1 Introduction

Players must always know the correct life and death status of the groups on the board. Determination of status requires *reading,* that is, the skill to imagine move sequences and their variations in order to make good decisions among moves. Reading is toughest when related to life and death. Therefore, every player must practise reading by solving problems solely in their minds. Since variations can have an incredibly great branching factor and depth, reading must be guided by aims, techniques, move types and principles. This book series offers both the necessary problems and theory.

Naturally, *Volume 1* begins with the basics, which include the fundamentals, eyespaces, modifications of their sizes, liberty shortages and threats. The book starts above the absolute beginner level of explanations of the removal of dead groups at the game end. Most of the presented problems require the reading of a few variations, of which each consists of a few moves.

Problems without a specified player to move permit 'Black or White to move first'. When a life status is already settled, the correct action is to play elsewhere. A status can vary from 'independently alive', via 'unsettled', to 'dead', but the additional possibilities 'seki' and 'ko' must not be overlooked. Two successive plays 'elsewhere' stand for a ko threat and its answer, but can also be a symbolic abbreviation of a possibly longer ko material sequence.

Usually, answer variations are optimised for only the life and death status. Additional side conditions, such as 'optimal territory balance', 'optimal endgame' and 'optimal excess number of remaining local ko threats', are infrequently considered, too. For the sake of better explanations, many answer variations show more moves than should be played in an actual game, in which playing elsewhere is possible as soon as the group status is settled.

If the reader finds answer variations he has not read or has misread during the attempt to solve a problem, he can go back to the problem diagram and practise reading all the answer variations. This brings us to the major principles of reading well in problems:

Read correctly.

Do not overlook any move changing a status.

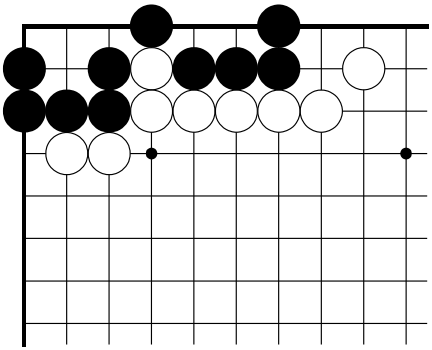
The second principle does not imply the need to read the complete game tree. This would be impossible; one must always filter many uninteresting moves. However, it is essential to consider each interesting move. This does not refer to the reader's personal preferences, but refers to likely relevance for status changes. If, at a player's imagined turn, one next move for his optimal result (unconditional life for the defender's group versus its death from the attacker's view) has been found, the study of further alternative next moves cannot improve that result. Alternatives can be more relevant for achieving additional side conditions.

There is a reason why the book includes both the most basic techniques, such as 'connection' and 'atari', and tesuji-like techniques, such as 'two-sided approach defect' and 'internal liberty shortage': a move of any type might change the status of a group. One must neglect neither the boringly easy, nor the unusually advanced techniques. The reader must appreciate both equally. His reading becomes strong, when he applies all techniques firmly and fluently. The enemy, which is his own oversight, can be anywhere - under the ordinarily looking stone as well as in the most beautiful shape. Just one stone can change everything.

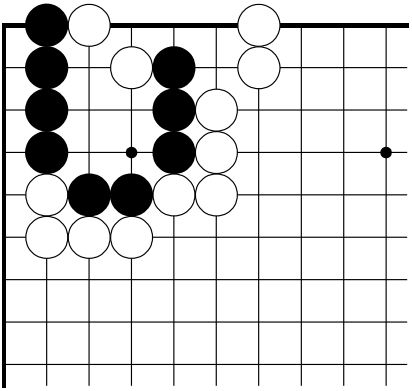
A player's move has a meaning of *threatening something,* if it enables the 'something' on his successive next move. In between, the opponent can play some unrelated move elsewhere. For example, there can be a threat to cut, a threat to give an atari, a threat to create a nakade and so on. A move threatening something should have also other meanings or be a multiple threat. In life and death situations, threats are as important as the direct meanings of moves.

The book introduces the term *lake* for 'potential eye' to the literature. See also the definition in *4.4 Lake* (p. 53). Knowledge of the following terms is presumed: *having sente* means 'being the first to play elsewhere'; *having gote* means 'being the second to play elsewhere'; *tesuji* means 'tactically unusual, brilliant move'; *joseki* means 'model sequence that is considered locally equal for both players'.

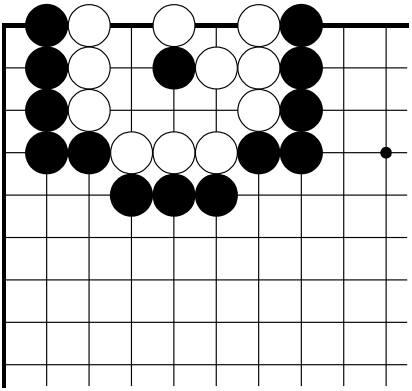
Pat Ridley and Stephen Bashforth have corrected the author's English or made suggestions. The diagrams have been created with Lauri Paatero's *GoWrite.* A few of the problem positions have been motivated by shapes occurring in amateur games.



