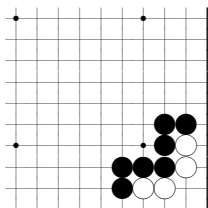
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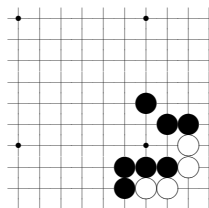
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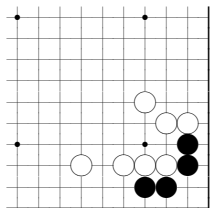
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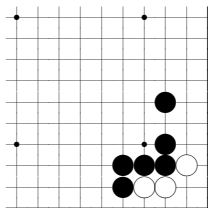
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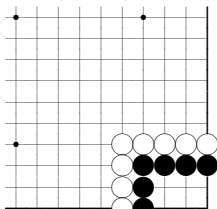


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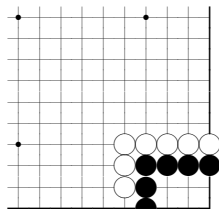


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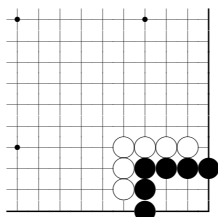
Six-Space Eye Shapes in the Corner



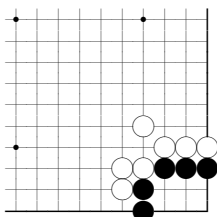
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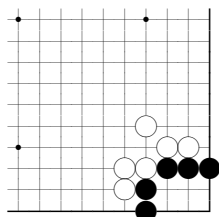
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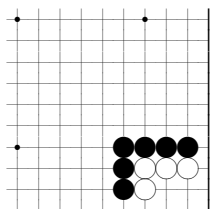
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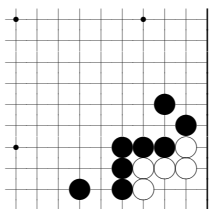
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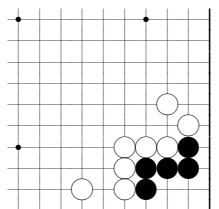
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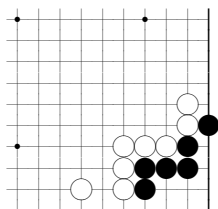
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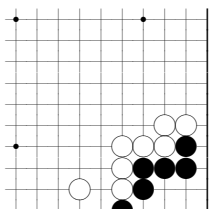
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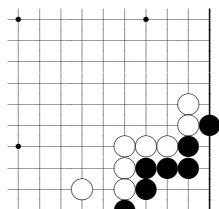
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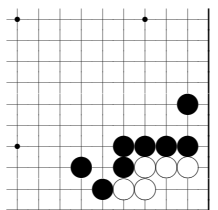
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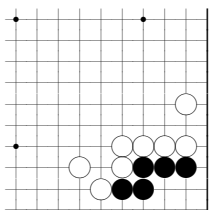
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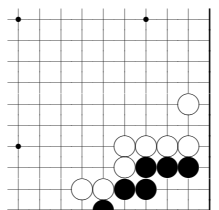
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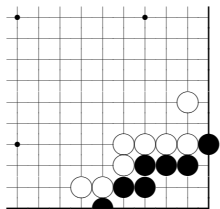
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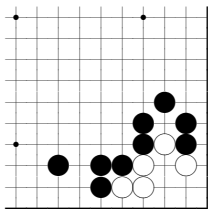
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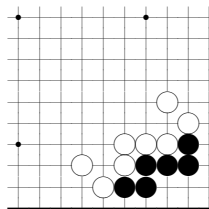
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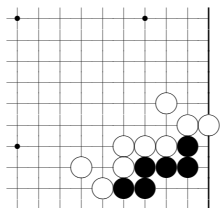
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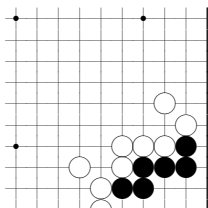
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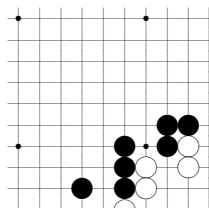
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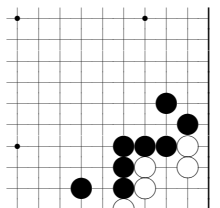
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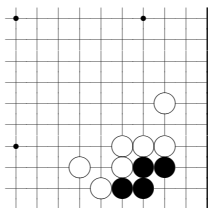
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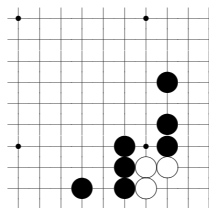
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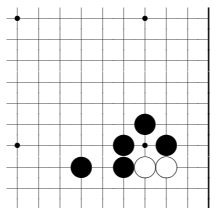
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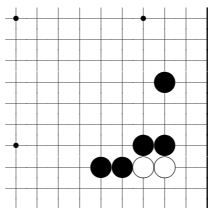
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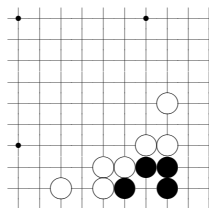
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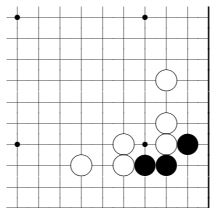
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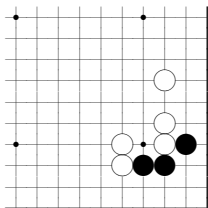
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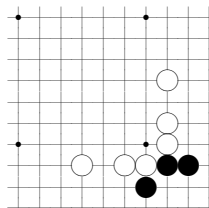
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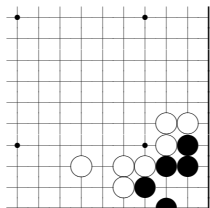
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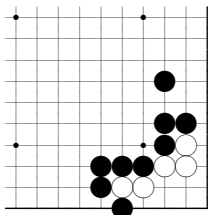
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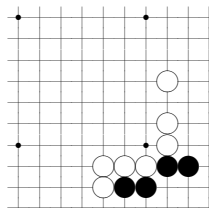
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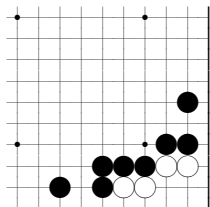
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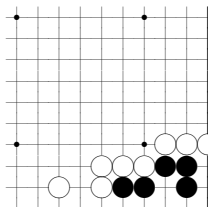
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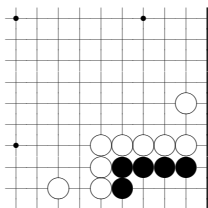


