

Nactation

Tutorial

by Nick Ballard

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Part 1

Basic Nactation

Introduction

The term “Nactation” is an amalgamation of “Nack” (its inventor) and “action notation.” Nactation uses terms for actions (run, split, slot...) and directions (up, down...) that are commonly used to convey checker movements.

It takes only a minute or two to learn the five basic characters (illustrated in section 1). Ultimately, you can, if you like, nactate an entire game or match. However, for now, you should regard the following as the primary purpose of Nactation: to describe play sequences and positions that arise in the *first few moves* of the game.

Imagine that you want to ask someone about the position below, but you have no board or diagram card handy. You want to communicate the position verbally.

You might say: “Okay, suppose you roll an opening 54. You split with the 4 and come down with the 5. Your opponent responds with a roll of 63 and runs into the outfield. Now you roll 31; how do you play it?”

A shorter way to describe the position is:

54-split, 63-run, 31

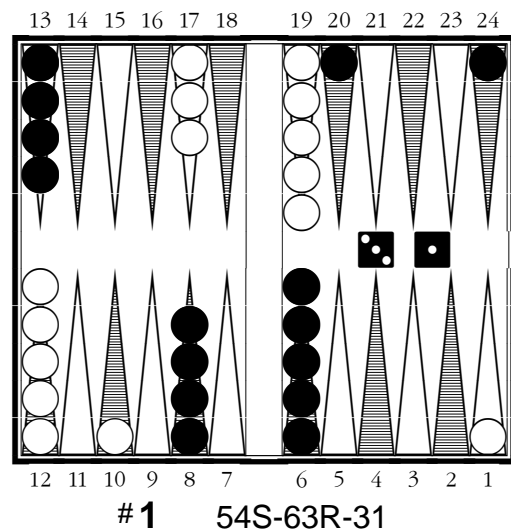
In written form, single-character Nactation is even shorter. The caption of position #1, “54S-63R-31,” indicates that

Black opened with **54S** (54-split), White responded with **63R** (63-run), and Black, on roll, has **31** to play.

It is standard to insert hyphens between moves, but slashes, periods, commas or spaces are occasionally seen instead.

Position #1 is analyzed in detail on page 44 of *Backgammon Openings*. (To learn more about this book, go to <http://www.nackbg.com/bgopreview.htm>.)

For all diagrams in this presentation, *Black rolled last*. If the caption ends with only the roll (e.g., “31”), it is Black to play. If the caption ends with the roll *and* another character (e.g., “31P”), Black has just completed his move. The text will clarify as well.



Positions in this tutorial are designed to teach not only Nactation but also expert checker play by example. Moves in the (captioned) lead-up sequences are usually best and always “well played”—giving up no more than .02 in equity. In the text, candidate moves are often helpfully described, for example as “best” or “better than” or “a common mistake,” etc., and for all positions you can look up rollout results in section 17.

In the darkly shaded column to the left of the text area of this document, click on the top icon. “Page thumbnails” provides you with an easy way to instantly jump to any page (though this tutorial is not actually cross-referenced by page number).

Now click on the second icon (“Bookmarks”), which displays three sub-icons. Click on + to expand, – to diminish. “Part 1” and “Part 2” let you navigate by section number, and “Nactations” by character segment. (To adjust the width of the column, drag the border or click on the right arrow at the top; and to restore, use the left arrow.)

A basic knowledge of Nactation will help you follow or join discussions in online forums and better comprehend some articles.

Nactation is NOT an all-or-nothing proposition. As you learn new letters, you can gradually substitute them in. Even learning a mere handful of letters and continuing to use longhand (traditional notation) for all or part of the other moves will noticeably reduce your amount of writing or typing.

Section 1 explains most of what you need to know to use Nactation. Later sections will help you refine your usage (if you so choose).

Section 1: Basic Characters

Nactation letters are easy to learn. In modern backgammon, the opening move is almost always one of the following types:

D = Down

P = Point

R = Run

\$ = Slot

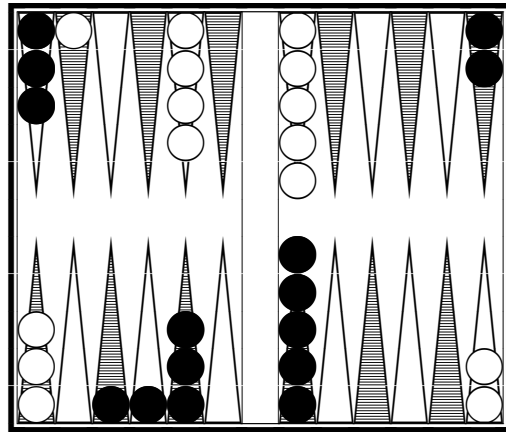
S = Split

I'll define these terms in alphabetical order.

D stands for **Down**. It typically refers to playing from the midpoint to the outer board, and usually with two checkers.

For example, in position #2, White played **52D** (or 52-down).

In the same position (#2), Black responded with **43D** (or 43-down).



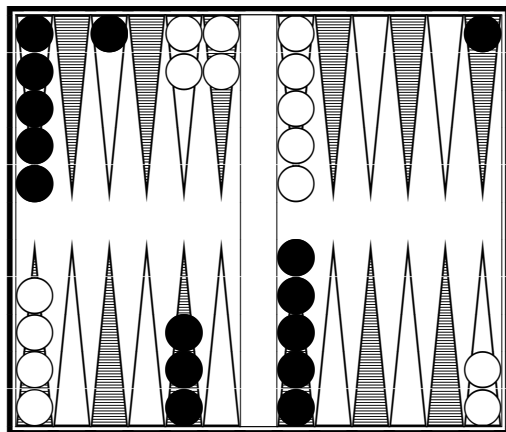
2 52**D**-43**D**

P stands for **Point**. It refers to making or covering a point, or pointing on a blot.

In pos. #3, White played **61P** (or 61-point).

R stands for **Run**. It refers to moving (running) a back checker to the outfield.

In the same position (#3), Black responded with **63R** (or 63-run).



3 61**P**-63**R**

\$

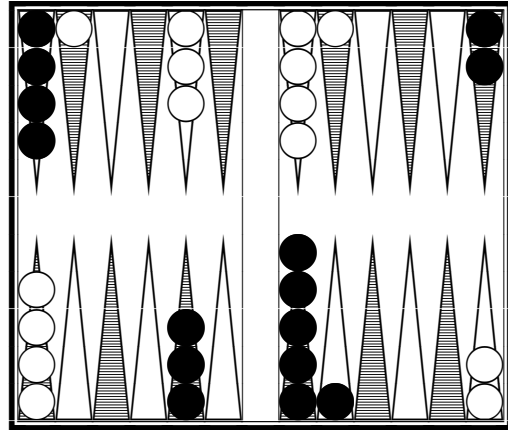
stands for **Slot**. The first and second letters in “Slot” overlap to form the \$ symbol.

Classically, “slot” refers to playing a checker to a vacant offensive point (usually a high inner board point).

Nactation adds a meaning that refers to the entire move. You “slot” by playing a checker *down* and putting it or another checker onto a vacant offensive point.

In pos. #4, White played **21\$** (or 21-slot).

In the same position (#4), Black replied with **62\$** (or 62-slot).



4 21\$-62\$

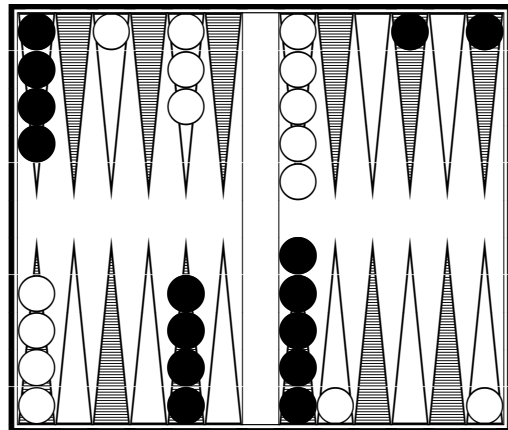
S

means **Split**. The traditional definition is to break an anchor.

With Nactation, Split is a two-part move. It means: (1) to play a checker anywhere on the **far side** of the board, *and* (2) to play **down** from the opponent’s outer board (typically from the midpoint).

In pos. #5, White played **43S** (or 43-split).

In the same position, Black replied with **52S** (or 52-split).



5 43S-52S

You are now ready to use Nactation: the above five letters/symbols cover most early game situations. For practice, write down all the opening moves you know in three columns: (1) the roll, (2) the traditional notation (if you know it), and (3) the Nactation letter.

For example:

<u>Roll</u>	<u>Notation</u>	<u>Nactation</u>
61	13/7, 8/7	P
64	24/18, 13/9	S
32	13/11, 13/10	D
.....		

If and when you would like to learn additional letters, move on to section 2.

Section 2: Other Useful Letters

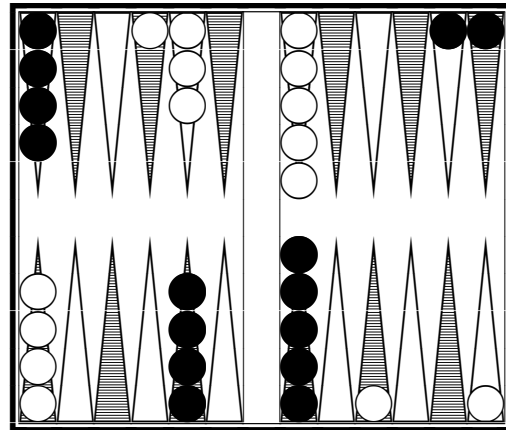
Z stands for **reverse split** (or whimsically, “Zplit”). If you write an “S” backwards (or reflect it in a mirror), it resembles a “Z.”

You can use Z for a splitting move in which a back checker plays the *smaller* number, and the larger number is played down from the far outer board.

In position #6, White played **43Z**, moving the back checker with the smaller number (the 3).

Compare with the previous position. In #5, White played 43S. In #6, she played 43Z.

In position #6, Black responded with **51S**. You *may* call this move 51Z, though it is unnecessary. Black could not legally split with the large number (the 5) nor come down with the small number (the 1).



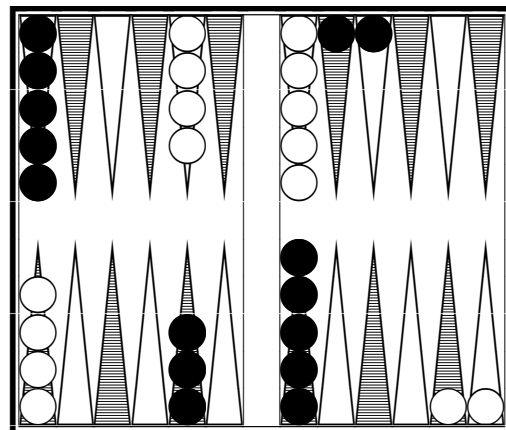
#6 43Z-51S

Convenience clause (defined above #62): The idea is that for an initial splitting move where the roll contains a 5 and/or a 1 (e.g., Black’s move in #5 or #6), you can use “S” unambiguously; indeed, I prefer it because it more instantly suggests the word “Split.”

U stands for **Up** (as in moving *up* to meet the enemy forces). It refers to advancing back checker(s), up to and including to the opponent’s bar point. (If any farther, it qualifies as R, a running move).

In position #7, Black played **43U**.

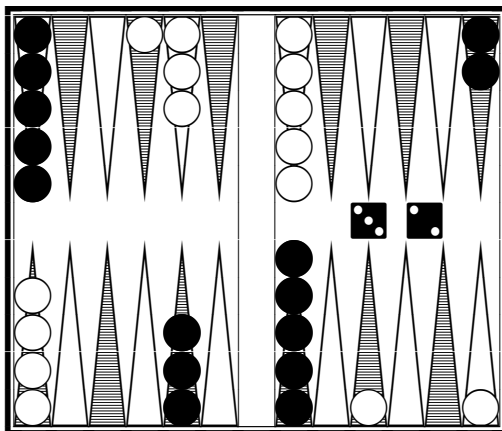
The subtleties of U are discussed in detail under “V,” starting with position #18.



#7 51S-43U

The next three related letters (H, X and K) are very descriptive and handy.

H stands for **Hit** loose (and only once).



8 43Z-32

In #8 above, Black can hit inside with the deuce. If he comes down with the 3, as in 8.1 (below, left), the move is nactated **32H**. The gist of the “down clause” (more fully explained above #67) is that you play *down* for a non-hitting portion of an H move.

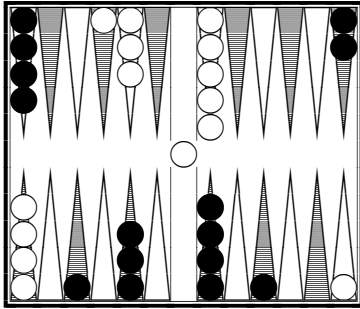
[If Black rolls 62 in #8, using the entire roll to hit in the *outfield* is 62H. The alternative that hits inside with the 2 and brings down the 6 is 62h. Refer to section 10 and #67.]

X has two diagonal strokes that represent **hit** and **split**. (Some may prefer to think of X as “eXpel and split,” or even, whimsically, “Xplit”). An X move hits on the near side with one number and plays on the far side with the other number.

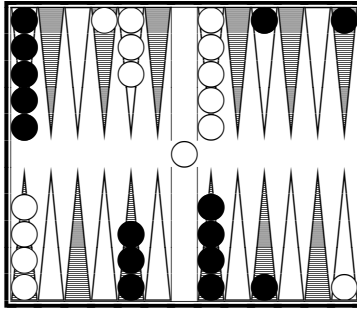
With the roll of 32 in position #8 (above), Black has a strong alternative: to hit with the 2 and split with the 3. This move, shown in 8.2 (below, middle) is nactated **32X**.

K stands for **Kill**, and it means to hit two checkers.

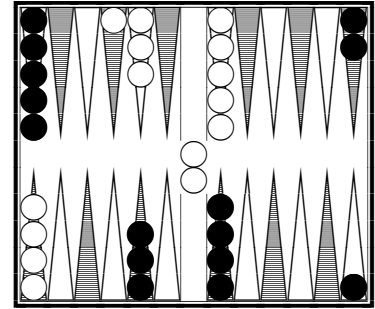
With the roll of 32 in position #8, Black’s third (though distinctly inferior) choice is to hit twice. This move, shown in 8.3 (below, right), is nactated **32K**.



8.1 43Z-32H



8.2 43Z-32X



8.3 43Z-32K

Having finished section 2, you should be able to nactate virtually any second or third roll situation except for those involving doublets.

Here is a recommended drill: Set up a backgammon board with the opening position. Roll one die for yourself and one die for your imaginary opponent.

Whoever has the higher die plays the opening roll. Make what you consider to be a strong move, and say the Nactation letter aloud. Then roll for the other player (if you roll a doublet, ignore and reroll), make a move and announce the letter.

After two rolls (one roll for each player), start over with the opening position and repeat the procedure. If you re-encounter an opening roll or reply situation, try to vary your move if there is a reasonable alternative. (If you feel confident, you can continue to a third or fourth roll in the sequence before starting over with the opening position.)

If you are not sure what letter to use for a move, look for the relevant discussion in section 1 or 2.

If and when you are ready to add doublets to your repertoire, move on to section 3.

Section 3: BEACON for Doublets

Nactating doublets will save you a lot of writing or typing. Diagram 77.1 provides a nice example: “Bar/21 24/20 13/9 11/7*” (23 keystrokes) is reduced to “B” (1 keystroke).

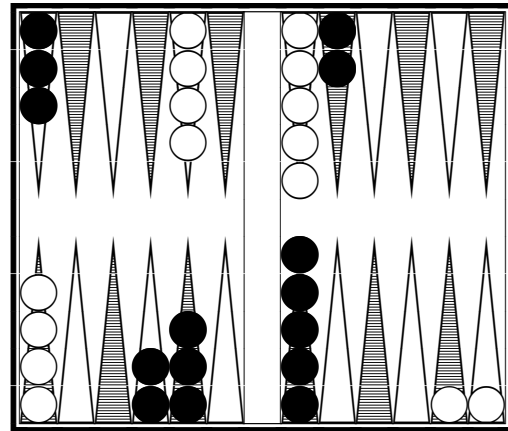
This section defines and explains the letters used for doublets, where the parts of the move are played as two separate pairs.

To help you remember these six letters, I am presenting them in the order of BEACON. This happens to rank them from most to least commonly arising, except for N.

B stands for **Both**. It means playing Both on the *far side* (i.e., with back checkers) and *near side* (specifically to or within the outer board) on the same move.

Position #9 shows **44B**. This balanced move gives Black a big advantage right out of the starting gate.

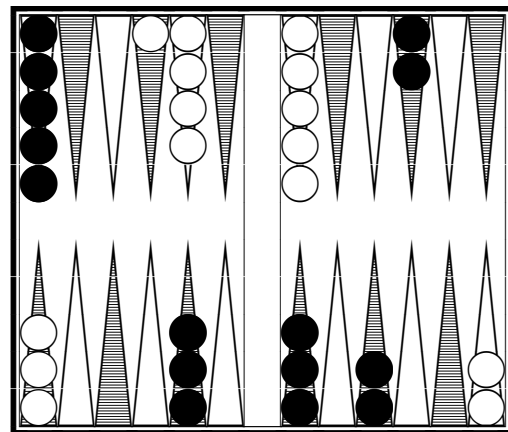
B is the most common move with double 6s, 4s and 3s in the early game.