Problem 1: White to move

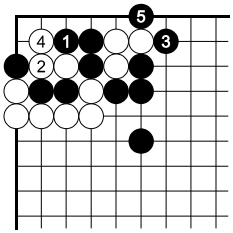


Problem 2: White to move

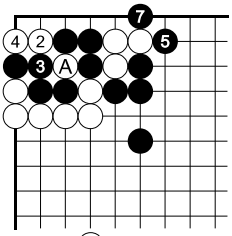


Problem 3

Answer 2

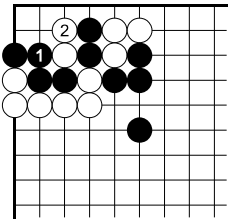


Var. 1: correct I



⑥ at A.

Var. 2: correct II



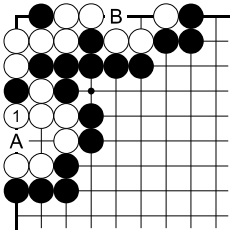
Var. 3: failure

Var. 1 + 2: Since Black cannot rescue all his stones, he sacrifices a few on the left side to ensure the life of his group on the upper side and in the center.

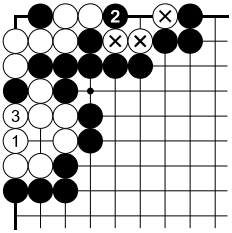
Var. 1: Black 1 prevents White's atari there. The black move also prevents White from capturing the black cutting string.

Var. 3: Black's escape from atari is useless: all his stones in the corner die.

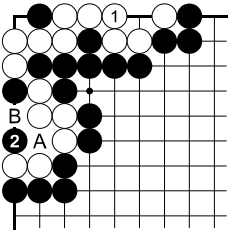
Answer 3



Var. 1: correct



Var. 2: failure I

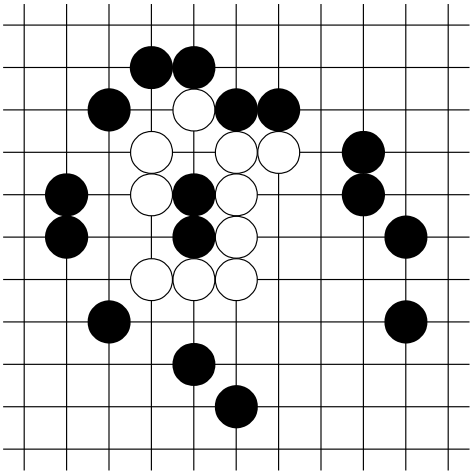


Var. 3: failure II

Var. 1: Although White does not prevent the atari A, he prevents it from being harmful. The major part of the white group lives. Black can play at B only in gote.

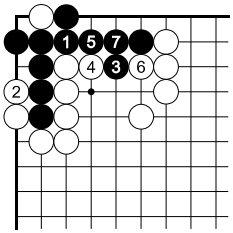
Var. 2: White cannot prevent all ataris. It is not good enough to live with most of his group, because the snapback Black 2 captures the marked stones in sente.

Var. 3: The premature defense of the white group's tail lets Black 2 kill the whole group. White A suffers from a liberty shortage. White B does not prevent Black A and its big reduction of the eyespace.

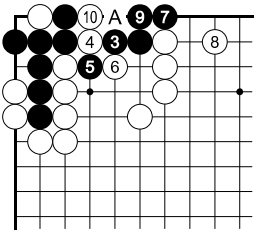


Problem 3: White to move

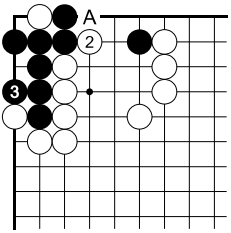
Answer 1



Var. 1: alive I



Var. 2: Black's mistake



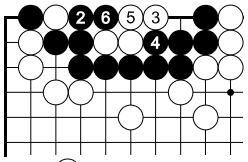
Var. 3: alive II, correct

Var. 1: Black 1 is a double purpose move: it protects the boundary of the corner lake and threatens to build a new lake on the upper side. Since White 2 reduces to attack the boundary of the left lake, Black 3 realises the threat and builds the new lake. White 4 and 6 reduce and threaten to attack, while Black 5 and 7 protect the boundary of the upper lake.

Var. 2: The mistake Black 3 allows White to attack the new lake successfully. After the sequence, Black A is answered by the iterative throw-in White 4. Black 9 at 10 is refuted by White 9.

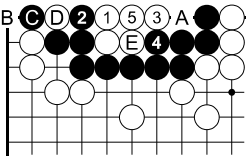
Var. 3: White 2 is the correct reply because of the option to end in gote, closing the territory boundary at A. Since White denies Black his new lake on the upper side, Black 3 completes the boundary protection of the lake on the left side.

Answer 3

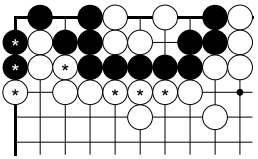


① elsewhere.

Var. 1: White's mistake



Var. 2: correct I

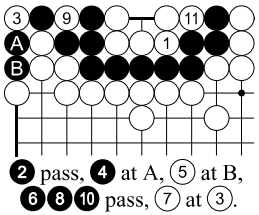


Dia. 3: worst case

Var. 1: White 1 must not play elsewhere. Otherwise, the black group lives easily. Black 6 prevents White from creating a nakade. Removal of the inner white string allows Black to partition the lake.