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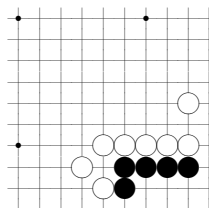


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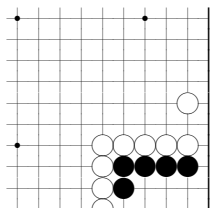
Eight-Space Eye Shapes in the Corner



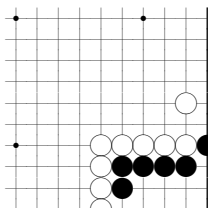
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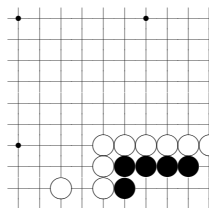
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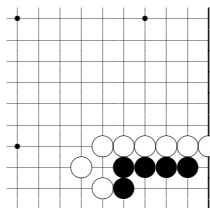
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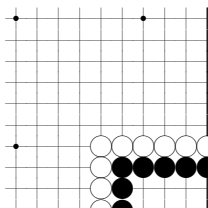
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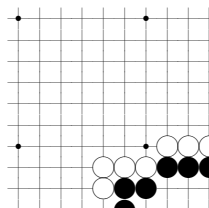
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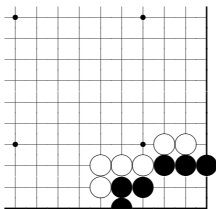
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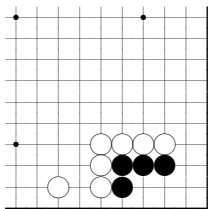
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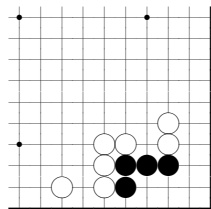
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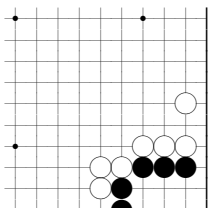
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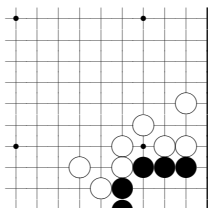
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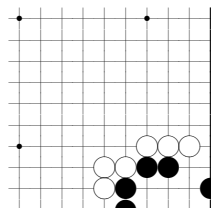
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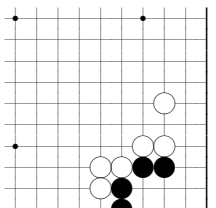
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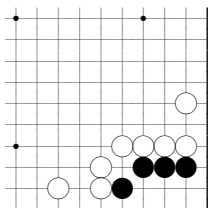
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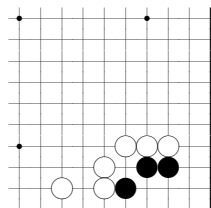
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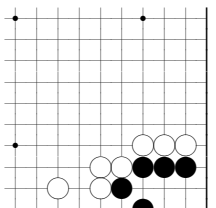
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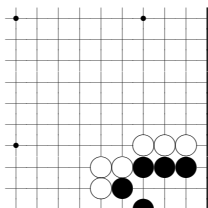
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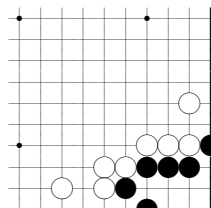
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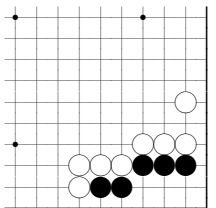
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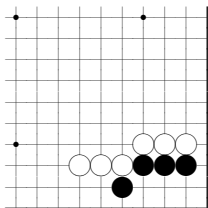
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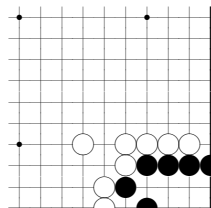
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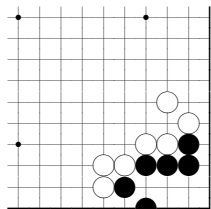
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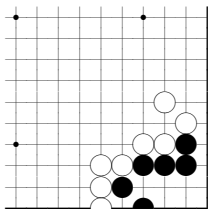
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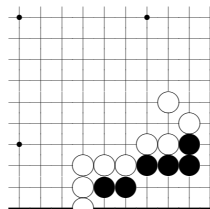
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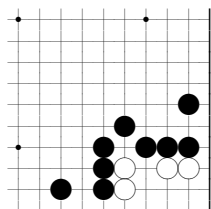
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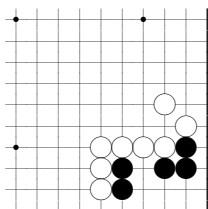
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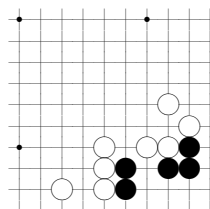
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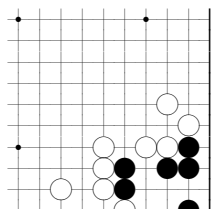
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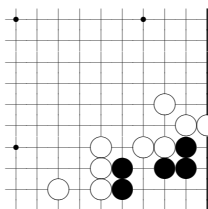
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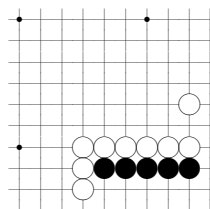
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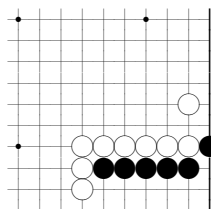
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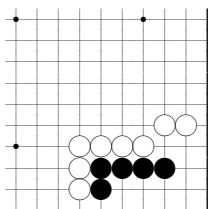
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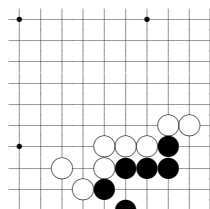
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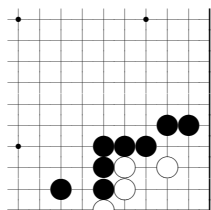
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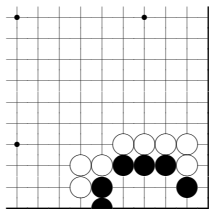