9 51S-44**B**

E stands for **Each**. It means that Each side of the board is allocated half the roll. E resembles B, except with E the near side part is played within the *inner* board.

In position #10, Black has correctly played **22E** in a second roll situation.



10 54D-22**E**

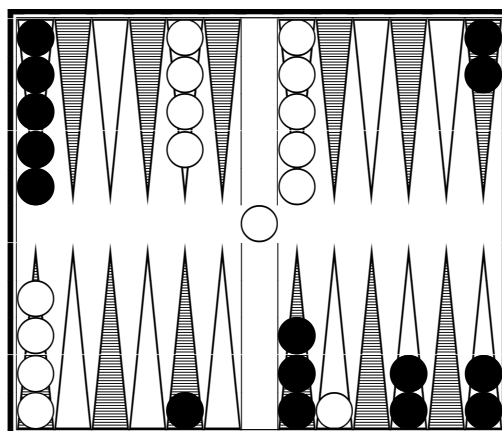
A stands for **Attack**. Half the roll is played *to* and the other half *within* the inner board.

In position #11, Black played **55A**.

If Black had instead rolled double 3s, he could also have made two inside points (pointing on a different blot) with 33A.

In #9 (earlier diagram), Black *could* have made two inside points with 44A (instead of 44B), the move most likely to win a gammon. [See rollout #9 (g), section 17.]

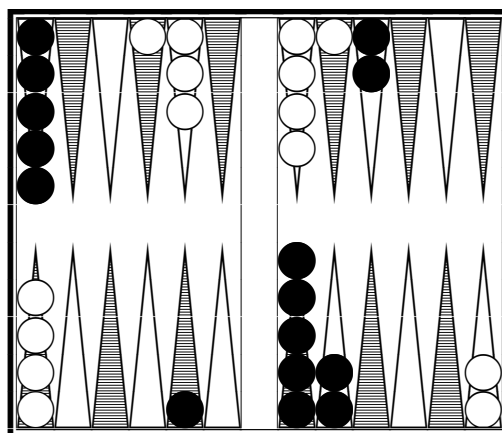
A is not always an Attacking (or Aggressive) move. What distinguishes A is the source and destination quadrants: outer-to-inner, and inner-to-inner.



11 54S-55A

C stands for **Cross**, where the near-side half of the move Crosses the bar. The other half advances the back checkers.

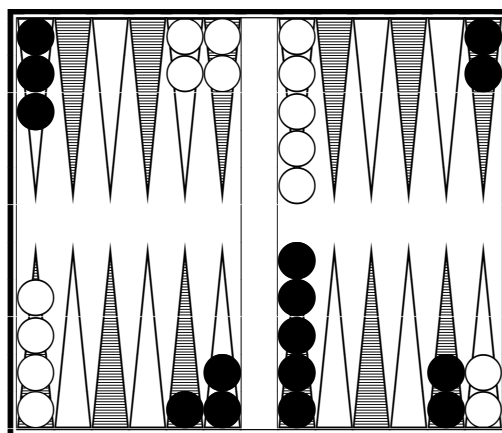
In position #12, Black played **33C**.



12 41S-33C

O stands for **Outer**. Half of the move is played *into* (or within) a player's Outer board and the other half is played *out of* his Outer board.

In position #13, Black played **66O**.



13 61P-66O

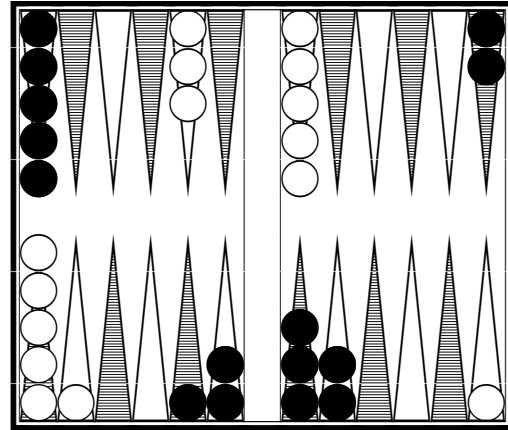
N

stands for **Near**. The move is divided between the two Near-side quadrants (from the perspective of the player making the move).

Half of the move is played to or within the outer board (frequently from the midpoint). The other half is played entirely within the inner board.

For 22N, 33N, 44N and 55N, a player brings two checkers down and uses two inside spares to make a new point.

11N, shown in #14, is the only N move as early as the second roll of the game that plays no checkers off the midpoint.



14 64R-11N

The above six positions demonstrate examples of *simple* doublets: those played in pairs. (Complex doublets are covered in sections 15 and 16.)

Congratulations! You now know the main letters for both doublets and non-doublets.

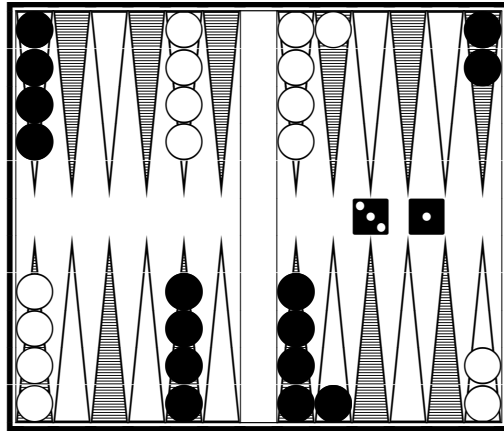
I recommend that you repeat the interactive drill described at the end of section 2, but this time include doublets. As you make each move, announce the Nactation letter for mental reinforcement.

The next few sections will add to your arsenal for nactating third and fourth roll moves.

[Henceforth, captions of after-diagrams will supply only Black's last roll + move instead of the entire sequence (e.g., "...31E" instead of 51\$-51\$-31E, for 15.1). In the text, a move will usually be referred to in the standard manner: simply by its letter *without* restating the roll (e.g., "E" instead of 31E).]

Section 4: BEACON for Non-doubles

BEACON letters can also be applied to *non*-doubles.

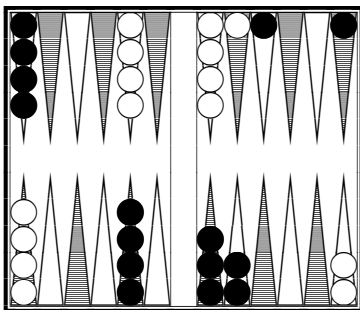


#15 51\$-51\$-31

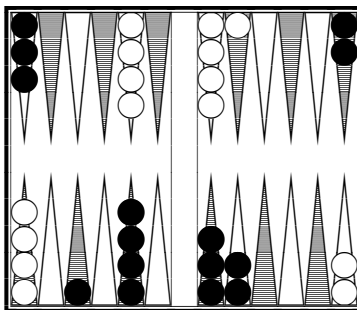
In #15, Black's roll of 31 offers three close moves. One option is to split with the 3 and cover with the 1, shown in 15.1 (below, left) and nactated **E**. Black plays half of his roll in Each inner board, much in the same way he did in #10. (See also 31.3, 53.1 and 57.1.)

Black's second option is **N**, dividing the roll between his Near side quadrants. Half the move is played to his outer board (3 down) and the other half within his inner board (the 1 covers), shown in 15.2. In that sense, it resembles his N move in #14. (See also 53.3.)

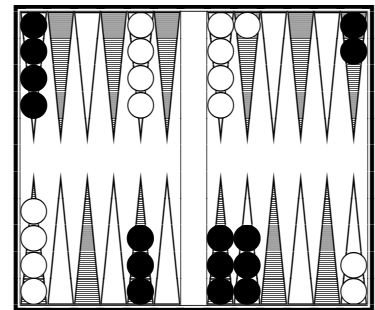
Black's third reasonable alternative is to play both the 3 and 1 to the same point, covering the inside blot: shown in 15.3 (below, right) and nactated **A**. Black plays half of his roll *into* and the other half *within* the inner board; in that sense it is an Attacking (or Aggressive) move similar to his doubles move in #11. (See also 16.3 and 53.5.)



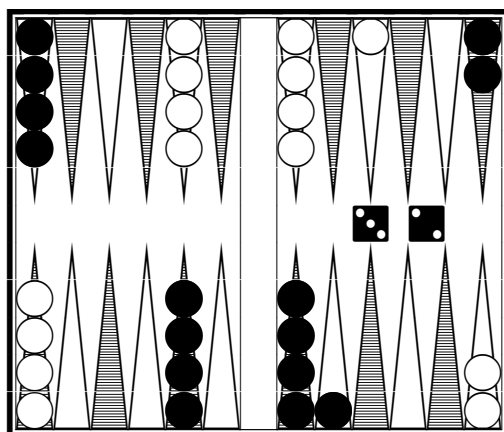
15.1 ...31**E**



15.2 ...31**N**



15.3 ...31**A**



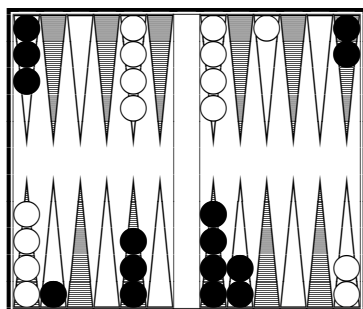
16 51\$-52\$-32

In position #16, Black rolled 32. (Hitting is a blunder, both here and in #15.)

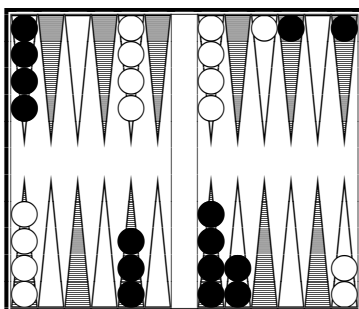
In 16.1 (below, left), Black brought the 2 down and covered with the 3. He played both into and out of the Outer board: the move is therefore nactated **O**. (Compare to #13.)

In 16.2 (below, middle), Black covered with the 3 (Crossing the bar) and split with the 2. This move is nactated **C**. (Compare to #12.) Similarly, from the large diagram #15, covering with the 3 and splitting with the 1 (fourth best) would have been C.

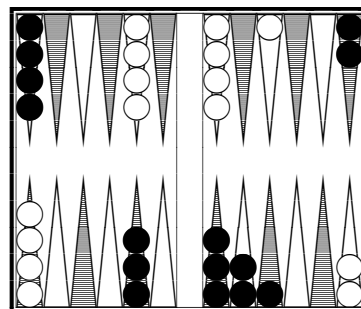
Black's third good alternative in #16 is to cover with the 3 and slot inside with the 2, shown in 16.3 (below, right), and nactated **A** for Attack or Aggress. For both positions #15 and #16, A is a close move but third best.



16.1 ...32**O**



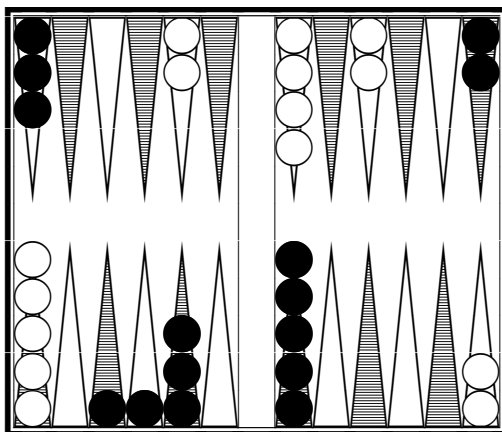
16.2 ...32**C**



16.3 ...32**A**

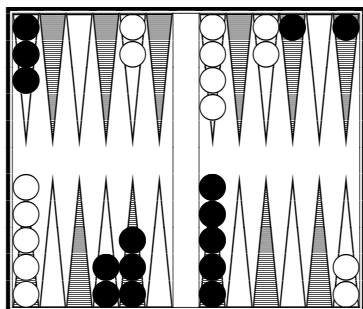
I have saved B for last because of its unusual application. *If* non-doublet B were simply a half-sized version of doublet B (see #9), it would perform the same function as either S (see #5) or Z (see #6). It is not and does not.

Instead, to better divide the labor, non-doublet B refers to (Both) moving one checker on the far side and the other checker *within* the outer board (instead of *into* the outer board —i.e., from the opponent's outer board, as S or Z handles).

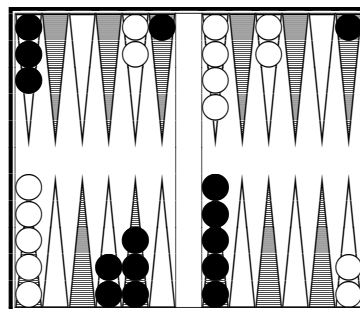


17 43D-42P-21 or -61

Consider #17 (above). With a roll of 21 or 61, Black should split his back checkers with the 2 or 6, and button up a point in his outer board with the 1. The position after Black plays **21B** is shown in 17x (below, left); the position after **61B** is shown in 17y.



17x ...21**B**



17y ...61**B**

For an apt comparison of (non-doublet) B, S and Z moves, see position #62.

Section 5: Areal Letters

There are two types of Nactation characters: *style* and *areal*.

Style characters include both letters and symbols. The most basic—P, \$, H, X and K—were defined in sections 1 and 2. More style characters will appear in sections 6 and 7.

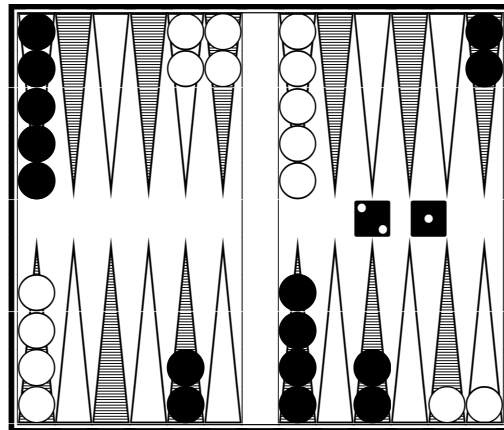
The majority of Nactation characters are *areal* (i.e., area-based). This group consists entirely of letters (no symbols), and can be applied whether or not they hit, make or break points, or create or safety blots. Areal letters operate purely by areas of the board where checkers are moved, and—depending on the number of these movement areas—can be uni-areal, bi-areal or multi-areal.

Most of the letters you have seen up to this point are *bi-areal*: they focus on exactly two movement areas of the board. This subgroup is made up of S, Z and the BEACON letters.

D, R and U (see #2, #4, and #7) are *uni-areal*: each operates in only *one* movement area of the board. Here, in section 5, the remaining three uni-areal letters (V, J and I) are introduced, and at the end of the section is an overview of the uni- and bi-areal letters.

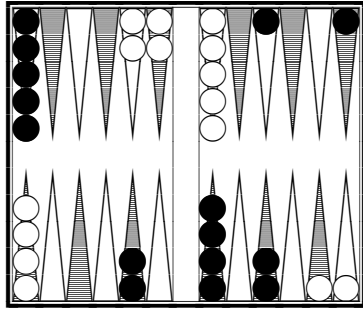
V

is a **Variant Up**. (For Up, see “U” explained in #7). Note that V follows U in the alphabet and physically resembles it.

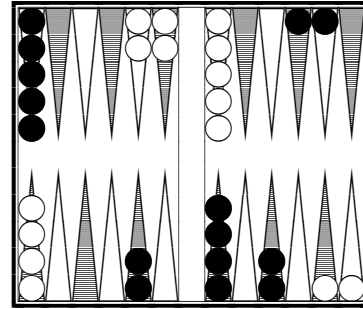


18 41S-42P-21P-21

In #18 above, Black has rolled 21. If he brings up one back checker, as shown in 18.1 (below, left), the move is nactated **U**. If instead he brings up both back checkers (as shown in 18.2), the move is nactated **V**.

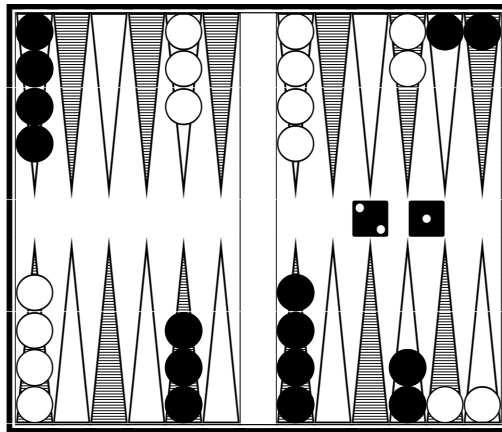


18.1 ...21U



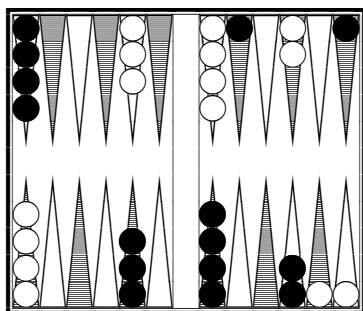
18.2 ...21V

Is one to infer, then, that U refers to playing one checker up, while V refers to playing two checkers up? No, not at all! The next two examples will help clarify.