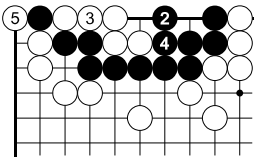
Var. 2: The correct move 1 is a double threat to create a nakade or to reduce by connecting to the outside. Since Black 2 prevents the latter, White achieves the former. Instead of move 4, Black can play elsewhere; this is studied in *Dia. 3* and *Var. 4.* Instead of move 1, White 3 - 1 - 4 - A and White 3 - 1 - 5 - 4 - 2 - A - B - 1 - 5 - C - D - E are failures allowing the life of the black group.

Dia. 3: Let us suppose that the players add the marked stones. White fills the outside liberties, while Black adds another ko approach hurdle. Although this is the worst case for White, he can dissolve the situation as in *Var. 4.*

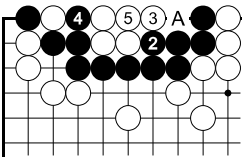


2 pass, 4 at A, ⑤ at B,
6 8 10 pass, ⑦ at ③.

Var. 4: removal



Var. 5: correct II



Var. 6: correct III

Var. 4: When the outside liberties are filled, White 1 can build his eye in the capturing race, because Black cannot approach at 11 any longer. It would be a self-atari. For the sake of game end removals, we can assume Black's passes, except that he resists with move 4. Finally, White 11 fills the last liberty and removes the black stones.

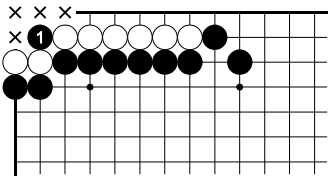
Var. 5: Black 2 prevents a big nakade, but White reduces the eyespace by connecting to the outside.

Var. 6: Black 4 at A is refuted by White 5.

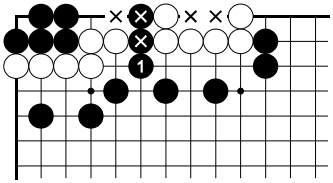
6.5 Big Reduction

A **big reduction** captures a surrounding string or cuts off part of the defender's group and so part of its eyespace.

The name 'big reduction' is the move's program. A big reduction of the eyespace makes it much harder for the defender to construct enough eyes in the remaining, much smaller eyespace.

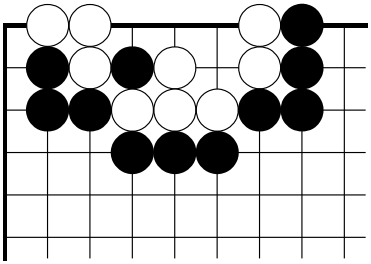


Example 1

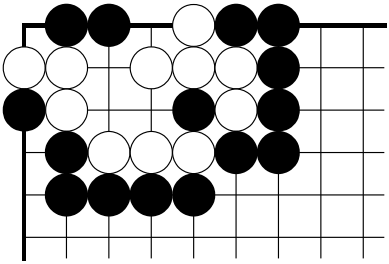


Example 2

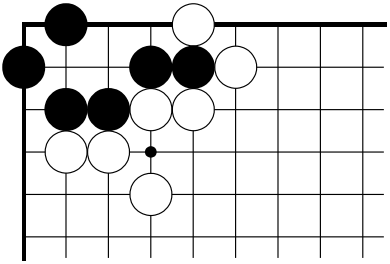
Examples 1 + 2: Black 1 is a big reduction, which takes away the marked intersections from the eyespace of the remaining bigger part of the white group. The big reduction captures a surrounding string or cuts off the right part of the white group, respectively.



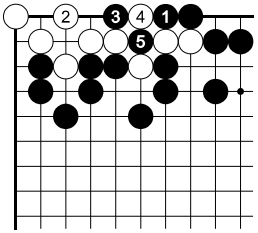
Problem 1: Black to move



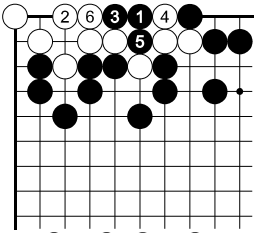
Problem 2: Black to move



Problem 3: White to move

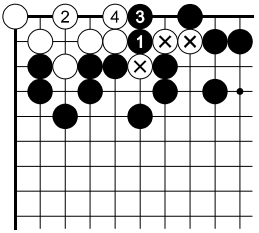


Var. 4: Black's mistake, ko



❼ at ❺, ⑧ at ❶.

Var. 5: Black's mistake, alive



Var. 6: Black's mistake, alive

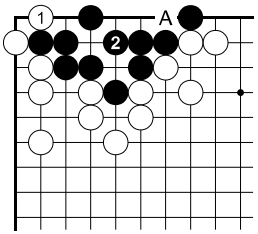
Var. 4 - 6: Black's other first moves fail to kill the white group unconditionally, because White may partition the eyespace at 2.

Var. 4: The ko is not good enough for Black. *Var. 1 - 3* are better.

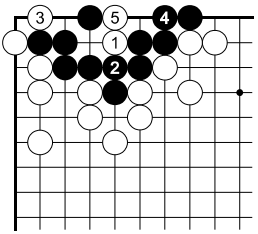
Var. 5: The throw-in string, which consists of three stones, becomes big enough to build the second eye under its stones.

Var. 6: Attacking only the marked tail of the white group is Black's failure.