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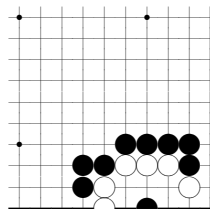


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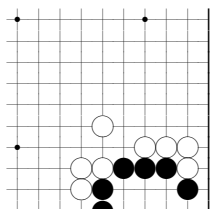
The Comb Patterns



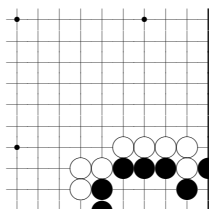
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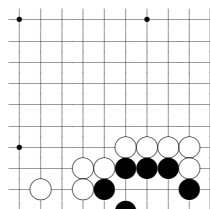
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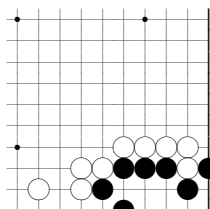
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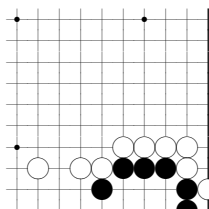
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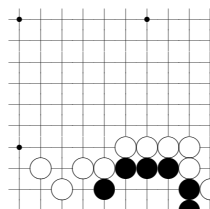
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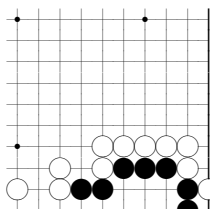
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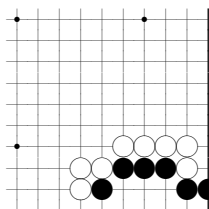
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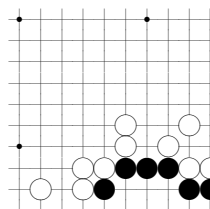
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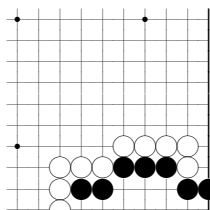
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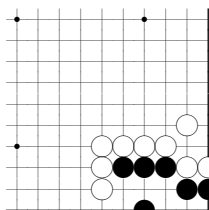
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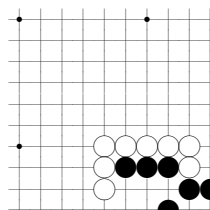
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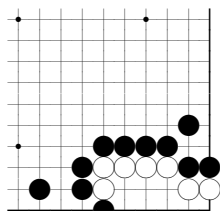
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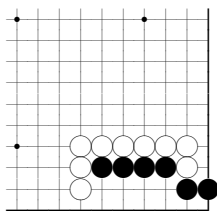
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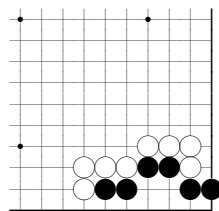
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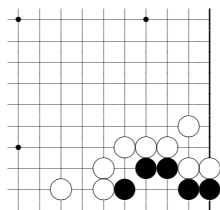
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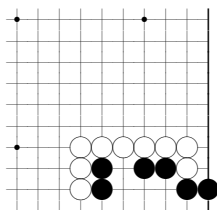
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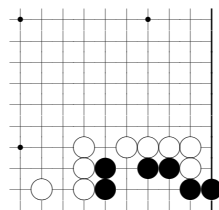
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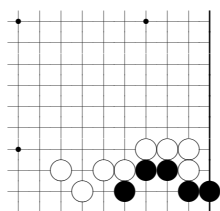
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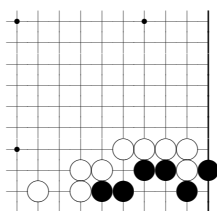
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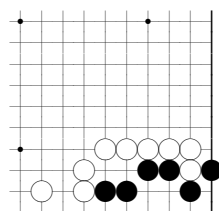
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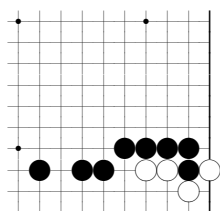
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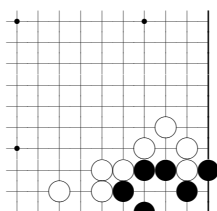
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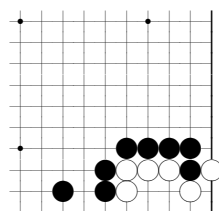
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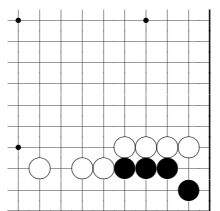
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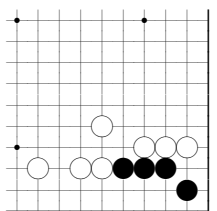
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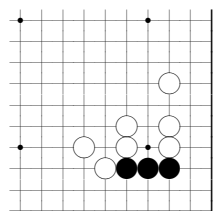
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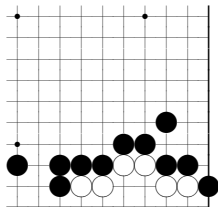
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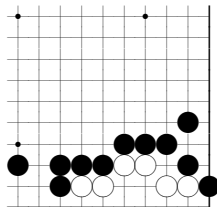
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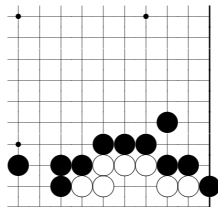
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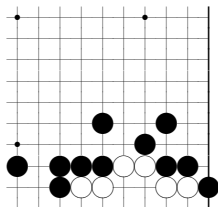
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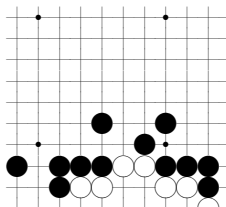
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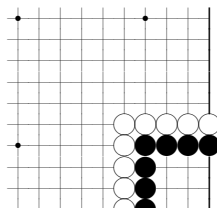