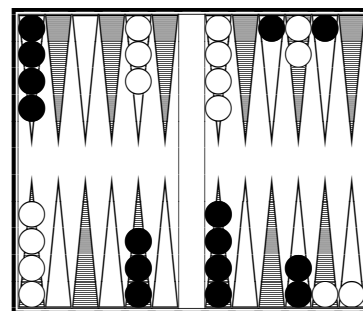


#19 51S-51S-53P-53P-21

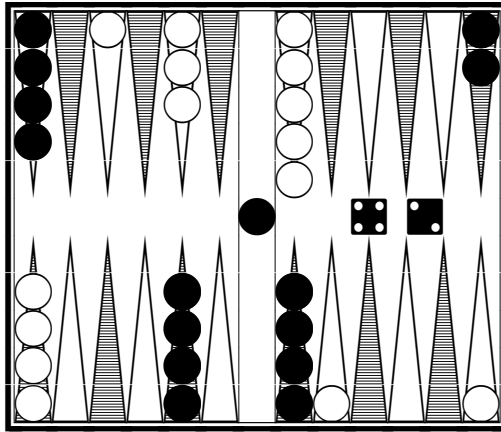
In position #19 (above), Black rolls 21. If he moves the *leading* back checker 3 pips, he has played **U**, shown in 19.1 (below, left). By contrast, if he moves the *trailing* checker 3 pips, he has played **V**, shown in 19.2 (below, right). Both moves bring one checker up.



19.1 ...21U

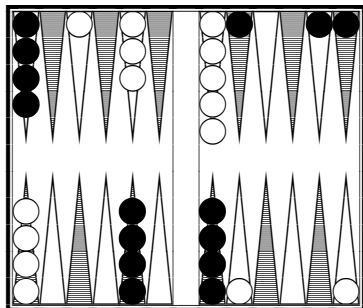


19.2 ...21V

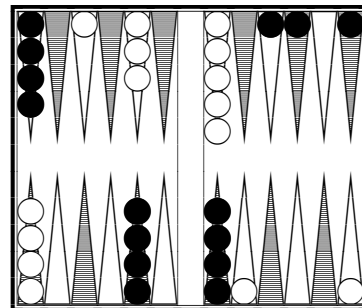


20 51\$-43S-42

In position #20 (above), Black rolls 42. The (best) candidate of entering with the 2 and coming up with the 4 is **U**, shown in 20.1 (below, left). Entering with the 4 and coming up with the 2 is **V**, shown in 20.2 (right). Both moves bring two checkers up.



20.1 ...42**U**



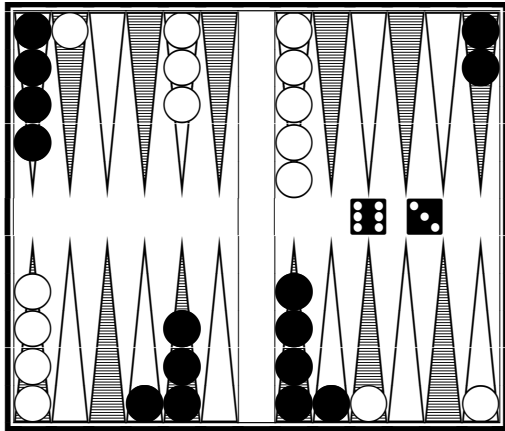
20.2 ...42**V**

In short, if there is only *one* legal up move with the roll, use U. If there are two, the move that plays the lead back checker closest to home is nactated U, and the other move is V. (This guideline may be overridden when an up move hits or anchors; e.g., #47 and #48.)

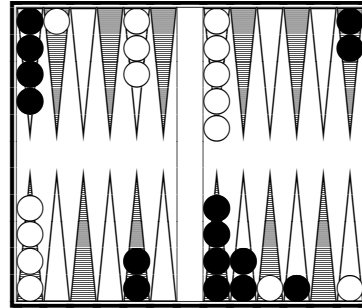
U and V are married; they are the top two members of the U “family.” Every other letter has its own distinct family. The concept of a family is expounded in sections 10 and 14.

J

stands for **Jump**, as in Jumping over the bar.



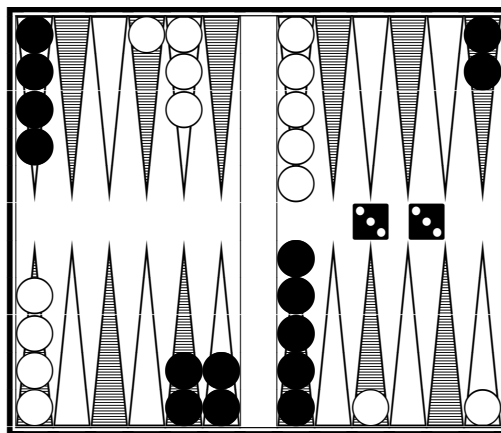
#21 41\$-32S-63



21.1 ...63J

In position #21 (above, left), Black rolled 63. His safest (and best) move is to cover his blot and slot (as shown in 21.1), thereby Jumping two checkers over the bar with **J**.

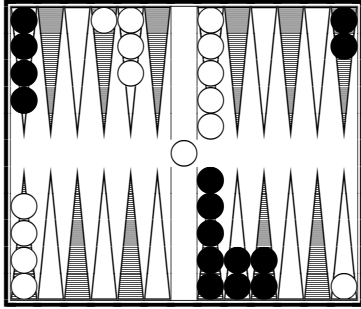
As has just been explained, for non-doublers the uni-areal letter **J** means that both portions of the roll Jump over the bar. For a *doublets* roll, *all four* portions Jump:



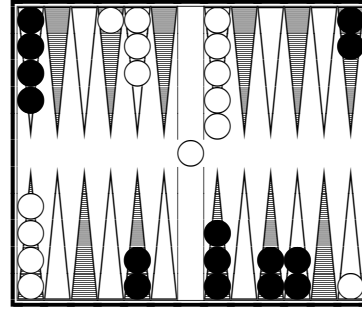
#22 61P-43Z-33

In position #22 above, Black's best move is to Jump all four checkers over the bar with **J**, as shown in 22.1 (below, left). In this way, he makes his strongest three-point board.

The (very close but) second best move is **A**, shown in 22.2 (below, right). See also #11.

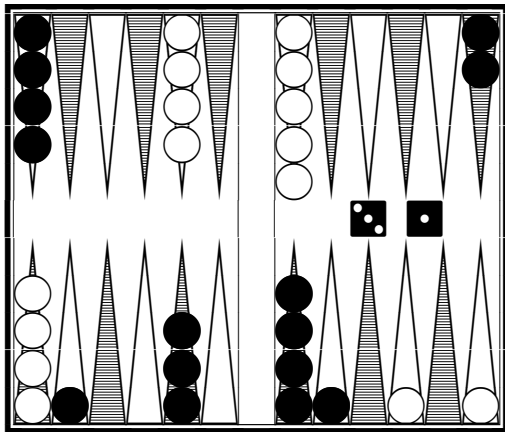


22.1 ...33J

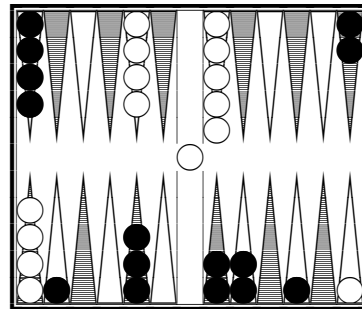


22.2 ...33A

I stands for **Inside**. It refers to playing one or more checkers entirely inside (within the inner board).



23 21\$-52S-31

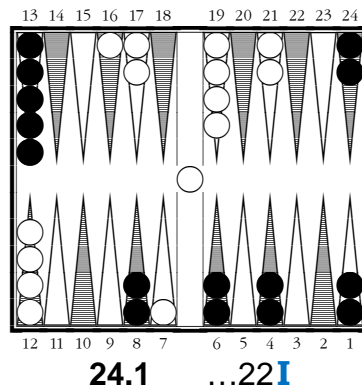
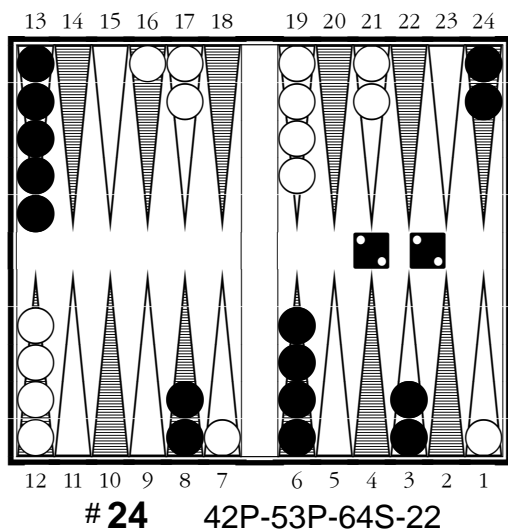


23.1 ...31I

Position #23 above is similar to a position analyzed on page 28 of *Backgammon Openings* (<http://www.nackbg.com/bgopreview.htm>). With his roll of 31, Black should cover his inner board blot and hit, as shown in 23.1. This Inside move is nactated **I**.

The hit here is incidental. Do not confuse Black's 31 I in 23.1 with his 31A in 15.3. There is only one source quadrant (inner board) for I, whereas there are two for A.

As by now you might have surmised: When applying I to a roll of doublets, *all four* portions of the move are played Inside. For example:



In #24 (left), Black should play all four deuces Inside with **I**, as shown in 24.1 (right), rather than anchor or hit outside. Such a committal choice may cause a positional player of the 1970s to roll over in his grave, but the swing is huge if White fans or rolls a 6.

Areal Overview

Not all areas of the backgammon board are utilized equally. Given that 13 of the 15 checkers start on the midpoint or lower in the opening position, there is a concentration of moves on the near side of the board. For this reason, of the four areas of movement (on which Nactation's areal concept is based), only one is defined by destinations on the far side of the board. The other three involve checker destinations on the near side.

Every backgammon move is composed of either two portions (if the roll is non-doublers) or four portions (if the roll is doublers). Each "portion" (sub-move) of the move performs one of four basic checker movements (which can be used as nouns):

- R**un on the far side of the board
- D**own to or within the outer board
- J**ump from outer to inner board
- I**nside within the inner board

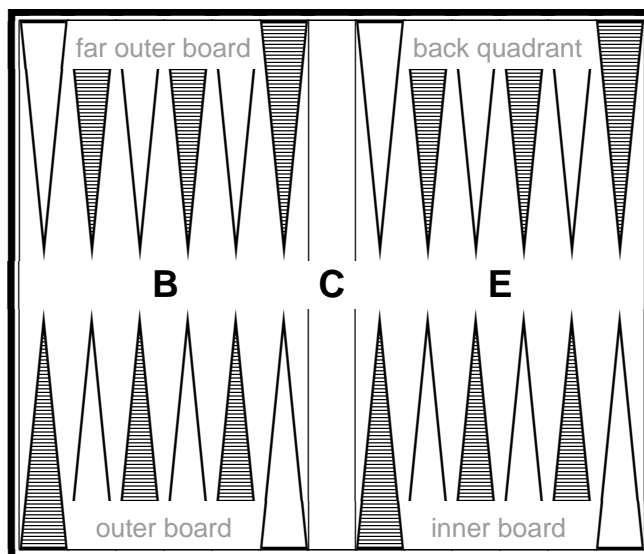
It is the specific way in which a move's two or four areal movements are combined that determine which areal letter is appropriate.

If both or all four portions are played in the same area, then just use the uni-areal letter: R (which is U in some cases), D, J or I. For example, R is composed of two or four "runs."

When half of the move is played in one area and half in another (a 2:2 ratio for doublets or 1:1 for non-doublets), the uni-areal letters of JIRD (i.e., RDJI) are the parents, and the bi-areal letters of BEACON (introduced in sections 3–4) are the offspring—the hybrids.

In the board illustration below, the parents have big letters and the hybrids small letters. Each hybrid is positioned equidistantly between its parents.

R



D O J A I

↖ — **N** — ↗

For example, if half the move is played Down (D) and half Jumps over the bar (J), then—areally speaking—D and J have each contributed half the move, thereby producing the hybrid Outer (O). You can write this as D + J = O. Below are all six combinations.

R + D = B (or S or Z)	#5–6, #9, #17, 39.3, #51–52, #54–56, #60, #62
R + I = E	#10, 15.1, 31.3, 39.2, 53.1, 57.1, 60.3
J + I = A	#11, 15.3, 16.3, 22.2, 39.4, 53.5, 55.2
R + J = C	#12, 16.2, 39.1, 60.2
D + J = O	#13, 16.1, 81.1
D + I = N	#14, 15.2, 53.3

For doublets, it is also possible to play three portions in one area and one in another, or to play portions multi-areally (i.e., in three or four areas). Areal letter families for all possible doublet moves are precisely defined and illustrated in sections 15–16.

Section 6: Style Letters

The previous section explains the *areal* concept. Areal letters are indispensable; they provide a guaranteed way of nactating a move that lacks an obvious action word to describe it or simultaneously achieves more than one objective. Moreover, the use of areal letters in conjunction with the “hit-more-6 rule” (the way to distinguish between two or more moves that use the same letter), as outlined in section 10, is the most reliable way for skilled nactators to communicate with each other or with a computer program.

Any backgammon move from any position can be described by an areal letter. Strictly speaking, therefore, *style* characters are unnecessary; moreover, they are more difficult to use perfectly. (Due to a less natural fit with the hit-more-6 rule, an extra clause or convention is sometimes substituted or added.) Well, then—why use them?

Here are some reasons that style characters are worthwhile:

- Given that they relate to action words, style characters are among the easiest for inexperienced nactators to grab out of the air.
- The interpreter can grasp the most clearly defined action more quickly.
- A style letter sometimes ranks higher in its family than the areal alternative.
- It can be a more natural choice than a multi-areal letter.
- Style characters sometimes mesh well with the use of assumption.
- They add color to the language of Nactation; they’re stylish!

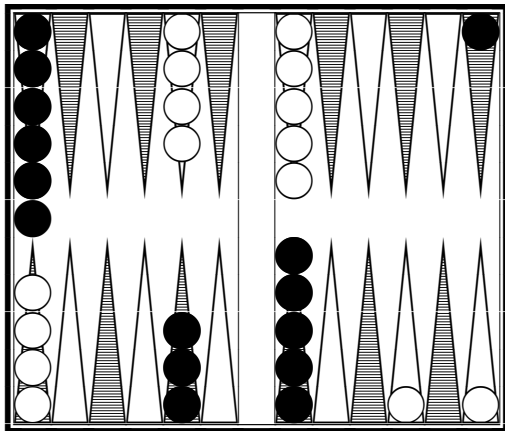
It is easy to appreciate the above justifications for the use of style characters, especially if one has fully digested sections 8, 10, and 13 and/or is well practiced with Nactation.

Sections 1 and 2 cover the fundamentals of the most commonly utilized style characters: P (Point), \$ (Slot), H (Hit), X (hit and split), and K (Kill; hit twice).

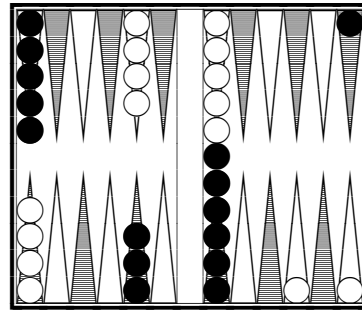
The remainder of this section introduces the other four style letters: T = sTack/Tower, L = Lift, W = Wild, and non-doublet Q = Quadruple split.

T stands for **sTack** or **Tower**.

In position #25 (below, left), Black has rolled 43. Having escaped a checker and leading in the race, he need not be embarrassed to play **43T**, even though it merely shuttles a checker from one tall point onto another, as shown in 25.1 (below, right).



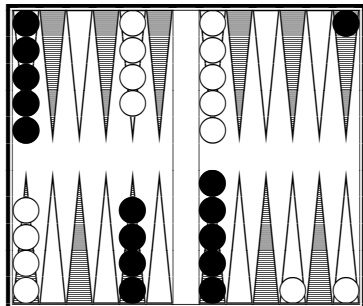
25 65R-52S-43 (or -41 or -32)



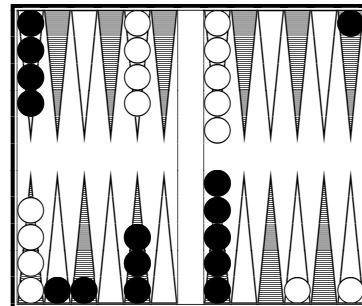
25.1 ...43**T**

Similarly, if Black rolls 41 in #25, he should bring one checker down from the midpoint, sTacking it with **41T**, as shown in 25x (below, left). This move can also be nactated 41D.

Also shown in 25x is **32T** (same move, but with a roll of 32 instead of 41). It is incorrect—or at best inadvisable—to nactate *this* move 32D, which (as clarified by the 6pt convention in section 10) translates to the blotty move shown in 25y (below, right).



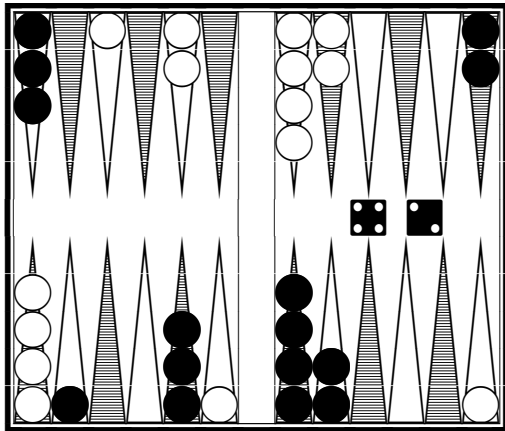
25x ...41**T** or 32**T**



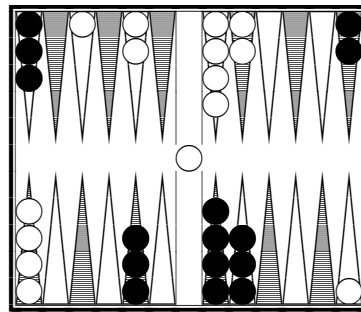
25y ...32**D**

L

stands for **Lift**, as in Lifting a blot to the safety of an occupied point.