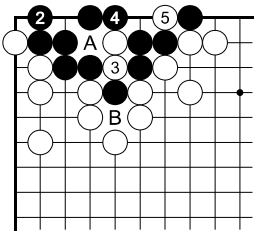
Answer 3



Var. 1: failure, alive



Var. 2: correct I, dead



Var. 3: correct II, dead

Var. 1: It is insufficient that White 1 eliminates the second initial lake, because Black partitions the big lake successfully. Similarly, White A is answered by Black 2.

Var. 2: The correct White 1 occupies the vital point, prevents Black's partitioning move and threatens the throw-in 3 in *Var. 3.*

Var. 3: This variation for Black 2 lets White 3 execute the throw-in. Next, Black A is countered by the iterative throw-in at 3. Black 2 at 4 or 5 is refuted by White 3. Black 4 at 5 is answered by White B; despite prolonging the throw-in string and cutting the black group into two separate parts, White's answer at 4 is worse, because it lets Black have two ko threats for a ko elsewhere on the board.

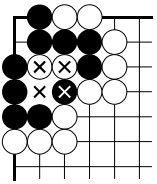
7 Liberty Shortage

A player's stones are caught in a **liberty shortage,** if he is prevented or discouraged from playing where he wants because of his immediately or eventually occurring suicide, self-atari or impossible escape from atari.

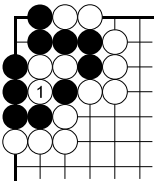
The five major shape types of liberty shortage are: 'snapback', 'one-sided approach block', 'two-sided approach block', 'external liberty shortage' and 'internal liberty shortage'. Snapbacks and approach blocks can be used by the defender or attacker. Usually, the defender is the victim of an external liberty shortage and the attacker is the victim of an internal liberty shortage, but exceptions are possible.

7.1 Snapback

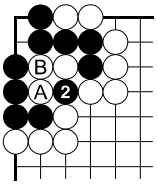
A **snapback** consists of the intersections of both players' stones and their only liberty, so that a player moving second can prevent the opponent from keeping any stone on the intersections. For the purpose of this definition, the players play only on the intersections or pass.



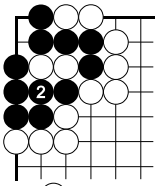
Dia. 1: snapback



Var. 2: removal I



Continuation



1 pass.

Var. 3: removal II

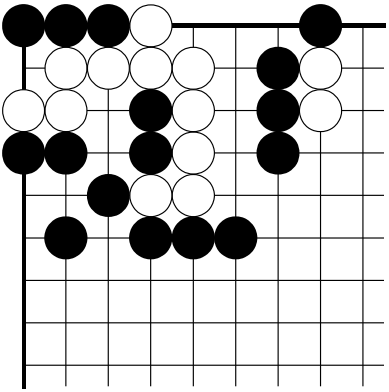
Dia. 1: The marked intersections are a snapback. The marked white string is captured.

Var. 2 + 3: Black is the second moving player, but he prevents White from keeping any stone on the intersections marked in *Dia. 1.* The sequences shown are imagined for the purpose of verifying application of the definition only. Note that White moving second cannot prevent Black from keeping stones on the marked intersections; it suffices that the definition applies in Black's favour.

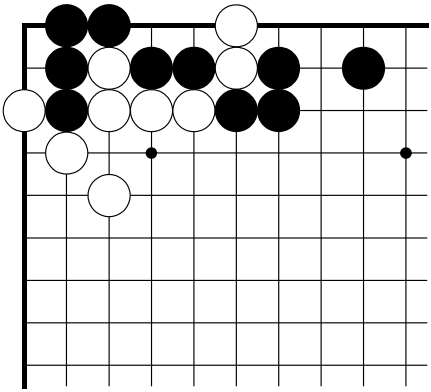
Var. 2: White 1 removes the black snapback stone, but immediately Black 2 removes the white string. Afterwards, White A can be answered by Black B.

Var. 3: The pass 1 makes it even easier for Black to remove all white stones from the snapback's intersections.

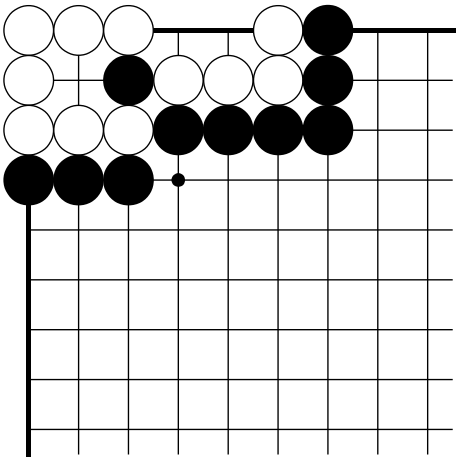
The player's move has the meaning of **creating a snapback,** if, before the move, there is no snapback including the move's intersection and, after the move, there is such a snapback. Informally, 'snapback' is a shorthand for 'creating a snapback' or for a stone in a snapback capturing the opponent's stones in it.



Problem 1: White to move

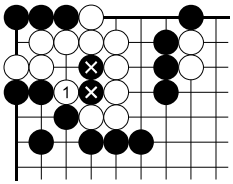


Problem 2: White to move

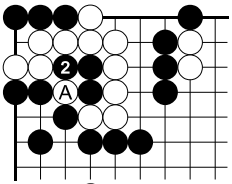


Problem 3: Black to move

Answer 1

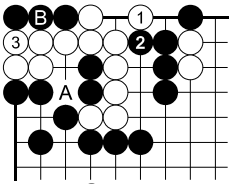


Var. 1: snapback



③ at A.