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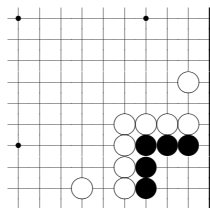


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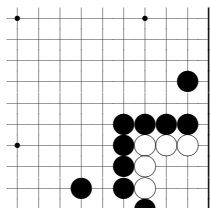
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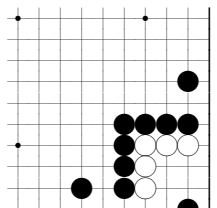
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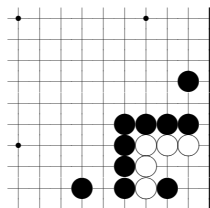
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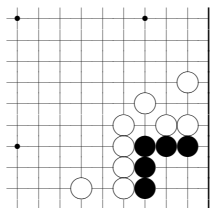
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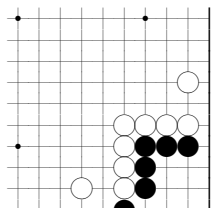
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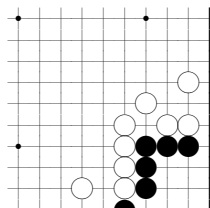
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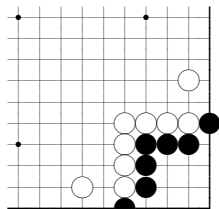
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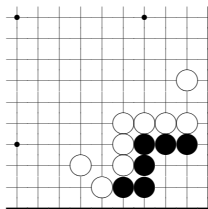
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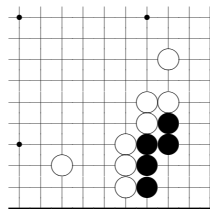
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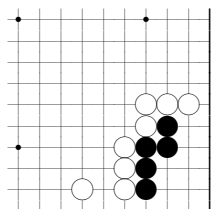
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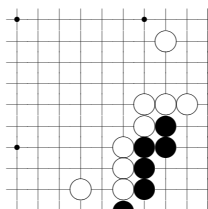
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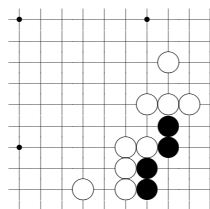
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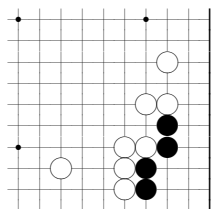
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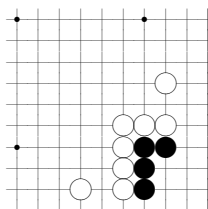
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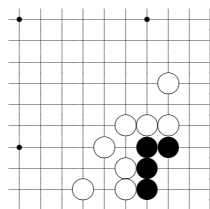
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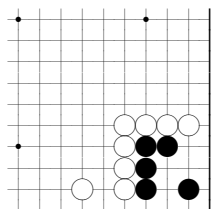
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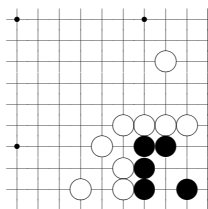
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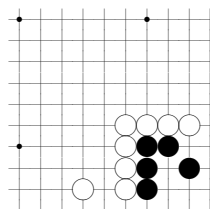
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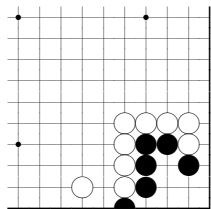
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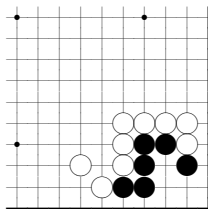
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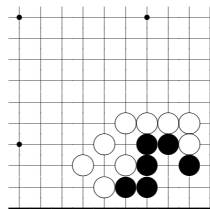
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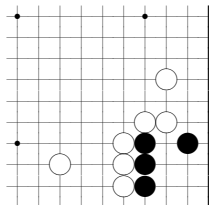
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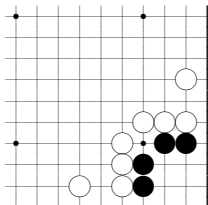
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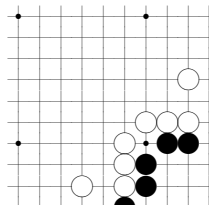
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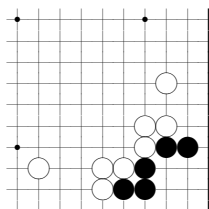
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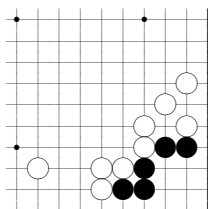
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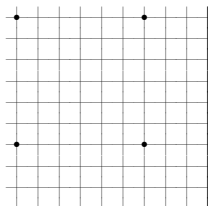


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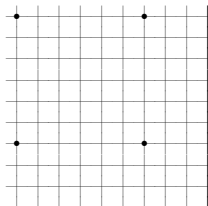


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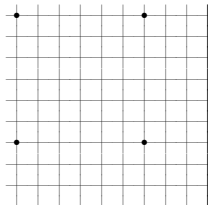
**Third Line
Shapes on the
Side**



**Second Line
Shapes on the
Side**



**Fourth Line
Shapes on the
Side**



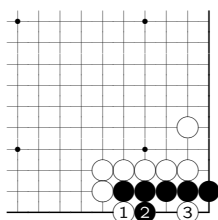
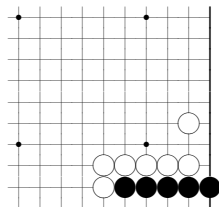
Solutions

Life and Death on the Second Line

Shape 1

White to play, Black dies

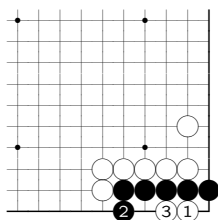
This shape consists of five stones lined up in the corner on the second line. If it is White's turn, Black dies; if it is Black's turn, he can live. This is one of the basic life and death patterns in the corner.