#26 52D-63S-31P-31P-42



26.1 ...42L

In position #26 (above, left), Black should hit (obviously) with his 4, and Lift his blot with the 2, as shown in 26.1 (above, right). By playing **L**, he cannot be hit back.

T and L are most often used for moves that play a single checker. T and L are sometimes interchangeable, though a conscientious nactator will select the letter he believes his readers will most quickly grasp in the situation.

T (sTack or Tower) must add to a point that, when the move is completed, will contain *four* or more checkers. L can add to a point that ends up with *three* or more checkers.

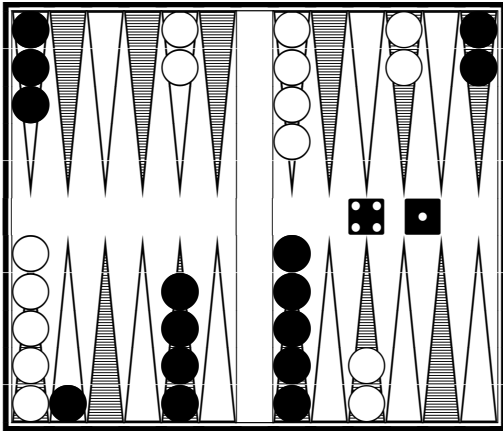
L (Lift) moves a *blot*, whereas T can move a blot or spare, or even break a point.

For more explanation and examples of L and T, refer to #69–71.

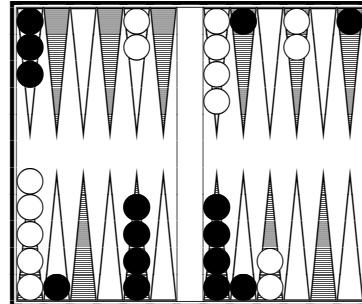
When using or interpreting style characters, think about what the terms mean in normal backgammon discussion. That approach will often serve you better than mechanically following rules and guidelines.

W

stands for **Wild**. It refers to a move that both splits and slots (i.e., “slots”). The checkers that move both end up as blots. Ain’t that wild?



27 65R-53P-52D-64H-21H-43@-41



27.1 ...41**W**

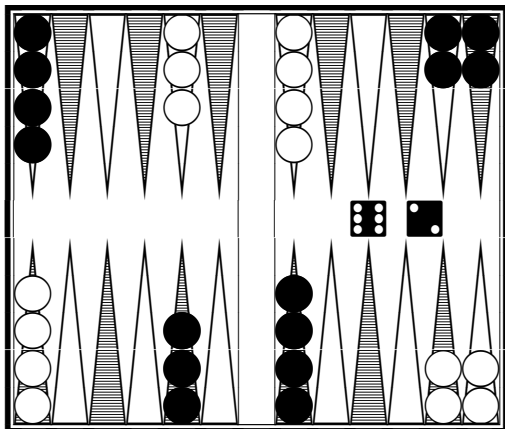
In position #27 (above, left), Black has rolled 41. His split-and-slot move of **W** shown in 27.1 (above, right) is indisputably wild. However, it is also stronger than any other move available, including the reflexive choice (not diagrammed) of making the bar point!

The areal way to nactate the move in 27.1 is E. It resembles Black’s E move in 15.1 (although there the ace happens to cover a blot instead of creating a new blot).

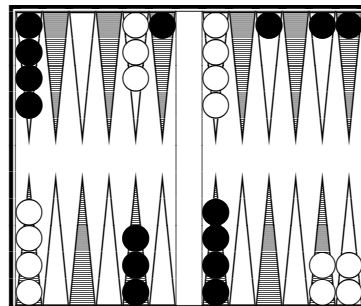
W is frequently interchangeable with E—or with C, if the near-side checker crosses the bar. However, E or C can be used even when one or both halves of the move cover a point, safety a blot, and/or float or spread a spare. By contrast, the narrowly defined but stylish W describes a very loose move, typically starting a point in both inner boards.

For more on W and the other slot-related families, see #29–32 and #72–73.

Q means **Quadruple split**. “Q” refers to a loose splitting move on the far side of the board that leaves the player with back checkers on four or more points.



#28 Nackgammon Opening 62



28.1 62Q

Position #28 is the opening position of the popular variant “Nackgammon” (for more info, go to <http://www.nackbg.com/nackgammon.htm>). One strong opening move is **62Q**, the Quadruple split shown in 28.1. Other strong openers are 41Q, 52Q and 63Q.

The above definition of Q applies only to non-doublers. When applied to a roll of doublers, Q has a different meaning—see section 16.

Congratulations: you now know how to nactate with 22 of the 26 letters of the alphabet!

In section 16, you can find definitions for the remaining four letters (F, G, M and Y) as well as clarified usage for other letters when doublers are rolled.

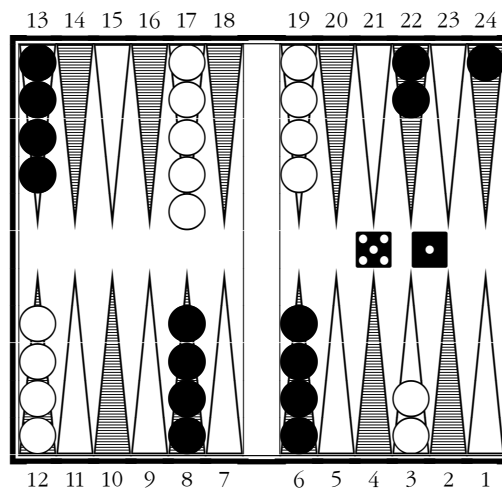
[Starting with section 7, traditional point numbers (1–24) are included in the text and around the diagrams. For example, “11” beneath the lower edge of a diagram labels Black’s 11 point, abbreviated in the text as Black’s (or *the*) “11pt.” White’s point numbers are mirrored on the opposite border.]

Section 7: Symbols

A “symbol” is a character that is neither letter nor numeral. The current list is: \$, %, &, @, #, ^, <, >. These symbols can be written, or they can be typed from a standard (U.S.) keyboard using the Shift key. (All but the last two are on the top row.)



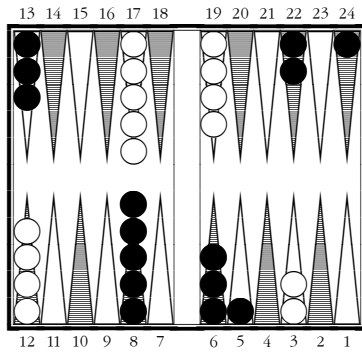
stands for (single) **Slot**, introduced in section 1. You “slot” by playing a checker to a vacant *forward* point (7pt or lower). If doing so uses only part of the roll, the other portion of the roll must: be played *down* (to or within the outer board), or enter from the bar (or be forced). [This is the “down clause.”]



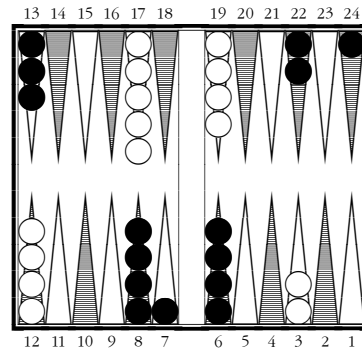
#29 51S-41K-1-52V-21H-43H-63R-65H-31@-51T-51

In position #29 (above), Black has 51 to play. The “down clause” written into \$’s definition is satisfied with 13/8. There is a choice of points Black can slot with the ace, but as the 5pt trumps other points, the move shown in 29.1 (below, left) is \$.

By the same token, bringing down a 2, 3 or 4 and slotting 6/5 with the ace is nactated 21\$ (White’s move in #4), or 31\$, or 41\$ (White’s move in #12). On the other hand, 13/7 6/5, which slots *two* points lower than the 8pt, is *not* 61\$ but rather 61& or 61N. (See the similar example in #32.)



29.1 ...51\$



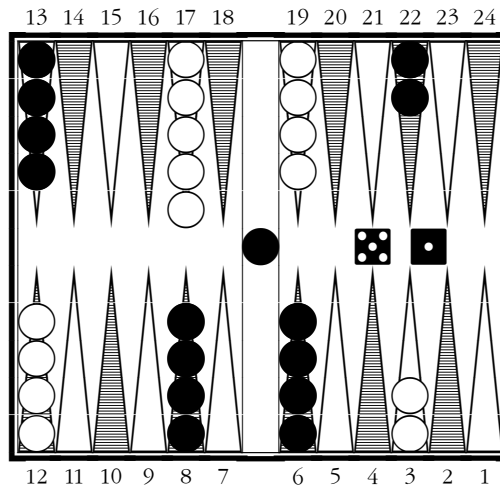
29.2 ...51%

%

stands for **alternate slot**: a slotting move that is secondary, based on the three conventions listed above position #72. For convenience, the % symbol is located just to the right of \$ on the keyboard.

The move shown in 29.2 (above, right) is delegated the secondary symbol %. (“51%” in the caption means 51 **alt-slot**, *not* 51 percent!) The 7pt takes a back seat to the 5pt. [For reference, the areal alternative for 29.1 is N (see section 4), and for 29.2 it is D.]

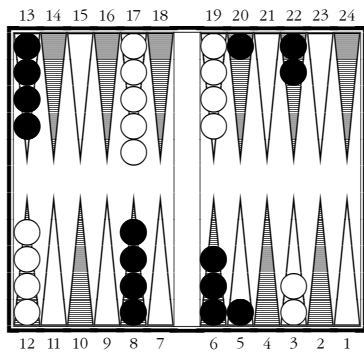
Position #30 (below) is identical to #29 (above), except that the checker on Black’s 24pt has been moved back one pip to the bar.



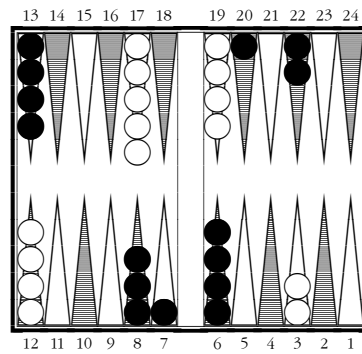
#30 52S-32X-21H-42@-62X-54R-32@-52H-F-51T-51

In the variant position above, Black has the same 51, but this time he must enter from the bar with half the roll. The definition of \$ allows for this entrance; the solely remaining portion of the roll can now be slotted without a portion coming down.

Slotting the 5pt as in 30.1 is \$ (primary); slotting the 7pt as in 30.2 is % (secondary).



30.1 ...51\$



30.2 ...51%

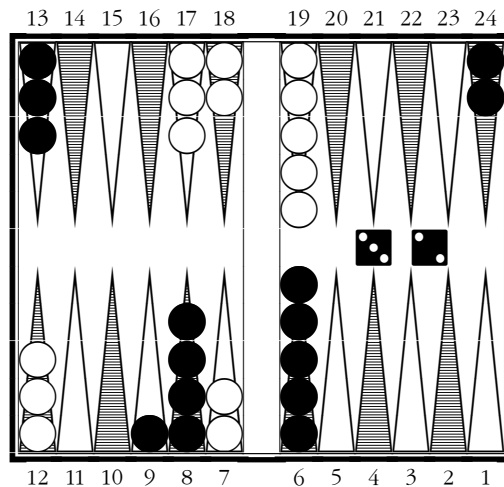
Note your alternatives of E, W or 5 for 30.1; and B, w or 7 for 30.2. (Refer to sections 4, 6 and 9.) For moves that enter—and this is true for most characters, not just for \$—you can choose to nactate either the remaining portion or the entire move.

For further discussion of \$ and related families, refer to section 13 (starting above #72.)



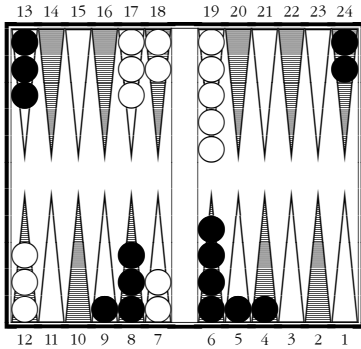
stands for **double slot**. By common usage, the ampersand represents the word “and.” To relate this to Nactation, think “slot & slot.” Also, the ampersand is vaguely suggestive of two criss-crossing \$ signs.

The & (double-slot) symbol refers to slotting two forward points, (i.e., below the 8pt). For preference of points slotted, see the *which point* convention above #72.

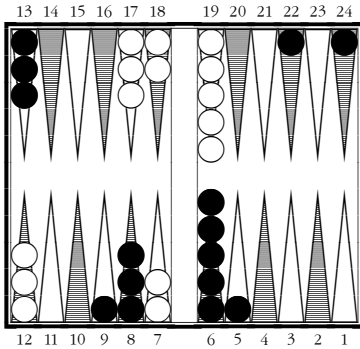


31 54D-66B-32

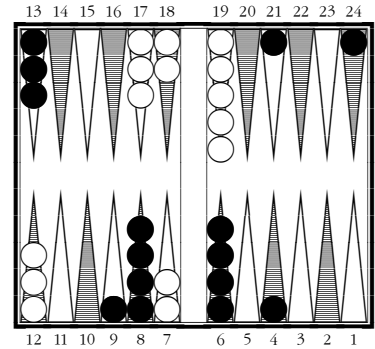
In #31, Black, who trails substantially in the race, rolls 32. The thematic move is &, the double-slot move shown in 31.1 (below, left), which aims to quickly build a strong board. This move’s most competitive candidates are likewise swashbuckling: W, shown in 31.2; and E, shown in 31.3. (Note that Black’s move in 27.1 is both W and E.)



31.1 ...32&



31.2 ...32W



31.3 ...32E (or w)

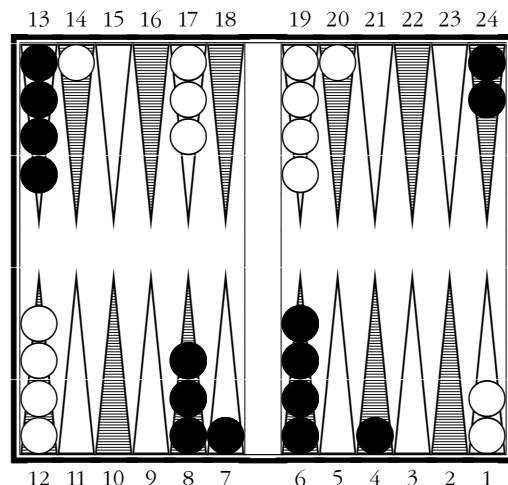
While it is natural to prefer the descriptiveness of & and W, the areal alternative for 31.1 is A (for other examples, see 15.3, 16.3 and 53.5), and for 31.2 it is c (refer to 16.2). For lower-case letters, see section 10.

Further clarification: a move creating *two* new blots (on points lower than one's own 8pt) is regarded as a & (*double slot*) move rather than a \$ (single Slot) move.

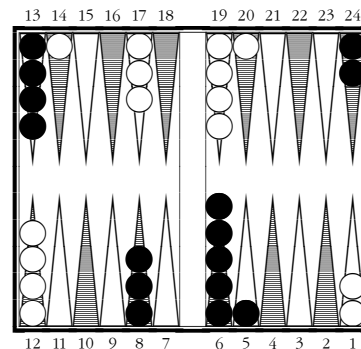
Do not confuse Black's 62& move in #32 (right) with his 62\$ move shown in 32x (below, right—a copy of position #4).

For Black's move in #32 (large diagram), "62N" is a common areal alternative. The areal choice for the move in 32x (small diagram) is 62o; see section 10.

White's opening 21\$ move (in both diagrams) also leaves two blots, but a checker higher than one's 7pt does not qualify as "slotted." Hence, the single-slot symbol (\$) is appropriate. The areal alternative is 21N.



#32 21\$-62&

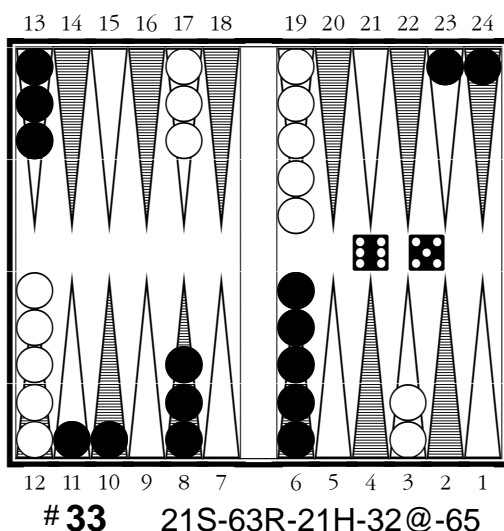


32x 21\$-62\$

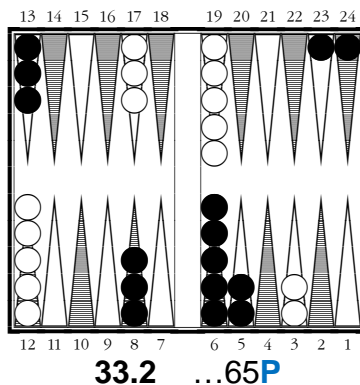
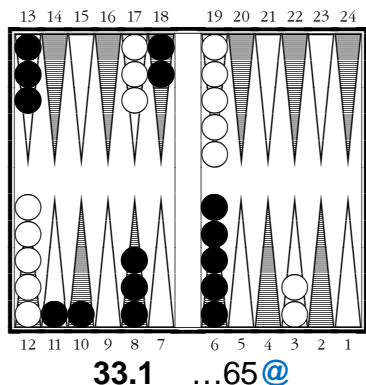


stands for **anchor**. (The symbol looks like a circled “a,” the first letter of the word “anchor.”) An anchor is a defensive point, usually in the opponent’s inner board, sometimes in her outer board.