Continuation



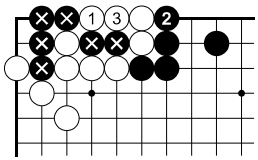
④ at B.

Var. 2: useless

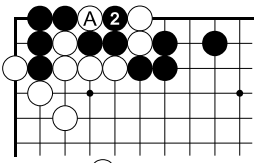
Var. 1: White 1 captures the marked black string in a snapback to make the second eye for the white group. In an actual game, Black 2 is not played, because White 3 can recapture immediately.

Var. 2: White's moves are useless for establishing life. White A is still necessary.

Answer 2

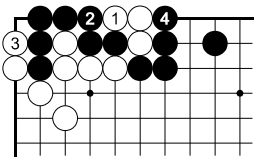


Var. 1: correct



③ at A.

Var. 2: snapback

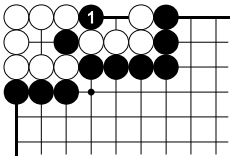


Var. 3: failure

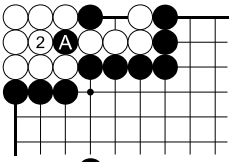
Var. 1: As *Var. 2* illustrates, White 1 captures two black stones in a snapback. After the sequence of *Var. 1,* the marked black stones are dead.

Var. 3: The simple atari 1 does not work. Black connects his stones and removes three white stones.

Answer 3

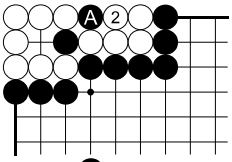


Var. 1: double snapback



③ at A.

Continuation I



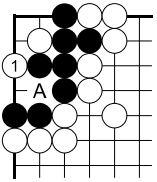
③ at A.

Continuation II

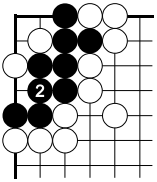
Var. 1: Black 1 creates a double snapback and kills the white group. If White removes either single black stone, Black recaptures immediately.

7.2 Threatening a Snapback

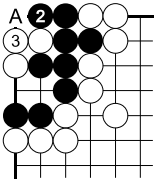
'Threatening a snapback' is the more common shorthand for the precise 'threatening to create a snapback'.



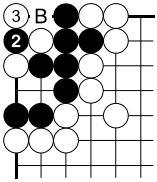
Example



Dia. 1



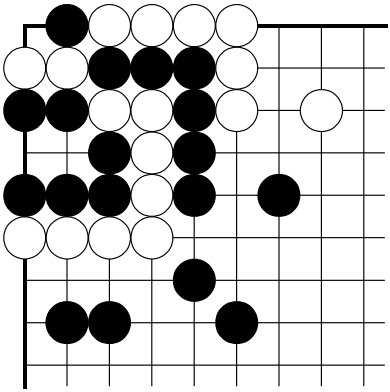
Dia. 2



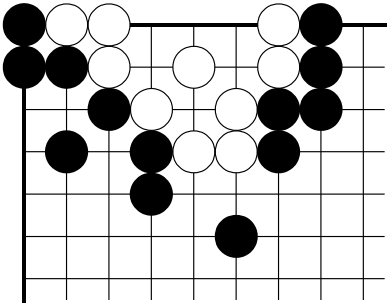
Dia. 3

Example: White 1 kills the black group by threatening a snapback at A.

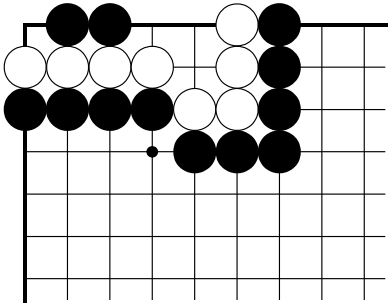
Dia. 1 - 3: Preventing the snapback does not help, because the remaining lake is a nakade. The self-atari at A or B means that Black cannot circumvent the snapback. His group is dead.



Problem 1: White to move

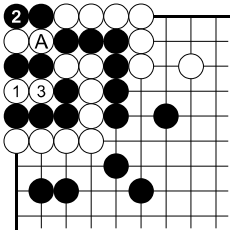


Problem 2: Black to move

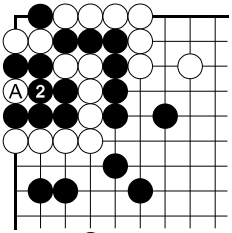


Problem 3: Black to move

Answer 1

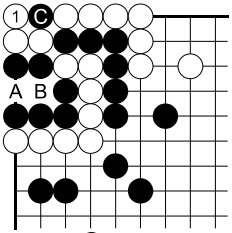


Var. 1: correct



③ at A.

Var. 2: Black's mistake



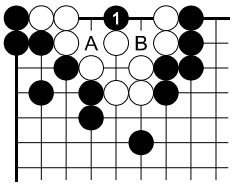
❷ at C.

Var. 3: White's mistake

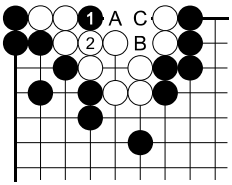
Var. 1: By threatening the snapback in *Var. 2,* White 1 ensures the life of the big white string on the left side. Alternatively, White's first move can be played at 3. After the sequence, if Black plays elsewhere instead of reinforcing and preventing a snapback, White A creates it and captures another four black stones.