Solution 1

Solution 1. Beginning with a hane

White first plays a hane at 1, then answers Black 2 by playing inside at 3. Playing a stone like this inside your opponents area after narrowing his base is a basic technique in killing stones.

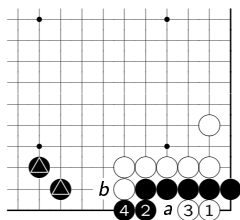


Solution 2

Solution 2. Beginning with a placement

White can also kill the group by beginning with the placement at 1, followed by Black 2 and White 3.

There are, in fact, two routes of play, beginning with the hane or the placement. You should take careful note, however, of the differences between these two methods



Reference

Reference. Connecting to the outside

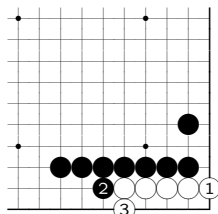
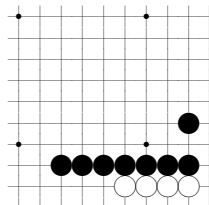
Suppose that there were black stones in the area of the two marked stones. In that case, after the placement of White 1, followed by Black 2 and White 3, Black would be able to connect to the outside with 4.

Therefore, White should play 1 at 2 as in Solution 1. Next, Black must play at *a* and White answers with 1. Now if Black captures at 4, White *b* is good enough.

Shape 2

White to play and live

This shape differs from the previous one in that White has not extended all the way to the edge of the board should he expand to the right or the left? The situation requires that you exercise some caution.

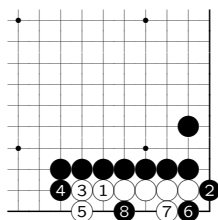


Solution

Solution. Descent is the vital point

White's descent at 1 is an important play. If Black answers at 2, then after White 3 we return to the same 'living' shape as the previous pattern

White's descent at 1 is at the vital point and makes use of the special nature of the corner.

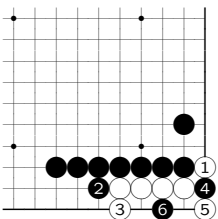


Failure 1

Failure 1. Inadequate space

Crawling to the left with White 1 is rash. Once Black hanes at the vital point with 2, White won't be able to live, even by expanding his area with White 3 and 5. The sequence continues to Black 8.

Black must also be careful. If he blocks with Black 2 at 3, he misses his chance.



Failure 2

Failure 2. Greedy

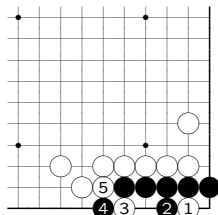
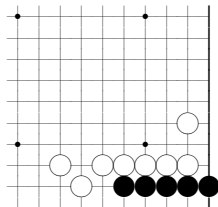
White's hane at 1 is pointlessly greedy. Because of this, Black's 2, 4, and 6 leads to a sudden and unexpected death.

Pay particular attention to the fact that the hane at White 1 versus the descent at 4 makes a one space difference in the width of White's eye.

Shape 3

White to play, Black dies

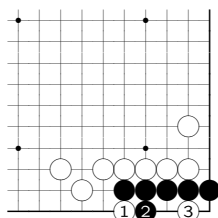
If the marked White stone were not present Black could play elsewhere and still be alive. However, if it is White's turn, the issue is how to make the marked stone work for him.



Solution 1.

Solution 1. Beginning inside

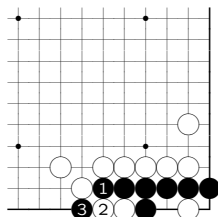
White 1 is the critical point for interfering with Black's making two eyes. If Black 2, then with the attachment at 3, White can make the left side into a false eye. Should Black descend at 3, White plays inside at 2. This is not, however, the only possibility for White 1.



Solution 2

Solution 2. From the outside

White can also start by attaching at 1. After Black 2, White 3 inside kills the group. This is not exactly the same technique as in the previous diagram and you need to understand the differences between them. To that end, take head of the variation in the next diagram.



Solution 3

4: at 2

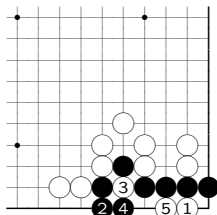
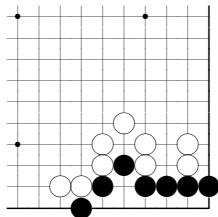
Solution 3. Dangerous

Continuing from the previous diagram, after Black 1, White 2 and 4 ruin Black's second eye. White may feel nervous about having two stones captured, but the follow up throw-in 4 is a standard technique.

Shape 5

White to play, Black dies

There is a defect in the left side of Black's shape. White must figure out how to take advantage of it. The problem is where to make his first move.

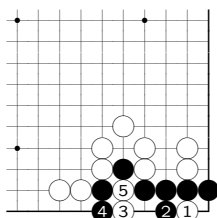


Solution 1

Solution 1. Begin inside

White should begin with 1, which prevents Black from getting two eyes. Even if Black descends at 2 to expand his eye space, the white throw-in at 3 leaves him with only one eye. The sequence ends with White 5.

If Black connects with 2 at 3, White kills him with the hane at 2.

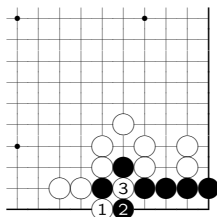


Solution 2

Solution 2. The placement tesuji

After White 1, if Black blocks at 2, the placement at White 3 becomes the tesuji (the best play in the local context). In response to Black 4, White 5 makes a false eye of the left side.