Grab a board and play through the sequence of moves (listed in the caption) that occurred to reach position #33 below. On her last turn, White rolled 32; she entered from the roof with the 3 and covered that checker with a 2, thereby anchoring with 32@.

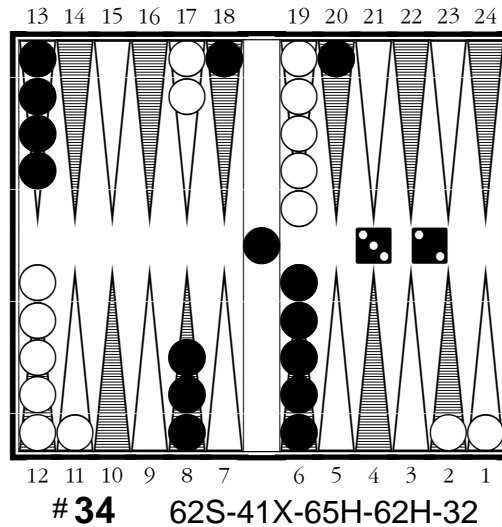


In #33 (above), Black has rolled 65. His best move is to make a defensive point (anchor) with @ as shown in 33.1 (below, left). A reasonable alternative is to make an offensive point with P, shown for reference in 33.2 (below, right).

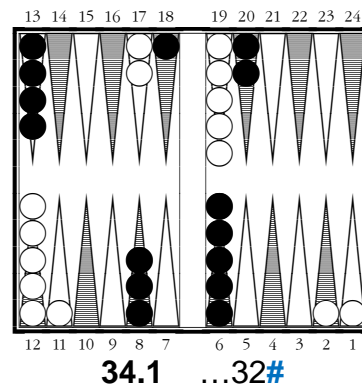
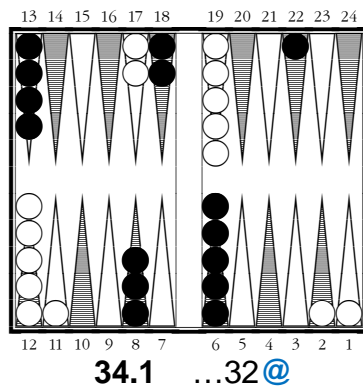


#

stands for **alternate anchor**. For convenience, the # symbol is located just to the right of @ (the primary anchor symbol) on the keyboard.



In position #34, Black has a *choice* of anchoring moves (either of which is better than hitting). He can make the 18pt anchor with @, as shown in 34.1 (below, left), or he can make the less advanced 20pt anchor with #, as shown in 34.2 (below, right).



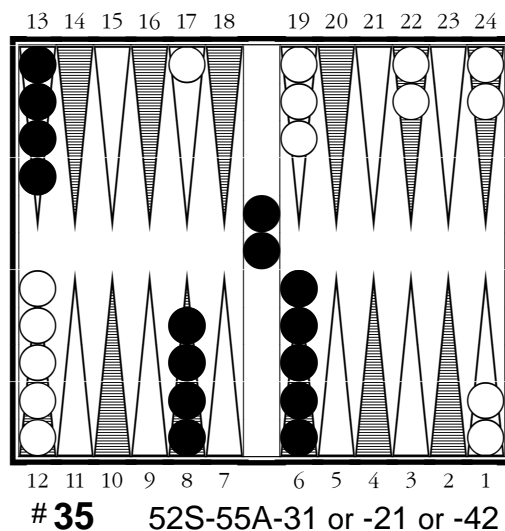
\$ and % are the first two members of the Slot “family,” while @ and # are the first two members of the anchor “family.” For further explanation, see sections 10 and 13.

[The # sign that precedes each of the feature diagram numbers is merely a formatting element I chose for this tutorial. In context, it is easily distinguished from the # (alt anchor) symbol that is written *after* the roll or is otherwise discussed in context.]

^ stands for **fan** (dance, stay off, fail to enter). The caret is suggestive of an upward arrow, pointing to the roof (the location of the fanning checker/s).

< stands for **enter one** checker. If you like, you can think of < as meaning to enter *less than* (fewer than) 1.5 checkers.

> stands for **enter both/all** checkers. If you like, you can think of > as meaning to enter *more than* 1.5 checkers.

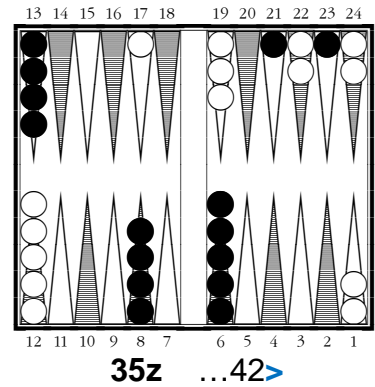
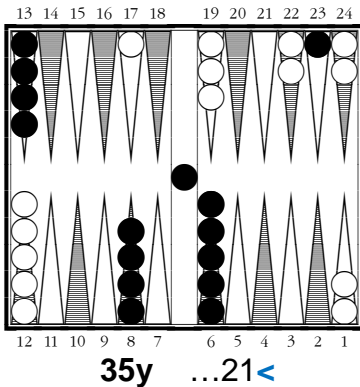
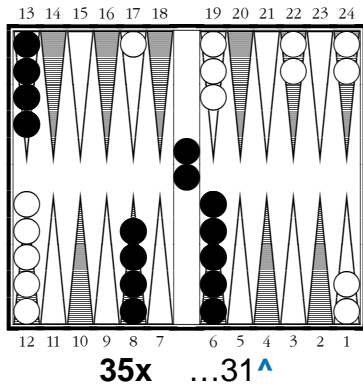


In position #35 (above), Black has two checkers on the bar. If he fans, you can list the roll plus ^. For example, the caption in 35x (below, left) indicates that Black fanned with **31^** (the only difference between #35 and 35x being the player on roll).

If you have no reason to convey the specific roll that fanned (66, 63, 61, 33, 31 or 11), you can replace 31^ with “fan,” “Fan,” or simply “F,” omitting the roll entirely.

If *one* of the checkers enters, you list the roll followed by <. In 35y (below, middle), Black entered one checker on White’s 2pt with **21<**. If you care about neither the exact roll nor the uniformity of using three characters (i.e., roll plus Nactation character) for every move, you can provide just the entering number, “2” (instead of “21<”).

If Black enters both (or all four) checkers, you can list the roll followed by >. In 35z (below, right), Black entered both checkers with **42>**. Listing just the roll (“42”) is also fine (unless, perhaps, if it’s the final move of a sequence). When a move is forced, it is common to give only the roll, omitting the Nactation character completely.



Avoid using the enter both/all symbol when a player enters two (or three) checkers with doublets and two (or one) portions of the move remain. For example, in #35, if Black rolls 22, then regardless of his move, the Nactation of > conveys incomplete information.

File names (for computers): When you save the rollout result of an early game position on a computer, its Nactation sequence typically makes a great file name.

The use of angle brackets <, >, is an exception. On most computers, angle brackets are used to redirect output and so cannot be part of file names. The easiest way around this (and it is a recommended textual option anyway) is to omit angle brackets and list just the two-number roll for a full entrance or a one-number roll for a single-checker entrance.

For more on file names, refer to the end of section 14.

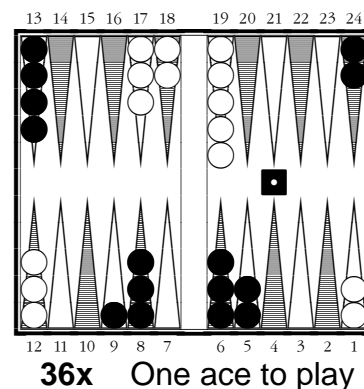
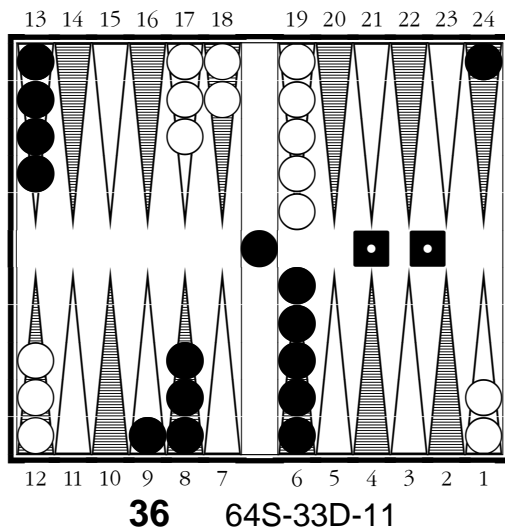
Section 8: Assumption

As Part 2 of this tutorial (i.e., section 10 and beyond) makes clear, Nactation, when properly used, is a precise language. When expert nactators or computer programs communicate with each other, there is no possibility of ambiguity.

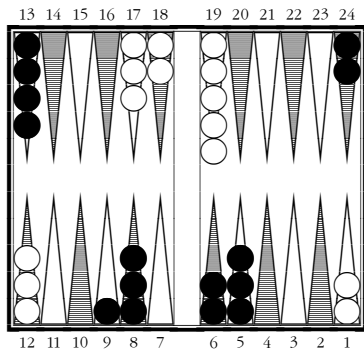
On the other hand, nactating perfectly requires a non-trivial amount of study. With this in mind, I am wrapping up Part 1 of the tutorial with the art of “assumption.” This short-cut technique endows you with a complete system, making it possible to handle any move that is likely to arise (even a tricky doublet) with a single character. The main prerequisite is that both nactator and interpreter employ a modicum of common sense.

Even if you are determined to become a concert nactator with complete exactitude in your selections, reading sections 8 and 9 will make it easier to interpret characters to which other people—those with incomplete Nactation skills—might resort.

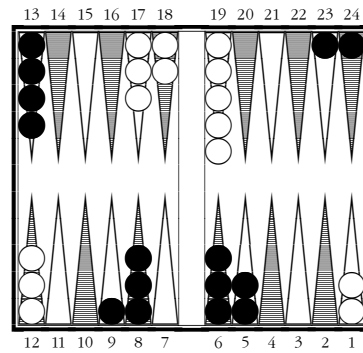
In position #36 (below, left), three aces are obvious: entering is forced, and Black should (of course) make his powerful 5pt. Assume, therefore, that the reader will know these three aces are played, reaching the position shown in 36x (below, right).



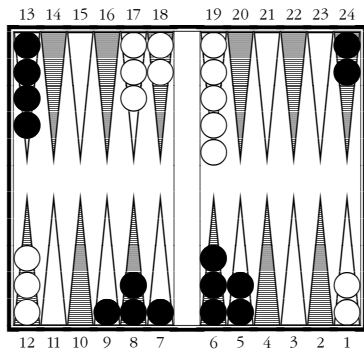
Oddly enough, Black would be better off stopping with the three aces played in 36x, but the rules of backgammon require him to play a fourth ace. Black’s four plausible options, in descending order of strength, are shown in the small diagrams below.



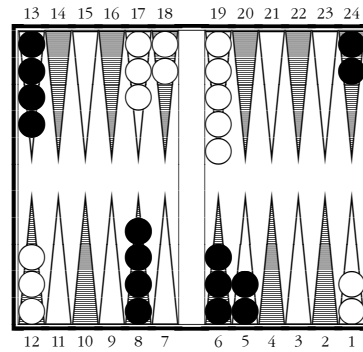
36.1 ...11I



36.2 ...11U



36.3 ...11\$

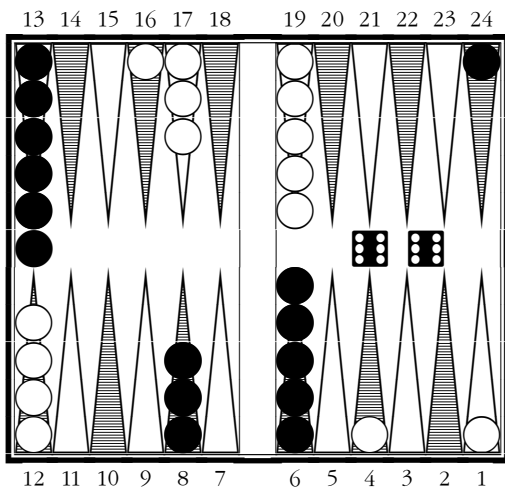


36.4 ...11L

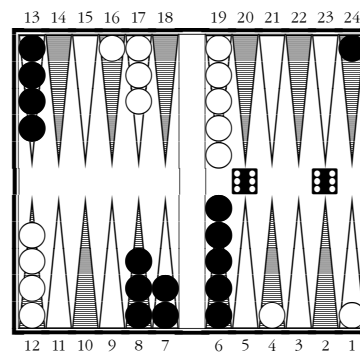
Other Nactations are possible; for example, the Lifting/sTacking ace in 36.4 can sport T instead of L. The main point, though, is that by applying the art of assumption, it is unnecessary to apply the advanced concepts explained in later sections (that with areal precision identify the moves for 36.1, 36.2, 36.3 and 36.4 as E., E, y and Y, respectively).

In position #37 (below, left), Black has double 6s to play.

All reasonable candidate moves involve Black bringing down two checkers, as shown in the small diagram 37x (below, right). That part of the move can be assumed.



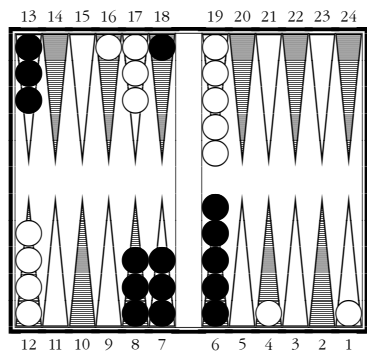
37 65R-43Z-66



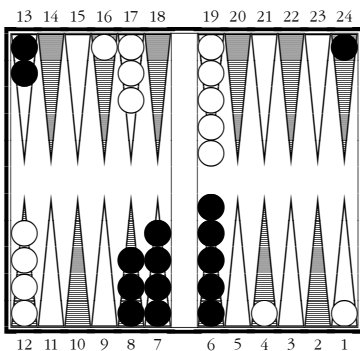
37x Two 6s to play

Black's move in 37.1 (below, left) is nactated **Z**—see the table of doublets in section 15. However, if Black comes Up with the third 6, there is only one good fourth 6 (coming down); therefore, **U** is fine. Indeed, even if the reader mentally plays Up with the 6 first, he'll quickly realize there is only one laudable way to play the other three 6s.

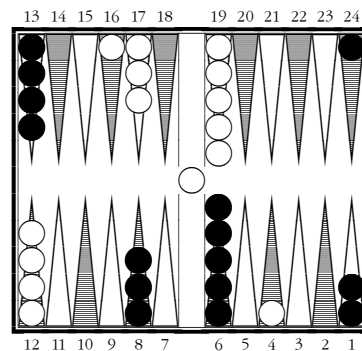
For the moves in 37.2 and 37.3, you can similarly use assumption by keying off of 37x if you like, though appraising four 6s from #37 yields the same letters. The move shown in 37.2 is **D** (coming Down), and the move shown in 37.3 is **P** (Pointing on the 1pt).



37.1 ...66**U**



37.2 ...66**D**

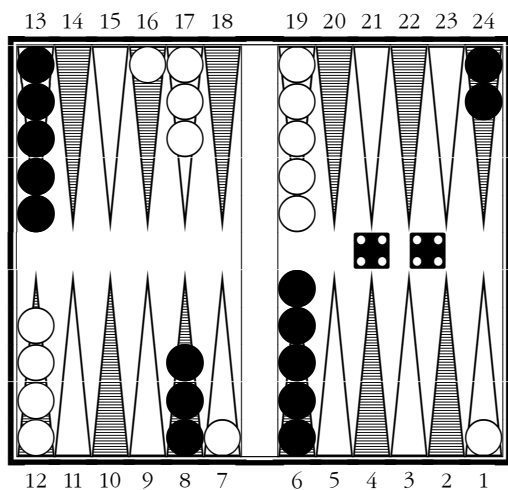


37.3 ...66**P**

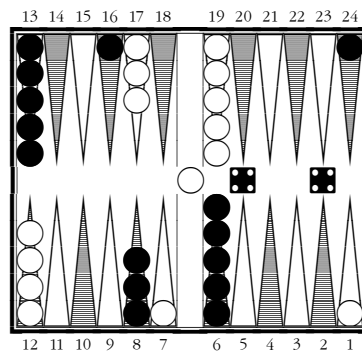
For #37 and related positions, this ditty will help you remember the best move by score:

- (1) At double match point, *double* **U**p. At gammon save, *save* **U**p;
- (2) Get your *money* **D**own.
- (3) At gammon go, to *gammon* is the **P**oint.

It is common to assume a *hit* (or hits) for part of a roll. In most cases, you can nactate the leftover part of a hitting move without fear of someone misinterpreting you.