Var. 3: The mistake 1 fails, because the white corner string has been trapped in a snapback, which Black 2 executes. White 1 must be played at A or B.

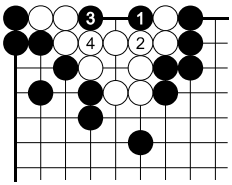
Answer 2



Var. 1: double threat



Var. 2: failure I



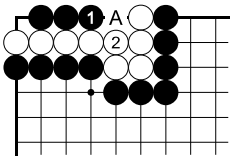
Var. 3: failure II

Var. 1: Black threatens snapbacks at A and B. Since White cannot defend against both threats simultaneously, his group is dead.

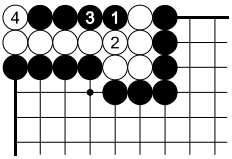
Var. 2 + 3: If, at each of his moves, Black plays an atari on one string, White can simply escape from atari.

Var. 2: The continuation Black A - White elsewhere - Black B - White C is no problem, because White's removal of two black string provides enough liberties.

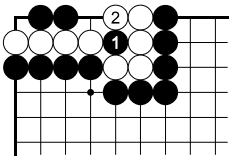
Answer 3



Var. 1: correct, seki



Var. 2: Black's mistake



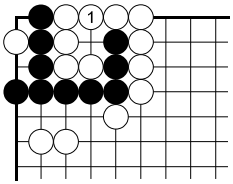
Var. 3: Black's mistake

Var. 1: Black 1 threatens the snapback Black 2 and threatens Black A, which creates an external liberty shortage. For these reasons, White 2 must connect. The result is a seki.

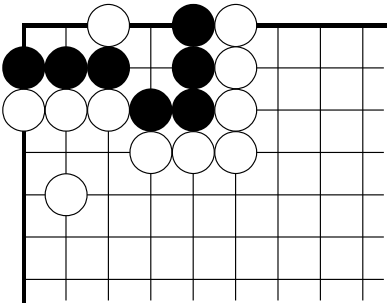
Var. 2 + 3: Black's mistake to start with an atari allows White to live.

7.3 Preventing a Snapback

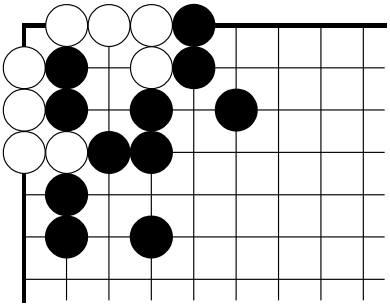
A player's move has the meaning of **preventing a snapback,** if, before the move, the opponent can create a particular snapback and if, after the move, he cannot do so.



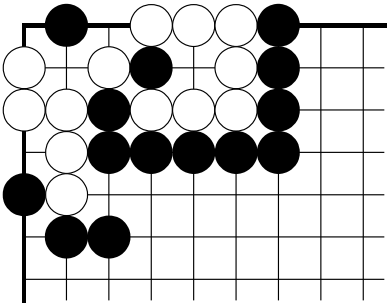
Example: White 1 prevents Black's snapback move there. The black group dies.



Problem 1: Black to move

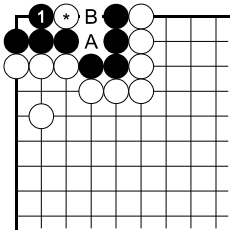


Problem 2: Black to move

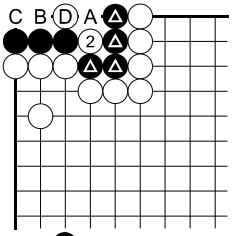


Problem 3

Answer 1

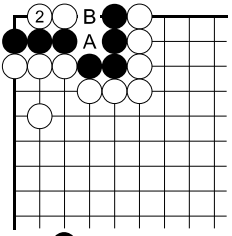


Var. 1: correct, alive



1 elsewhere.

Var. 2: snapback



1 elsewhere.

Var. 3: threatened snapback

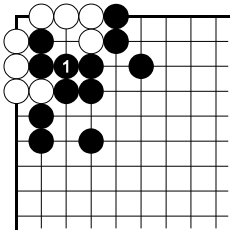
Var. 1: Move 1 prevents the snapback White A. Now, White A can be answered by Black B because of the removal of the marked stone. Black avoids 1 at A, because White 1 could create a nakade.

Var. 2 + 3: It is Black's mistake to play elsewhere, because White can then kill the black group.

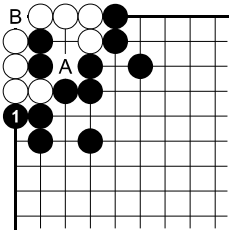
Var. 2: White 2 captures the marked string in a snapback, and Black has one ko threat at A to use in a ko fight elsewhere on the board. White 2 at A is only almost correct, because the exchanges Black 2 - White B and then Black C - White D amount to two ko threats for Black. With each threat, he threatens to revive his group.

Var. 3: White's alternative move kills, too. It threatens the snapback A or the atari B. The self-atari Black B fails.

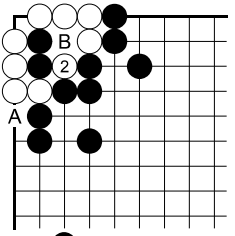
Answer 2



Var. 1: correct



Var. 2: almost correct



❶ elsewhere.