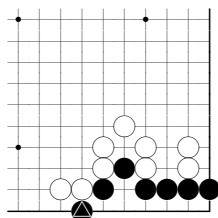
If instead of 3, White carelessly ataris at 4, Black will play at 3. A ko results, making this a failure for White.



Failure

Failure. Ko

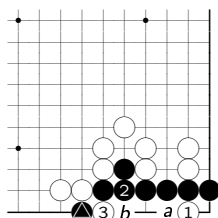
Beginning with the atari at White 1 is rash. Black 2 and White 3 produce a ko. Also, you should verify that if White begins with the placement at 2 instead of 1, Black will block at 1 and live.



Reference 1

Reference 1. Adding a hane

We've added a hane (the marked black stone) to the previous diagram. It appears that Black's situation improved markedly. However, the fact is nothing has changed. Just like before, if it's White's turn, Black dies.

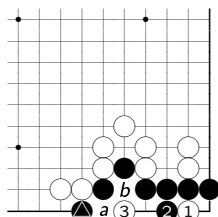


Reference 2

Reference 2. Same idea

Just as before White 1 is good enough. If Black connects at 2, White throws in with 3. If the marked Black stone were not present, White's throw-in at 3 would simply be a hane at 3; regardless, Black is dead. Continuing, next White answers Black *a* by extending inside to *b*.

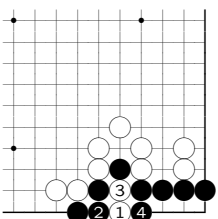
Likewise, should Black play 2 at 3, White plays at 2.



Reference 3

Reference 3. Placement

After White plays 1, if Black blocks at 2. White again makes the placement at 3. Next, if Black *a*, White *b*, or if Black *b*, White *a*. In either case, it is apparent that Black's hane is useless.



Reference 4

Reference 4. Alive

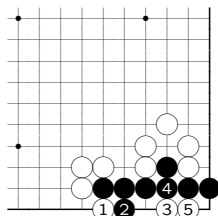
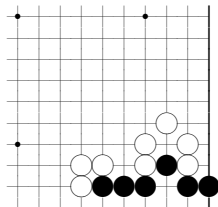
In this case as well, beginning with the placement at White 1 is a mistake. After 4, Black is alive.

Likewise, should White begin by throwing in a stone with White 1 at either 2 or 3, Black gets life after capturing at 1.

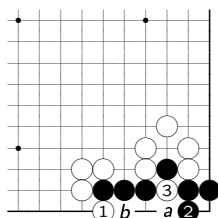
Shape 6

White to play, Black dies

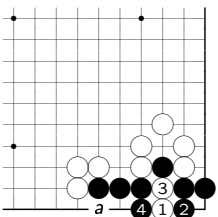
The location of the bulge has shifted to the right side. For White, deciding where to put the first stone in the position can be somewhat troublesome.



Solution 1



Solution 2



Failure

Solution 1 Begin with a hane

In this shape, beginning with the White hane at 1 is correct. If Black blocks at 2, White's play at the vital point of 3 comes immediately to mind. After Black 4 and White 4, Black is dead.

If Black blocks with 4 at 5, it should be apparent that White's insertion at 4 turns this into a false eye.

Solution 2. Throw-in

What about if, after White 1, Black plays at 2, to assure himself of himself of one eye in the corner? In that case the throw-in at 3 works. This makes *miai* of *a* and *b*: (Black *a*, White *b* and vice versa) Instead of 3, a white extension to *b* will also kill Black.

Failure. Wrong timing

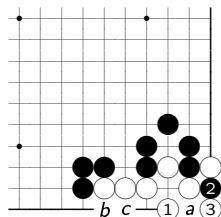
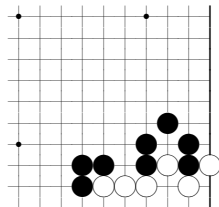
White 1 really looks like the vital point, but playing it immediately fails. Black lives with 2 to 4. He could also live with Black 2 at 3, followed by White 2, Black *a*, White 4: this is *seki*.

The trick is to begin with a hane, then play at the now-obvious vital point.

Shape 7

White to play and live

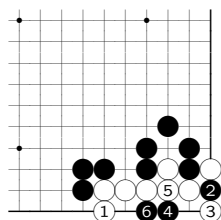
In the corner, replacing the extension to the edge of the board with a hane weakens White's shape. If it's Black's turn and he wants to live, where is the vital point?



Solution

Solution. Partition

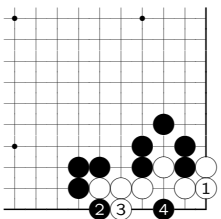
White 1, establishing a partition between the two eyes, is clever. The presence of the hane means that if Black plays 2, White's capture at 3 gives him one eye at *a*, and he is assured of a second eye by simply blocking a black hane at *b* with *c*.



Failure 1

Failure 1. As wide as possible?

Expanding your eye space is not always the answer. It looks as if White is alive after he descends to 1, but after Black attacks with 2 and 4, White is left with one eye. The throw-in of Black 2, in particular, is essential.



Failure 2

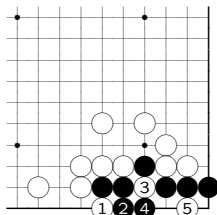
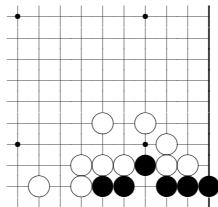
Failure 2. Reversion

What happens when White, still trying to expand his eye space, connects at 1? In that case we return to the same shape as in the previous pattern. After the combination of Black 2 and 4, White is dead.

Shape 8

White to play, Black dies

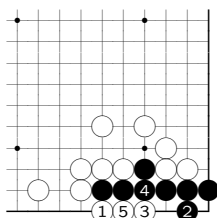
Once again, the position of the bulge has changed. This is a relatively common shape, so for White's play, something ordinary is likely to be good enough.