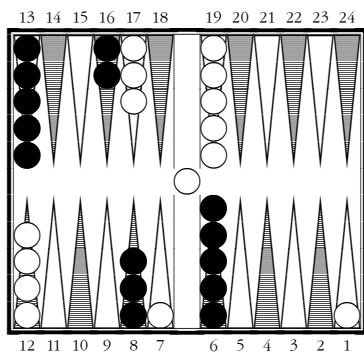
#38 64S-44



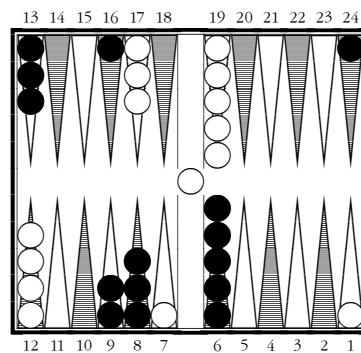
38x Two 4s to play

Position #38 (above) is a valid example. “Clearly,” Black should hit with two 4s, shown in the partial-move diagram 38x (above, right). We can nactate the *other* half of the move.

Black’s best option is to run out with his other checker (covering the first one), as shown in 38.1 (below, left), nactated **R**. In truth, assumption is unnecessary for this move: running two checkers out with double 4s is R even if there is no blot to hit.



38.1 ...44**R**



38.2 ...44**D**

A good alternative (and the best move at gammon go) is to bring the other two 4s Down, with **D**, as shown in 38.2 (above, right).

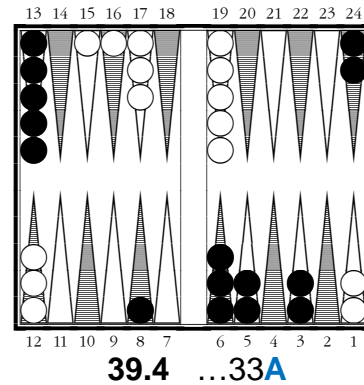
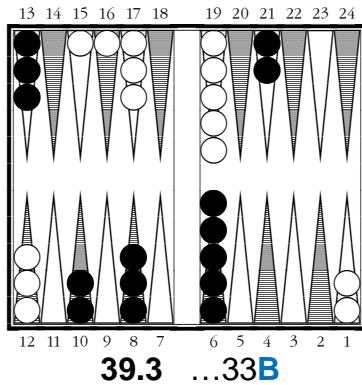
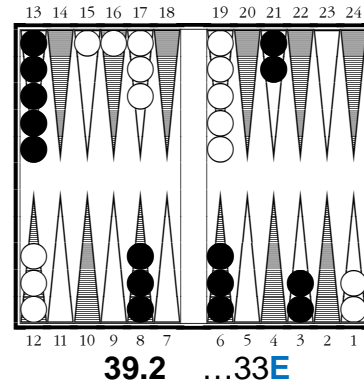
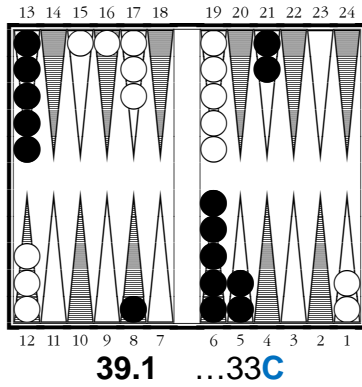
The 38.2 move is properly nactated B, but the benefit of assumption is that you and your reader need not know the hit-more-6 rule (explained in section 10). As D is surely not meant strictly (13/9(4) in #38 would leave a blot on the midpoint!), it is obvious that assumption has been applied. Hit, come **D**own, and then of course cover that checker.

The above example helps to demonstrate a useful axiom: the weaker the strict-usage move would be, the more confidently one can implement assumption with a given letter.

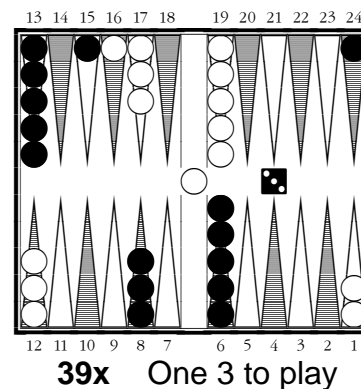
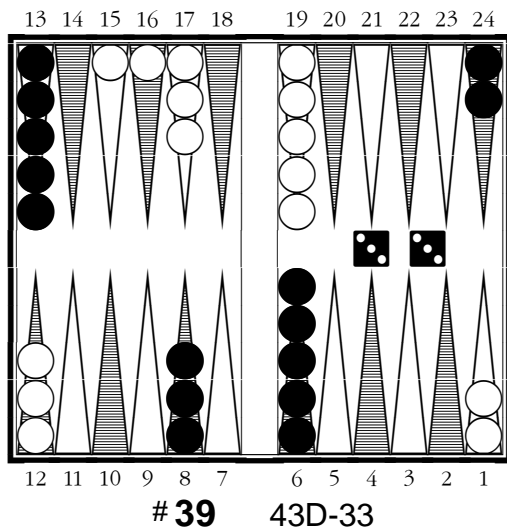
Even when hitting is *not* part of the best move, it often works to apply the hit assumption. After all, unless one is hitting, it is natural to play doublets in point-advancing pairs—moves that are covered by basic letters.

Logically, then, the assumption of a loose hit can be a convenient resource for describing a wider variety of candidate moves without the advanced doublets knowledge found in sections 15 and 16.

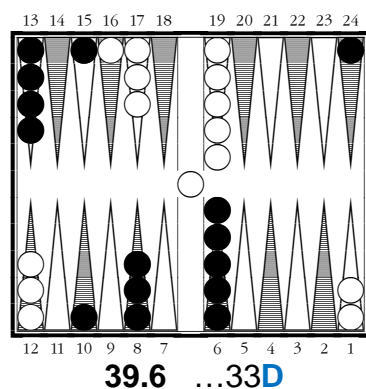
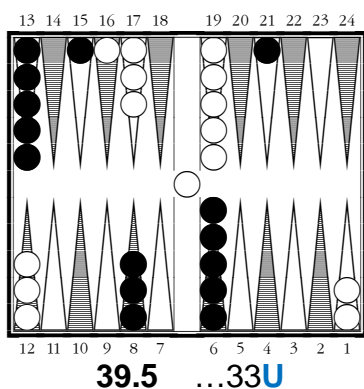
The four positions below each show a competitive move for Black at some match score with double 3s in reply to White’s opening 43D:



The above moves are nactated with four of the **BEACON** letters (from section 3). But Black has additional choices. Let's back up to the position before he made his move:



As a free-wheeling principle, you may “assume” that Black hits with three 3s as shown in 39x (above, right), allowing you to use a letter for just the final 3. In 39.5 (below, left), Black comes up with **U**, and in 39.6 he comes down with **D**. That seems sensible enough.



You must put yourself in the shoes of your readers, however—even if you are nactating moves to be replayed later by yourself. How are *they* going to interpret U or D in #39?

The answer to this question hinges in part on the playing strength of your readers and the degree to which they flow with assumption. However, what is typically even more relevant is the *strict-usage* translation of the letter in the position at hand: how reasonable is *that* move compared to the move you intend to communicate?

Granted, the moves diagrammed above in 39.5 and 39.6 are merely third and fifth best, but I’ve seen experts play both. According to the #39 rollouts (located in section 17), these moves are relative equity losses of only .028 and .033 (respectively) for money, and only .007 and .010 at double match point.

Technically, 33U means to make the opponent’s bar point, and 33D to make one’s own bar point, with relative evaluations of $-.150$ and $-.230$: a whopper and a double-whopper compared to the moves diagrammed. The use of assumption seems reasonable here.

The non-assumptive areal letters for the moves shown in 39.5 and 39.6, respectively, are R and S (see section 15). There is also a good non-assumptive style alternative for 39.6, which is H (noting the down clause mentioned in #8 and above #67).

Final observation: For 43D-33, 39.6 shows the best move that one can reasonably call D, because Black cannot hit in his *own* outer board. Compare with 63S-33 in #59, where a vastly superior and legitimate D move (pointing on the bar point in 59.1) is available. There (in #59), identifying 24/15* 13/10 (where only one of four portions is played in Black’s outer board) as “D” would surely convey the wrong impression.

In conclusion, be careful not to assume too casually. It is worthwhile to consider (in a given position) what a letter might *otherwise* mean to make sure it is not misleading.

Examples of assumption continue in the next section.

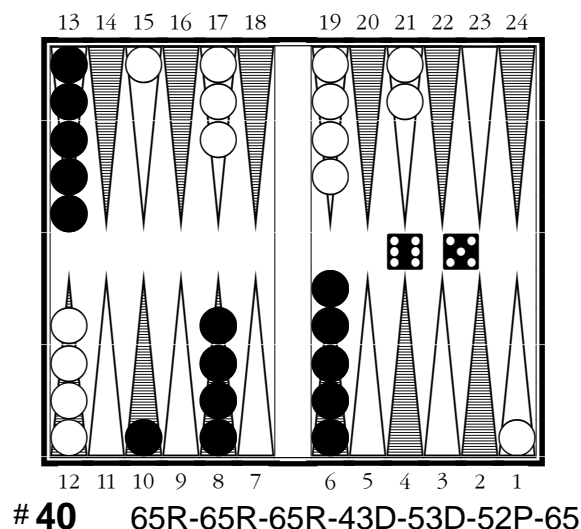
Section 9: Numerals

Instead of going with a letter (A, B, C...) or symbol (\$, &, @...), you frequently have the option of nactating with a numeral (1, 2, 3...). It is a convenience to which you can resort when you are not sure that you would be correctly communicating, or that your reader knows enough to correctly interpret, a letter or symbol for a given move.

A numeral simply represents the last digit of the traditional point number, and is the final destination for at least one of the checkers being played. For example, “1” means playing a checker to the 1pt, 11pt or 21pt, and in that order of priority.

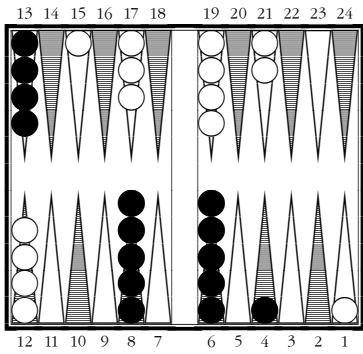
Numerals obey no strict rules, and should be interpreted assumptively: For example, “3” implies, “I’m playing a checker to the 3pt and *you* figure out the rest!” That said, for any remaining portions of the move that do not seem obvious, you may be *aided* by conventions (see section 10 and the summary at the end of section 13).

Suppose you know little Nactation beyond the first two or three sections of this tutorial. For #40 (below), you merrily nactate the first six moves with basic letters, and then...

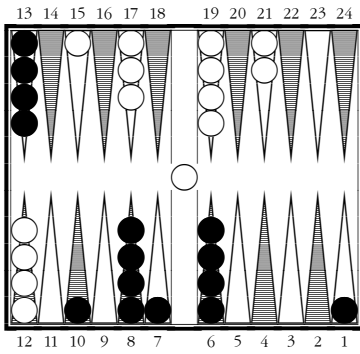


From #40 (above), you need to nactate Black’s move of 13/8 10/4. If you (or perhaps your readers) are fuzzy with definitions or conventions, you can use “4” to describe the 10/4 portion of the move, very reasonably assuming your readers will see that 13/8 surely accompanies it (as shown in 40.1, below left), as any other 5 is abhorrently worse.

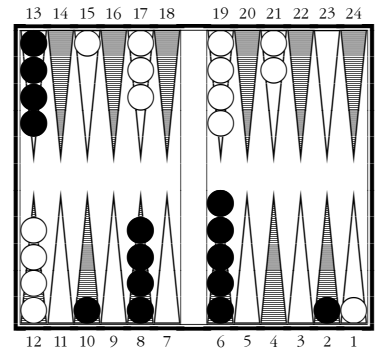
Like reasoning can be applied to 40.2 and 40.3. Relative values of the three moves are unimportant. What matters is that if the 6 is played to the 4pt (4) or to the 2pt (2), then 13/8 (in 40.1 or 40.3) is the obvious 5; or if the 5 hits on the 1pt (1), then 13/7 (in 40.2) is the obvious 6. Any other choice with the leftover number leaves a double direct shot.



40.1 ...654



40.2 ...651

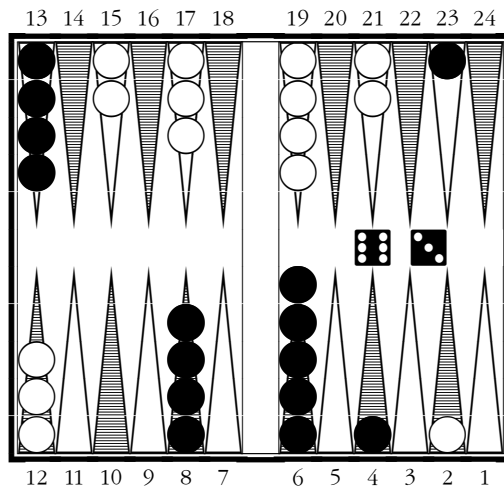


40.3 ...652

When implementing assumption (with a numeral or otherwise), nactate the *less* (or least) obvious portion of the move. For example, if you identify 13/8 as “8,” granted the best 6 is then 10/4 (shown in 40.1), but that 6’s edge over 13/7 is small compared to the edge that 13/8 has over 8/3 or 6/1* if 10/4 (i.e., “4”) is put on the board first. In other words, nactate the hard part; you want the *unstated* part of the move to be as obvious as possible.

If you find it unsettling to rely on such assumptions, cultivate the (more robust) areal letters and familiarize yourself with the hierarchies explained in Part 2. For reference, the three moves above, respectively, are o, N and o, with style options of \$, H and \$.

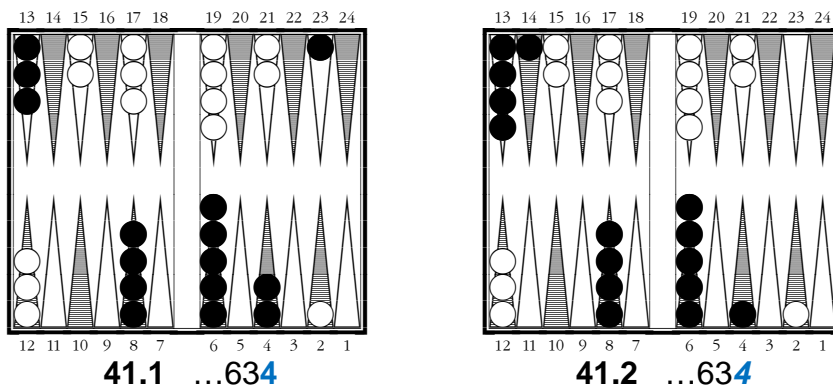
Flush with success after having numerically nactated the 40.1 move, you identify the next three moves of the game sequence easily (as H, H, and P), before reaching this position:



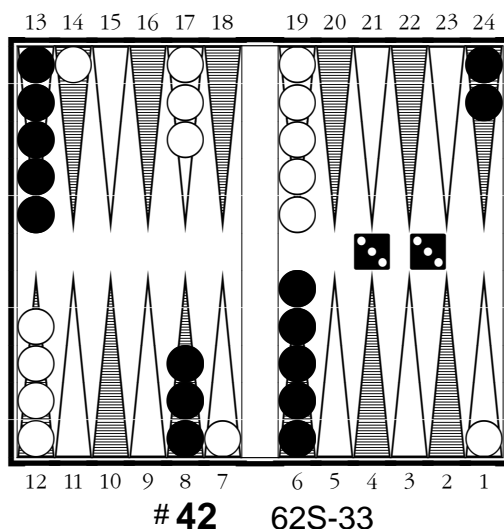
#41 65R-65R-65R-43D-53D-52P-654-21H-42H-32P-63

In position #41 (above), Black has a choice of two good moves. This example helps demonstrate the principle of giving priority to the lower point number.

There are two moves in the 4 family. The primary member **4** is shown in 41.1 (below, left), and the secondary member **4** (see section 14 for italics) is shown in 41.2. That is, the 4pt is prioritized over the 14pt. For reference, P (Point) or O (Outer) on the left, and R (Run) on the right, are the orthodox characters.



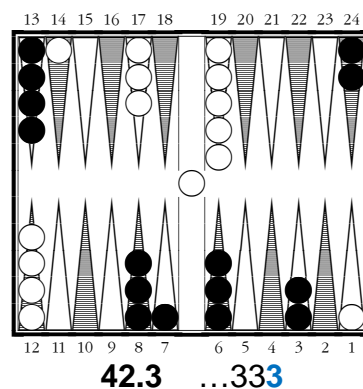
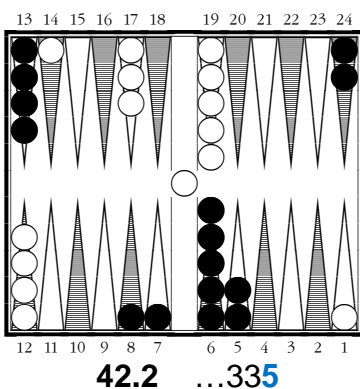
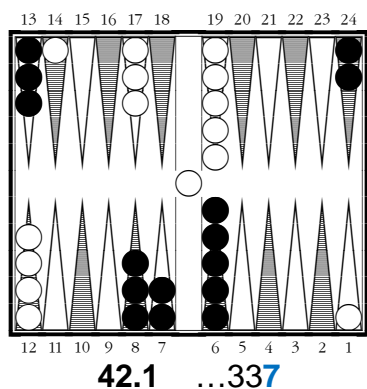
Instead, suppose the roll in #41 is 54. In that case, as only *part* of the move (8/4) covers the 4pt, one must *assume* 13/8 is the 5. Hence “4,” though reasonable, is a less bulletproof choice with 54 than with 63. (For 23/14, you should certainly eschew a numeral, as all four legal moves that cover the 4pt could, in theory, rank higher in the 4 family.)