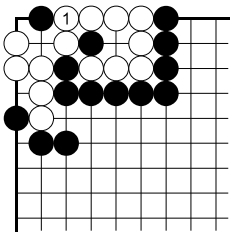
Var. 3: snapback

Var. 1: In order to kill the white group, Black 1 needs to prevent the snapback in *Var. 3.* Afterwards, White has zero ko threats.

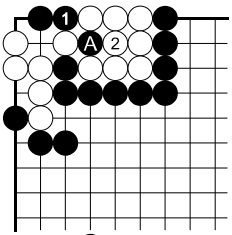
Var. 2: Although Black 1 kills the white group, the move is only suboptimal. If a ko occurs elsewhere on the board, the ko threat White A must be answered by Black B. It is Black's slight disadvantage that White has one ko threat more than in *Var. 1.*

Var. 3: Black A can force White B to dissolve the snapback, but the life of the white group is maintained.

Answer 3

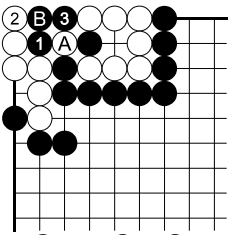


Var. 1: White starts



❸ at A.

Var. 2: Black starts, correct, snapback



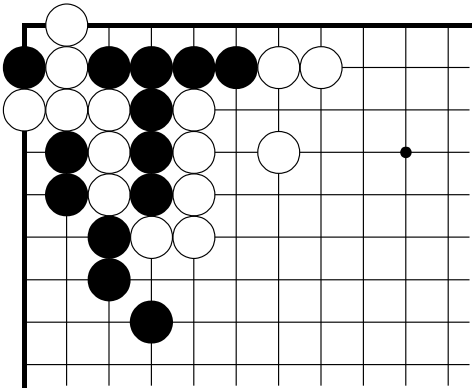
④ at A, ❺ at ❸, ⑥ at B.

Var. 3: Black starts, failure, snapback

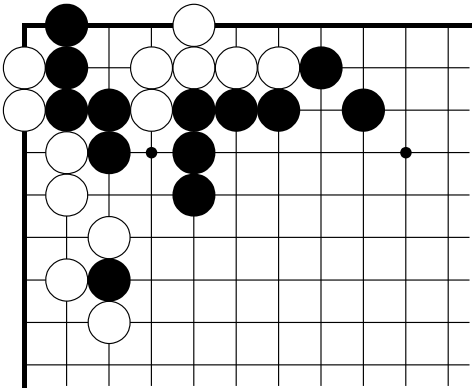
Var. 1: If White starts, his defense is necessary to prevent the snapback in *Var. 2.*

Var. 2: Black 1 kills the white group by creating a snapback.

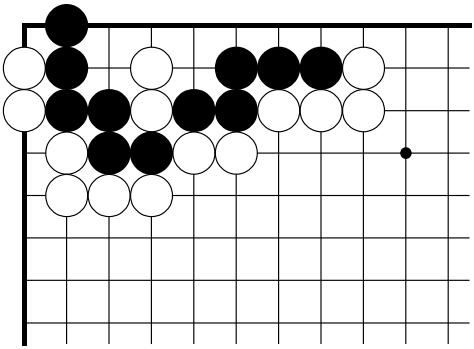
Var. 3: Black's first move is a mistake, because his own string is caught in a different snapback, before he can remove the big white string on the upper side.



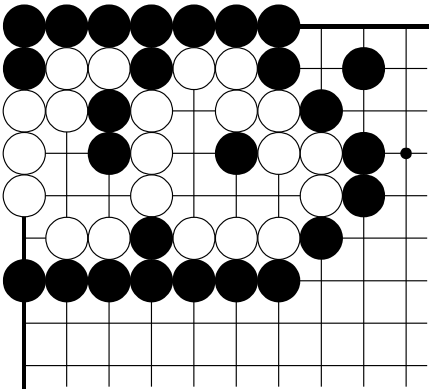
Problem 1: White to move



Problem 2

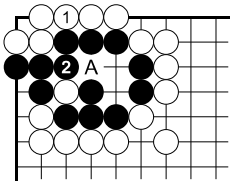


Problem 3

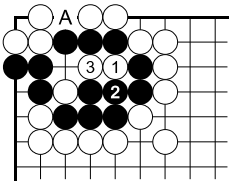


Problem 3: Black to move

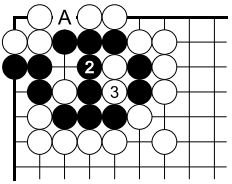
Answer 1



Var. 1: failure, alive



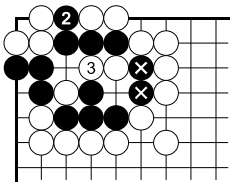
Var. 2: correct I, dead



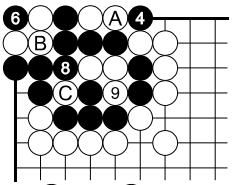
Var. 3: correct II, dead

Var. 1: White must avoid the mistakes 1 or A, because Black 2 creates life.

Var. 2: White 1 threatens these external liberty shortages: the removed black string in *Var. 3* and the capture of the marked string in *Var. 4*. Besides, White 1 threatens the one-sided approach blocks related to the self-atari A here and the self-atari A in *Var. 3*.