Solution 1

Solution 1. Kill with a hane

The simple hane at White 1 is the killing play. Black blocks at 2, and the sequence continues with White's throw-in at 3 and play inside at 5. In this position it's necessary to first exchange White 1 for Black 2. Starting immediately with the throw-in at 3 ends up failing after Black captures at 4.

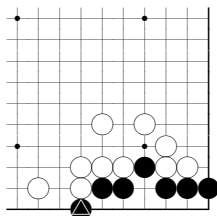


Solution 2

Solution 2. The placement is the key

In response to White 1, Black 2 is a strange play; however, White must take some care. So long as he is aware of the placement White 3, he will be fine. The sequence continues to 5.

White must not hastily play atari with 3 at 5. If he does, Black blocks at 3 and survives.

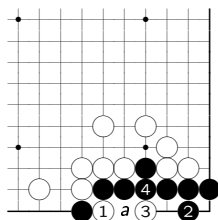


Reference 1

Reference 1. Black is alive

The marked black stone has been added to the problem diagram. If it remains White's turn to play, can he kill the Black group?

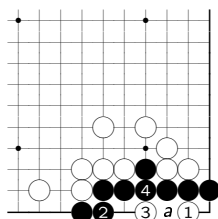
The answer is, if the hane is present, Black is alive. However, if Black plays poorly he still might die. so this shape will be subject of some further investigations.



Reference 2

Reference 2. Black has an eye

Consider the throw-in at White 1. In answer to this, Black 2 is a skillful play which might be easy to miss. Next, if White makes the placement at 3, Black connects at 4. After this a White play at *a* achieves nothing and the role of the black hane becomes apparent.



Reference 3

Reference 3. Seki

This variation also applies to the original pattern. In response to White's play inside at 1, Black can simply expand his eye space with 2. If White 3, Black connects at 4. After this, even if White plays *a*, Black is alive in seki.

Seki

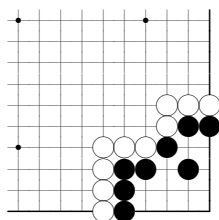


Diagram 1

Diagram 1.

When you are involved in life-and-death problems, the three types of solutions you are concerned with are 'life', 'death', and 'ko.' Rather than handling seki separately, you should think of it as one of the possibilities under 'life.'

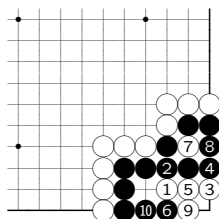


Diagram 2

Diagram 2.

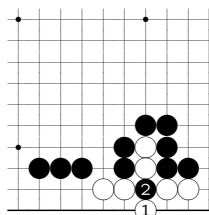
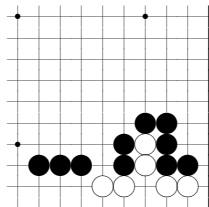
If someone laid out a problem such as in Diagram 1 as a tesuji problem, not simply a question of life or death, and asked 'If it's White's move, what result is possible?', then the answer might be 'seki'

We can see in Diagram 2 that, after after the placement of White 1 and Black 2, White 3 is the key tesuji. After Black 4 to Black 10 it results in a seki.

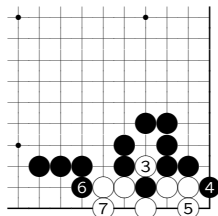
Shape 9

White to play and live

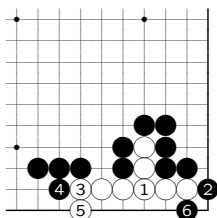
This is a slightly troublesome shape. First you should, of course, Consider what happens when White connects his two stones, but if you decided that White cannot live by playing that way, you'll have to search for a more efficient play.



Solution 1



Solution 2



Failure

Solution 1. Retreating

White 1, retreating to the first line beneath the two stones, is a good, calm play. Black 2 captures the two stones, but that is what White intends. The follow-up is shown in the next diagram.

Solution 2. Recapture

White recaptures with 3. After this, White answers Black 4 at 5 and Black 6 at 7 and barely lives with the smallest eye space.

Because the first play was at the vital point for making eye shape, and at the same time made use of a recapture, White was able to live.

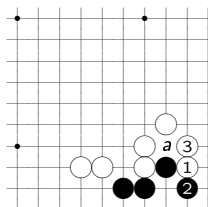
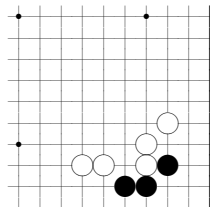
Failure. Connection

In an actual game White might very well connect at 1. If he does so, however Black hanes at the vital point in the corner, and even if White crawls at 3 he doesn't have the eye space necessary to live. The continuation is to Black 6.

Should White begin by descending with 1 at 2, White, of course, captures at 1 and there is no way for Black to live.

Shape 10

White to play, Black dies

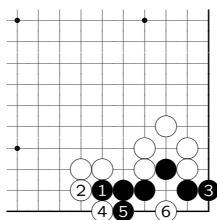


Solution 1

Solution 1. Attach and pull back

White should attach and pull back with 1 and 3. If you've absorbed what's been covered so far, then Black's death should be easy to confirm. The follow-up is shown in the next diagram.

Playing the atari at *a* instead of 3 is a terrible move.

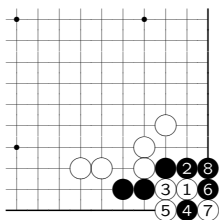


Solution 2

Solution 2. A former shape

To continue, if Black 1, White blocks at 2. Now it seems as if descending at 3 is the only move, but we have already seen in Shape 6, if it's White's turn, Black dies.

As before, White's hane at 4 is good enough. When Black blocks at 5, White's placement at 6 kills the group.