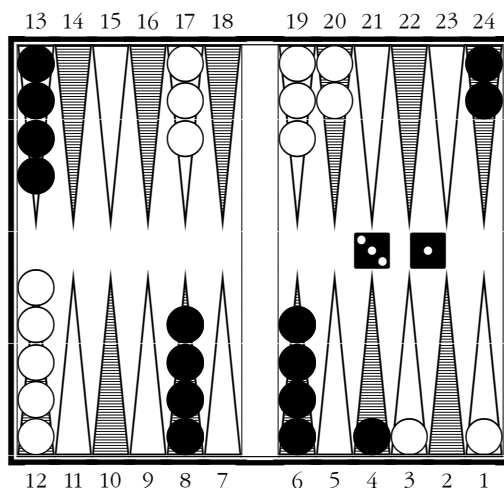
With a roll of 33 here, the best move is to bring two checkers down, pointing on the 7pt, as shown in 42.1, which can be nactated **7**. This is the same move made in 59.1 (White’s builder differing by 1 irrelevant pip), nactated there with the standard D.

You might similarly choose **5** and **3** for the moves respectively shown in 42.2 and 42.3 (below). After playing a blot to the 5pt or 3pt, it is only logical to cover it; then for the other two 3s, hitting is “clear” and is a common assumption anyway.

If all three diagrammed moves are referenced together as 7, 5 and 3, there is a sense of consistency, just as there is if you label the three moves D, O and N. (Instead, P, O, N is fine, though P conflicts with the areal theme.)



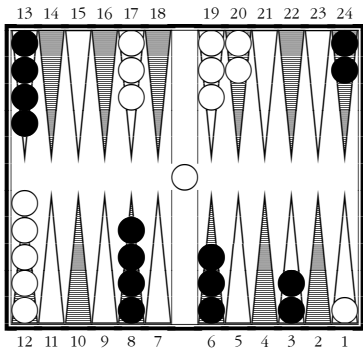
Lest you lose touch with basic characters or your assumptions become too lax, it is inadvisable to treat numerals as a major option. Sometimes, however, you encounter a position where numerals are a compelling fit, even when a non-doublet is rolled. To wit:



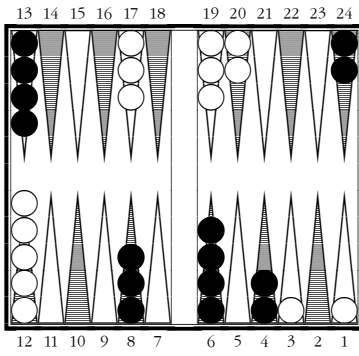
#43 65R-54S-62H-32H-41H-21H-31E-31

In #43 (above), Black has a choice of three inside points he can make. Once you have digested the hit-more-6 rule (section 10) and italics (section 14), then for moves 43.1, 43.2 and 43.3, respectively, you can use P, *P* and p; or you might prefer I, a and A.

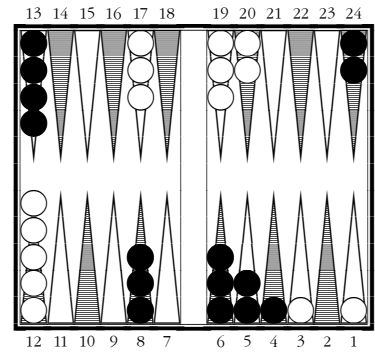
Numerals are the alternative: **3** for the 3pt, **4** for the 4pt, and **5** for the 5pt. In most cases, I prefer letters (or symbols), but the simplicity and clarity of numerals in this case make them irresistible. There is no crisper way to distinguish these moves than **3**, **4** and **5**.



43.1 ...313

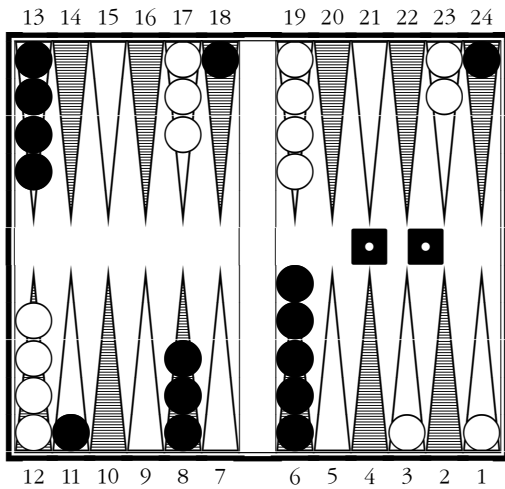


43.2 ...314

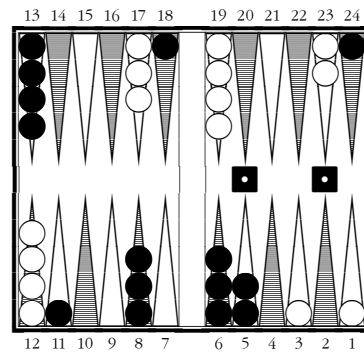


43.3 ...315

Unless you are fairly fluent in the use of complex doublet letters (see sections 15–16), numerals may be your best resource in some positions. For example...



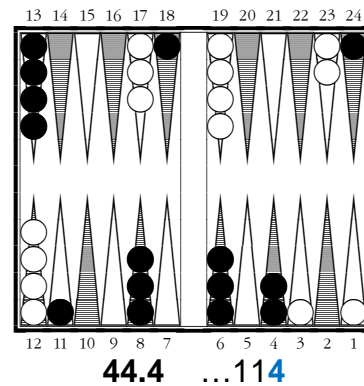
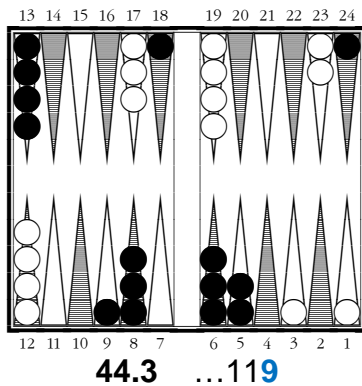
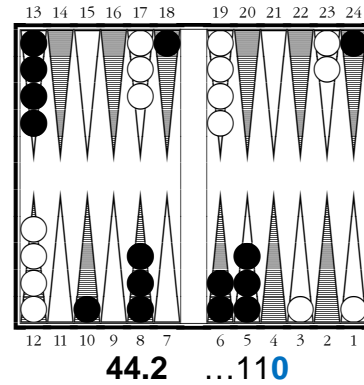
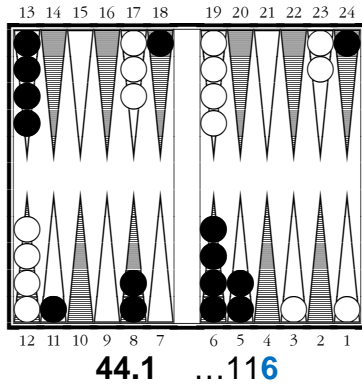
#44 64P-62S-52S-11



44x Two aces to play

In #44 (above, left), Black would prefer to stop after making the 5pt in 44x but must legally play two more aces. His four best moves (in order of strength) are shown below. The respective areal Nactations of the four-ace moves are I, O., n and i (or the style letters P for the first, and p for the fourth, are available).

Numerals are a fine option. With the obvious 5pt made, **6** and **9** (shown in 44.1 and 44.3) are telegraphed. For 44.2, **0** (for 10pt) is clear enough; you don't specify the 10pt if continuing to the 9pt, and slotting the 7pt volunteers a double shot, leaving only 6/5 as the obvious fourth ace. Finally (bottom right), **4** puts a checker on the 4pt, and of course it should be covered, again so as not to a leave a double shot.



From the reader's / interpreter's perspective, there are two ways to reason out characters that may have a built-in assumption. We'll use "6" (reaching 44.1) as an example.

- Assume the obvious 6/5(2) for two of the aces, as shown in 44x. Then, play a checker to the 6pt as "6" suggests. (This was the method outlined.)
- Starting from #44, imagine a checker played to the 6pt (i.e., "6"). Then, with the other two aces, make the obvious 5pt. (This method is at least as common.)

Employing either mental procedure (neither of which seems clearly superior to the other) leads to diagram 44.1. It is helpful to be aware of both.

Nactation

Tutorial

by Nack Ballard

Part 2

Advanced Nactation

Section 10: Hit-more-6 Rule

You will sometimes encounter situations—even when non-doublets are rolled—that, given your knowledge so far, would be ambiguous. If the same letter is used for two different candidate moves, how can the reader guess which move is made?

Until now, U (also known as UV) is the only “family” that has been illustrated in this tutorial. If there are two legal up moves, you use U for one and V for the other (as explained beneath 20.2). How does one handle similar dualities for the other 24 letters?

Lower-case letters (a, b, c...) to the rescue! The capital letter is the primary member of its family, and the lower-case letter is the secondary member.

To determine which of two moves of similar type earns the capital, there is a “hierarchy” of moves. Usage rules are designed such that the capital-letter move is stronger (i.e., a better backgammon move) than the lower-case-letter move most of the time.

Letter (and symbol) families conform to three important conventions, in the order of priority listed below. Collectively, these conventions are known as the **hit-more-6** rule.

Hit convention

Hit if possible, and on the higher point.

[Exception: An extra point in the home quadrant overrides *any* hit.]

More points convention

Making or retaining more points has next preference.

(The 24pt and 23pt do not count as owned points.)

6pt convention (order of priority)

1. *Point owned*: closer to the 6pt (tie goes to the inside point).

2. *Blot/spare destination*: closer to 6pt trumps

(except in one’s own outer board, where *farther* from 6pt trumps).

Above all (i.e., even over the hit-more-6 rule), one must honor each letter’s underlying *definition*. For example, P means to make a Point, and A has a specific areal imperative. In #45 (below), therefore, 64P or 64A translates to 8/2 6/2 (whether it hits or not), never 24/20*/14*. Conventions operate only within the integrity of a letter’s definition.

The hit-more-6 rule is fully spelled out above. Throughout this section, I will isolate elements of it, in order of priority, so that each can be clearly demonstrated.

Let us start with the Hit convention.

Hit convention

Hit if possible, and on the higher point.

[Exception: An extra point in the home quadrant overrides *any* hit.]

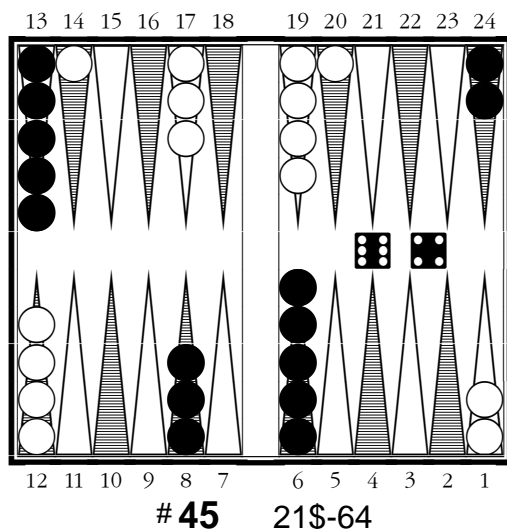
Allow me to expand on the admittedly compact line that is highlighted above:

Priority is given to the move that hits as many times as possible. Given a choice of moves that hit the same number of checkers, prioritize the move that hits on the higher point.

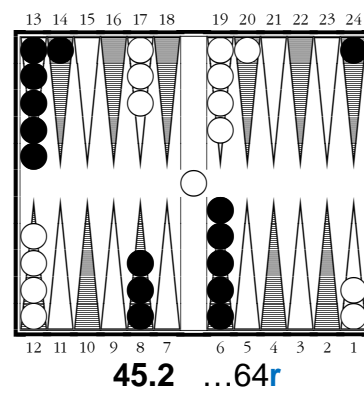
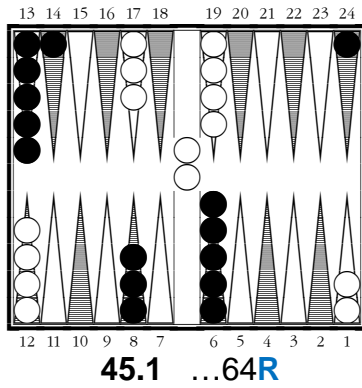
(The “exception” underneath the highlighted line is dealt with in #53.)

R, r

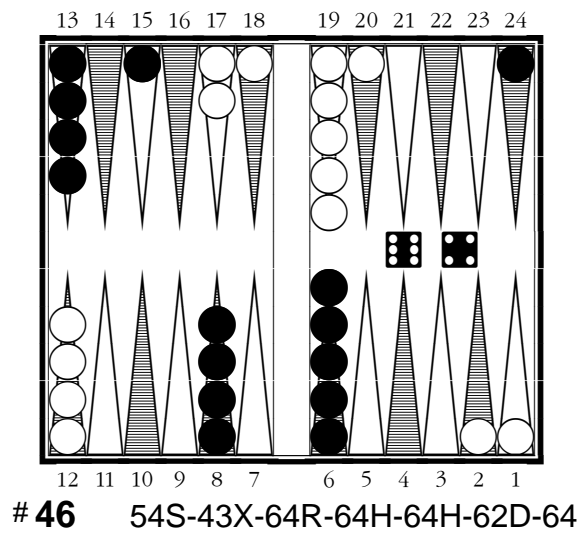
“R” and “r” *both* refer to running back checker(s). I will now begin to integrate and clarify the roles of capital and lower case.



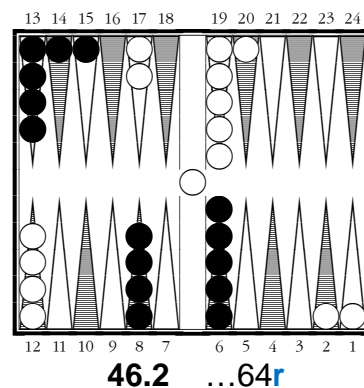
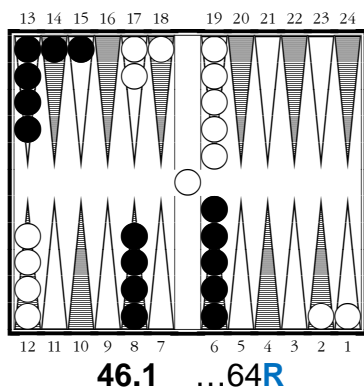
In #45 (above), Black should of course hit two checkers, as shown in 45.1 (below, left): this move can be nactated **R** for Run (though more commonly K for Kill). On the other hand, if Black plays 24/18 with the 6 and then hits only *one* checker (perhaps oversight or timing finesse) as shown in 45.2 (below, right), it is nactated with a lower-case **r**.

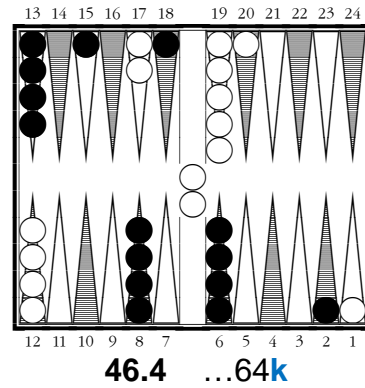
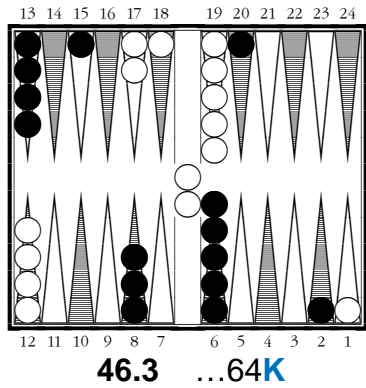


In short, the hit convention prioritizes hitting as many checkers as possible. Accordingly, capital R (the head of its family) hits two checkers, and lower-case “r” hits one checker.



In #46, Black can run in two different ways, either way hitting one checker. Hierarchy of R/r is decided by the other part of the hit convention: hitting on the *higher point*. Thus, 24/20*/14 (shown in 46.1) earns capital **R**, and 24/18*14 (see 46.2) gets the lower-case **r**.





K, k

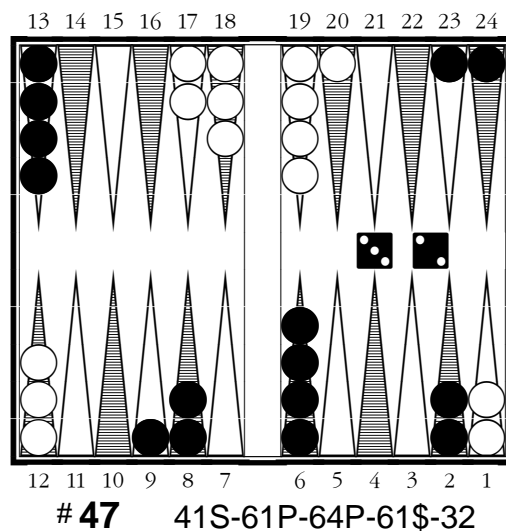
“K” stands for “Kill,” which means to hit twice. The secondary member of the K family is the lower-case “k.”

Another approach in #46, though inferior to (hit and) Run, is to Kill, with the second hit being on the 2pt. As with the R family, the main hit on the 20pt earns the capital letter (**K**, see 46.3, above left) and the hit on the 18pt gets the lower-case letter (**k**, see 46.4).