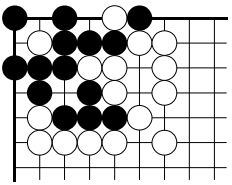


Var. 4: correct III, dead



⑤ at A, ⑦ at B.

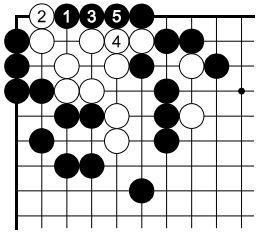
Continuation



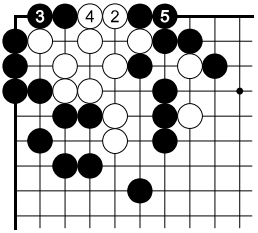
Result

Var. 4: Black 2 tries to live by sacrificing the tail. However, the throw-in 5, the nakade recreated by White 7, and White 9, which lets C be eyeless, prevent the life of the black group.

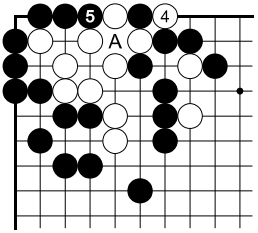
Answer 3



Var. 1: correct I

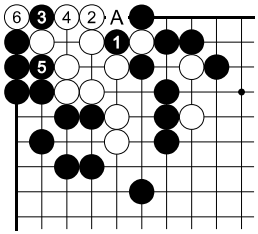


Var. 2: correct II

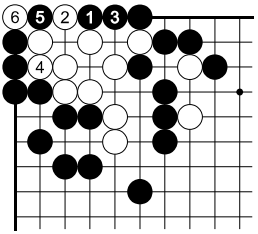


Var. 3: correct III

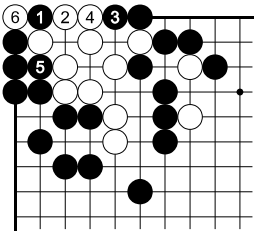
Var. 1 - 3: The triple purpose move 1 kills the white group. The purposes of the move are: to occupy a vital point and prevent White's partitioning move on the intersection 1; to threaten a reduction at 2; to threaten a reduction at 3. In particular, the double threat to reduce from and connect to the left or right side guarantees success. In *Var. 3,* A is not an eye.



Var. 4: failure I



Var. 5: failure II



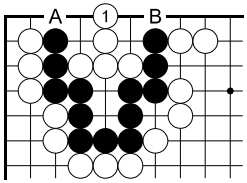
Var. 6: failure III

Var. 4 - 6: Every other first black move is wrong. Creating a ko is not good enough. Similarly, in *Var. 4,* Black 1 at A or 5 are mistakes.

8.2 Double and Multiple Threat

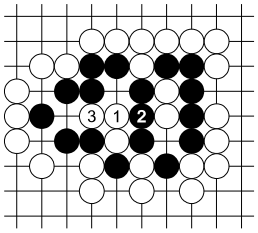
If all functions of a move are threats, it needs at least two.

Locally a move achieves nothing, if its only function is a threat and the opponent can simply answer. He cannot always refute a move having two or more threats. A move with a direct function can be powerful, if it has additional functions that are threats.

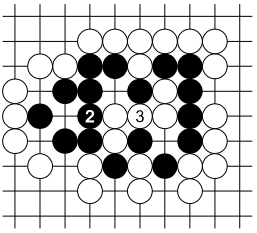


Example: The double threat 1 threatens connection at A or B.

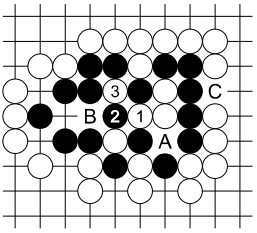
Answer 8



Var. 1: correct I



Var. 2: correct II

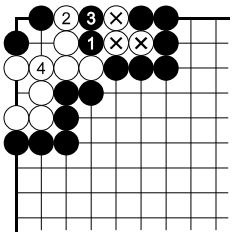


Var. 3: failure

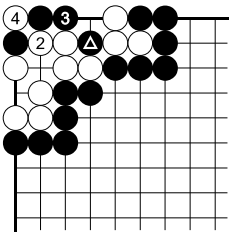
Var. 1 + 2: White must start with the reduction 1. White 3 prolongs his reduction string, so that the black group dies.

Var. 3: White 1 is wrong, because it leads to a ko. Other mistakes are White A - 1, White B - 2 and White C - 2, which let the black group, or part of it, live unconditionally.

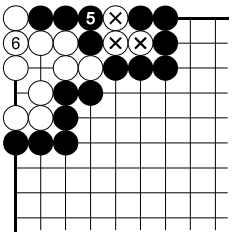
Answer 9



Var. 1: correct, sente reduction



Var. 2: White's mistake, ko



Var. 3: Black's emergency measure

Var. 1: The throw-in 1 is correct. Black removes the marked string in sente, while the corner becomes a seki. White avoids replacing move 2 by White 3 - 2 - 1 - 4, which results in a snapback.

Var. 2: Since the marked stone is a snapback, the ko capture is White's only chance for move 4. Usually, White 2, which leads to this ko, is his mistake: if he loses the ko, he loses many points; if he wins the ko, he gains only a few points.

Var. 3: If Black cannot win the ko in *Var. 2,* he can capture the marked white string in sente. Since White's independently alive group surrounds two empty intersections and move 4 in *Var. 2* has removed one stone, this result is only 3 points better for White than the result in *Var. 1.*