Failure

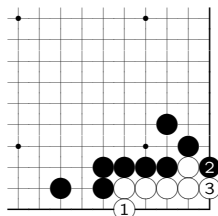
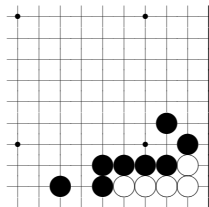
Failure. A troublesome play

Going back to the beginning, while the placement at White 1 is undeniably also at a vital point, after Black's block at 2 the situation becomes unmanageable. In response to White 3, Black 4 and Black 6 are tenacious. After White 7, even if Black simply connects at 8, his stones won't die.

Shape 11

White to play and live

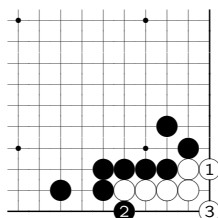
By maximizing his eye space White has just enough room to live. But there is one thing White must be careful about to begin with, However, he must determine where to make the fast play.



Solution 1

Solution 1. Four-in-a-row living shape

The ordinary descent to White 1 is sufficient. Black can't do anything better than hane at 2, but then White 3 produces the problem-free four-in-a-row living shape.

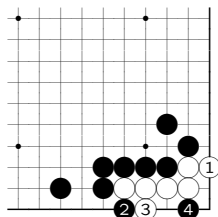


Solution 2

Solution 2. A territorial loss

Descending at White 1 also makes White alive; however, it cannot be considered the best method of doing so. When Black plays 2, White has no choice but to retreat with White 3. Compared to the previous diagram, White loses as much as 2 points of territory.

Do you see why it is necessary to yield with White 3?

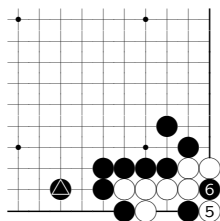


Failure 1

Failure 1. Attachment

After descending at 1, if White carelessly answers Black's hane at 2 by blocking at 3, he will be in serious trouble. Black will immediately attach at 4. Now White will have to pay a price in order to live.

Continuing in the next diagram -

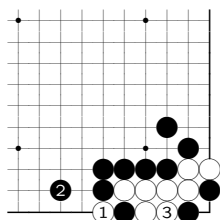


Failure 2

Failure 2. Ko

White has no choice but to throw in at 5 and ends up with a ko.

Now, just for the sake of clarity, the presence of the marked black stone does have an impact on the life or death of the white group. To see what would happen if the stone were not present, see the next diagram.

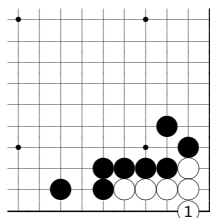


Reference 1

Reference 1. Squeeze play

After the previous diagram, White captures at 1. If Black is forced to play a defensive move at 2, then White, who still has an unfilled liberty on the outside, can aim at a squeeze play with White 3.

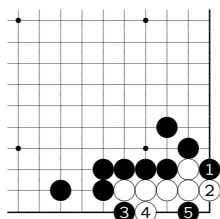
In either case, however, living as in Solution 2 must be considered a loss.



Solution 3

Solution 3. A loss

White 1, at the vital point for making eye shape, is a tight way of living. White no longer needs to be concerned about living, but compared to Solution 1, he has suffered as much as a two point loss.



Reference 2

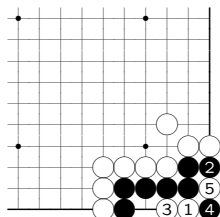
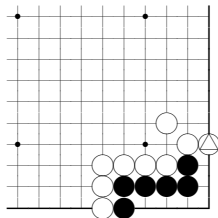
Reference 2. Black to play, White dies

Just as a reference, should White play elsewhere in the original diagram, so that Black gets to make the first move here, naturally there is no way for him to live. Black narrows White's eye space with 1 and 3, then plays inside at 5. White is clearly dead.

Shape 12

White to play, Black dies

In this position it seems as if Black's base is sufficiently wide, but his lack of outside liberties and the presence of the marked white stone give White an opportunity.

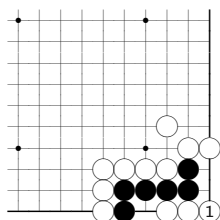


Solution

Solution. Attach at the vital point

The attachment at White 1 is a good move. When Black blocks at 2, crawling at 3 is an important play. Black has no choice but to throw in with 4, and now White 5 starts a ko fight.

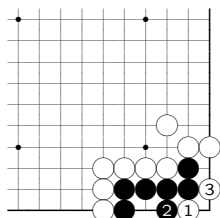
Being in a hurry and starting the ko with White 3 at 5 yields only a one-step approach move ko for White, so be careful. It would also let Black capture the ko first.



Reference

Reference. Bent four in the corner

If Black fails to start the ko with Black 4 in the previous diagram, White stretches out with 1. This is not seki, it is a bent four in the corner and is unconditionally dead.



Variation

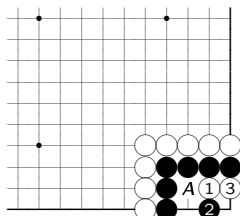
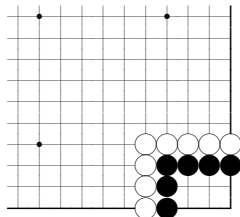
Variation. Unconditional death

In response to the attachment of White 1, blocking at Black 2 is a defensive mistake. White hanes at 3, and then because of a shortage of liberties Black cannot block at *a*.

Shape 29

White to play, Black dies

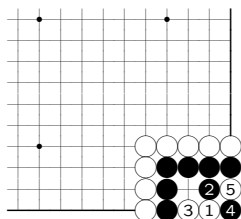
This is the six-space group. Notice that all of the outside liberties are filled in. If it's White's turn, Black will die; however, it's easy to slip up if you're not careful.



Solution

Solution. Shortage of liberties

The attachment at White 1 is correct. Black is forced to make a counter-attachment at 2, but blocking at White 3 is good enough. Because of his shortage of liberties, Black cannot block at 'A', so he dies.



Failure

Failure. Ko

White 1 is also at a vital point and forces Black 2. Now after White 3, Black plays at 4 to get a ko. If Black doesn't use 4 to make ko, then White can play there and make the shape into a bent four in the corner. In any case, ko is a failure for White.