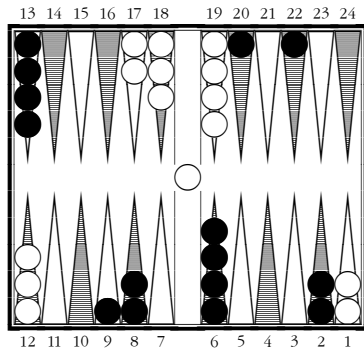
U, V

U stands for Up (to play up), and V stands for Variant up. However, U and V have the same underlying definition: to play back checker(s) to or within the area from the 24pt to the 18pt.

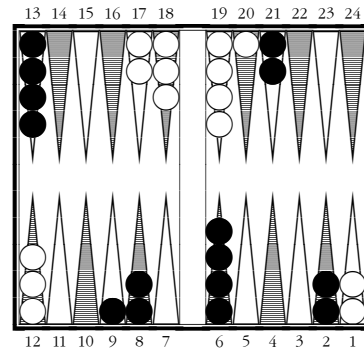
U and V are the only letters that share a family. U is the primary and V is the secondary member of the U (or UV) family, just as R is the primary and r is the secondary member of the R family. (U is introduced in #7, and V is compared to U in #18–20.)



Black’s move shown in 47.1 (below, left) is **U**, simply because it hits. The move in 47.2 (below, right) is the lower-ranked **V** because it does *not* hit.



47.1 ...32U



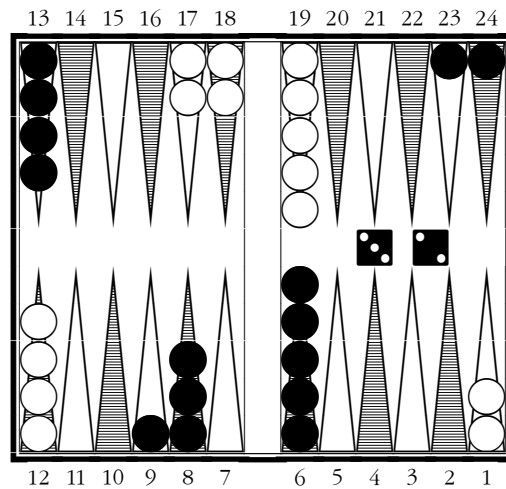
47.2 ...32V

What happens when (within a letter's definition)... it is not possible to hit? or... when two moves hit the same number of checkers? or... when two moves hit on the same point? In any of these cases, we use the next highest priority determinant (isolated below):

More points convention

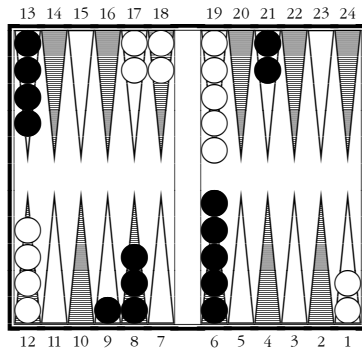
Making or retaining more points has next preference.

(The 24pt and 23pt do not count as owned points.)

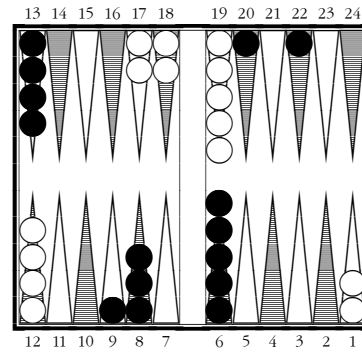


#48 41S-61P-32

In variant position #48 (above), there is no White blot for Black to hit. Assignments are therefore based on the more points convention. The move shown in 48.1 is U, and the move shown in 48.2 is V, because the former (the one on the left) makes an extra point.



48.1 ...32U



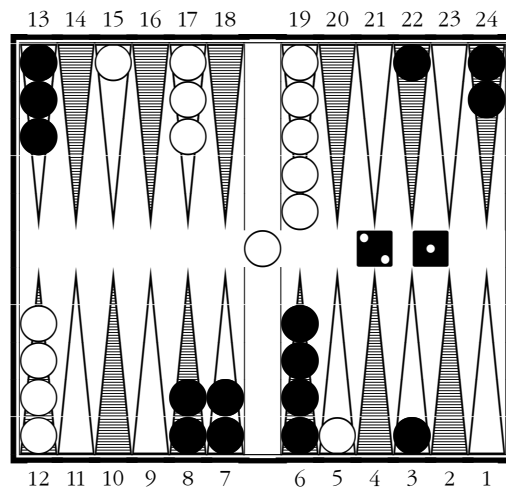
48.2 ...32V

[As you will realize when you learn part 2 of the 6pt convention: without the existence of the more points convention, the above U and V designations would be reversed.]

For reference, the symbol @ (anchor, see #33) is a correct (and more common) alternative for the move shown in 47.2 and 48.1.

P, p

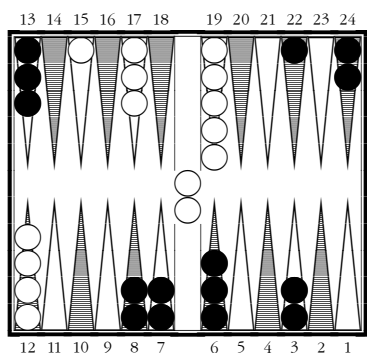
“P” (primary) and “p” (secondary) both refer to making a Point. The letter P is introduced in #3 and expanded upon in #63–66.



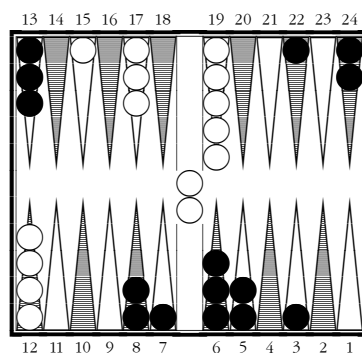
49 63S-51H-62H-31H-F-51P-41V-21K-5-21

Position #49 (above) illustrates a subtler example of the more points convention. Black’s two best moves in the P family (which also happen to be best overall) hit on the same point; we therefore count the *number of points* owned after each move is made.

Covering the 3pt as in 49.1 (below, left) is capital **P** because it gives Black a fifth point on the board. (Never count the 24pt.) Making the 5pt in 49.2, which merely *trades* the 7pt for the 5pt, ends up with one fewer point (four) and therefore gets the lower-case **p**.



49.1 ...21**P**



49.2 ...21**p**

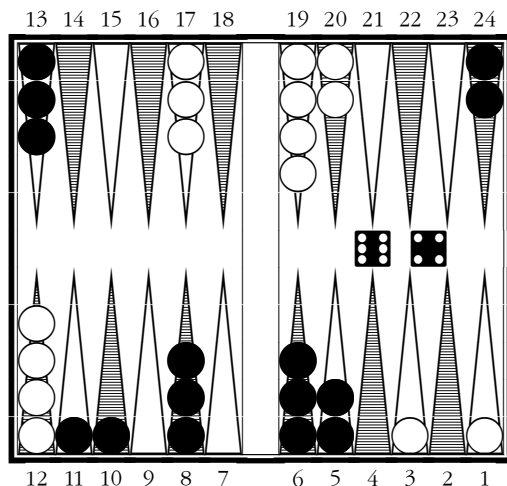
[The only other member of the P family from #49 is 6/4/3 without hitting (ugh). Moves with 24/22 are *not* in the P family, because part of the roll is left over. Refer to #63.]

What happens when two moves have the same hitting status *and* end up with the same number of points? In that case, we move another rung down the ladder: we break the tie by implementing part 1 of the 6pt convention:

6pt convention (order of priority)

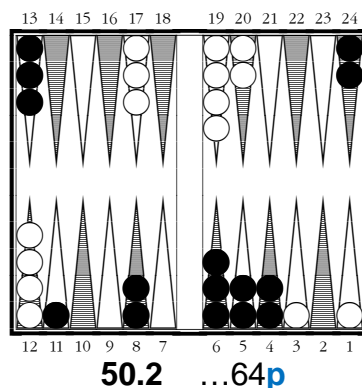
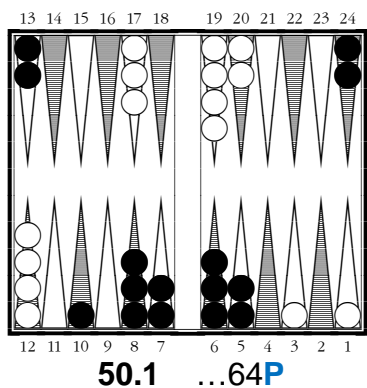
1. **Point owned:** closer to the 6pt (tie goes to the inside point).

2. **Blot/spare destination:** closer to 6pt trumps (except in one's own outer board, where *farther* from 6pt trumps).



#50 21\$-51\$-31N-32C-64

For position #50 (above), making the 7pt as shown in 50.1 (below, left) is nactated **P**. Making the 4pt as shown in 50.2 (below, right) is assigned the lower-case **p**. The 7pt earns the capital letter because it is closer (than the 4pt is) to the 6pt.



Note that when owned points are *equidistant* from the 6pt, tie goes to the inside point. That is, 5pt beats 7pt, 4pt beats 8pt, 3pt beats 9pt, 2pt beats 10pt, and 1pt beats 11pt.

In review of 49.1 and 49.2, the 5pt is closest to the 6pt, but *two* points (3pt + 7pt) beat one (5pt). By contrast, moves 50.1 and 50.2 end up with the *same* number of points. The 6pt convention is considered only when the resulting number of points is equal.

More points convention

Making or retaining more points has next preference.

(The 24pt and 23pt do not count as owned points.)

6pt convention

1. *Point owned*: closer to the 6pt (tie goes to the inside point).
- 2...

Before moving on, take note of the parenthetical directive highlighted above. It relates both to the more points convention (above it) and part 1 of the 6pt convention (below it, just discussed). *Even if the 24pt or 23pt contains two or more checkers, it does not count as an owned point.* (A second checker on either point is classified as a “spare.”)

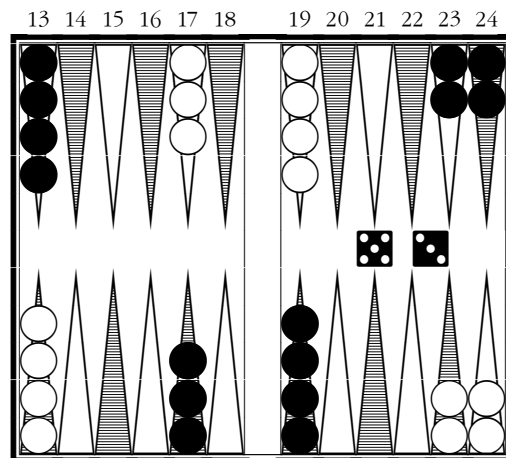
For understanding the reasons behind the 24pt-23pt directive, and for learning the other part of the 6pt convention, opening 53 of Nackgammon (below) is a good case study.

S, s

S is a basic letter that stands for “Split” (large number up, small number down). It is introduced way back in #5. Capital “S” is the head of its family; lower-case “s” is the secondary member.

Z, z

Z, a companion letter for the above, stands for “reverse split” (small number up, large number down). For details, see #6. Capital “Z” is the head of its family; lower-case “z” is secondary.



#51 Nackgammon Opening 53

We will examine four families of moves (in order of strength, except for S).

There are two ways to come up with the 3 and down with the 5. Even with two or more checkers on it, neither the 24pt nor 23pt is counted as a point; therefore, part 2 of the 6pt convention, highlighted in the text box below, determines Z/z ranking.

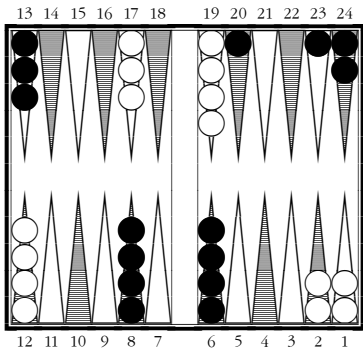
The destination of the 20pt is closer (than the 21pt is) to the (one’s own) 6pt; thus the move shown in 51.1 (below, left) is **Z**, and the move shown in 51.2 (below, middle) is **z**.

6pt convention (order of priority)

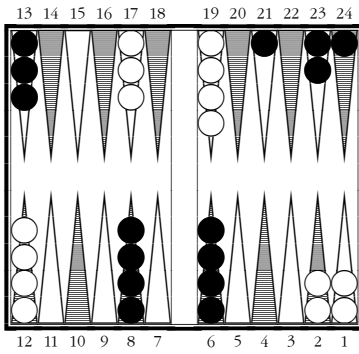
1. *Point owned*: closer to the 6pt (tie goes to the inside point).

2. *Blot/spare destination*: closer to 6pt trumps

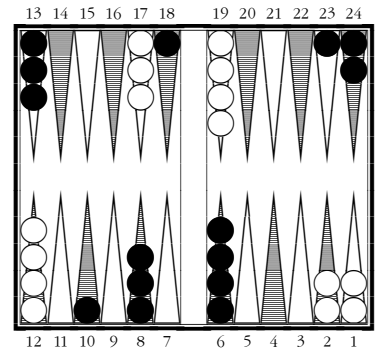
(except in one’s own outer board, where *farther* from 6pt trumps).



51.1 53Z



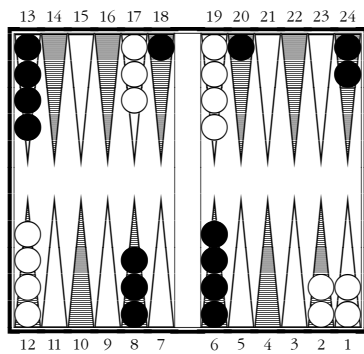
51.2 53z



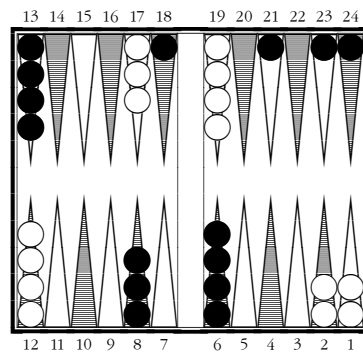
51.3 53S

While S and Z are different families, a convenience clause (introduced in #6) permits the use of S when it is not legally possible to play up (i.e., split) with the larger number. Such is the case with opening 52, 53 and 54 in backgammon, but not in Nackgammon. For reference, see 51.3 (above, right): **S** comes up with the *larger* number (the 5).

Next is the U family. There is only one way to come up with the 5, which means, as before, that the way the 3 is played determines U/V ranking. Again, the 20pt is closer (than the 21pt is) to the 6pt; hence, the move shown in 51.4 is **U** and 51.5 is **V**.



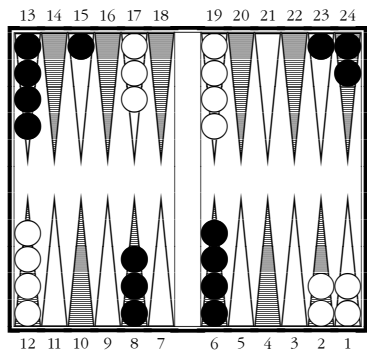
51.4 53U



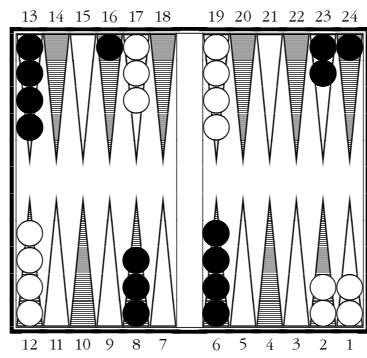
51.5 53V (or Q)

A popular alternative for the move in 51.5 is Q. Interestingly, the same position is reached in 28.1 (nactated U or Q) with a different roll of the dice.

Finally, let's look at the R family. Once more we apply part 2 of the 6pt convention. Running to the 15pt as shown in 51.6 (below, left) is capital **R**, and running to the 16pt in 51.7 is dealt the lower-case **r**. The 15pt is a pip closer (than the 16pt is) to the 6pt.



51.6 53R

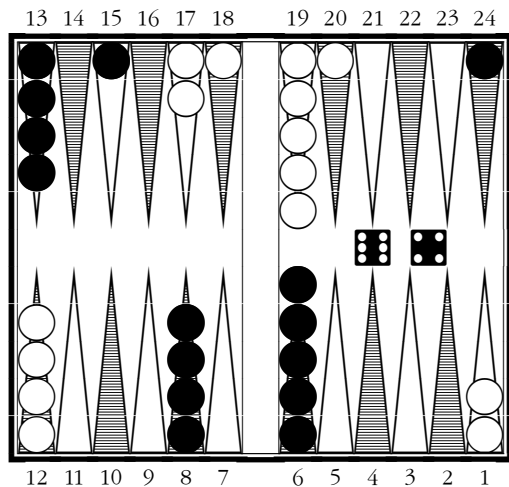


51.7 53r

In #51, if Black's opening roll is 54, 63 or 62 (instead of 53), similar reasoning applies: the move that runs out farther (closer to the 6pt) earns the upper-case R, and the move that runs less far gets the lower-case r. If, however, Black's roll is 65, 64, 61, 52 or 43 and he chooses to run, there is only one R-family move and the 6pt convention is irrelevant.

The unifying theme of the Z/z, U/V and R/r pairs above is that the higher-ranked move is determined by part 2 of the 6pt convention (closest blot). If the 23pt were counted as a point (which it isn't), part 1 (closest owned point) of the 6pt convention would determine the capital, and both Z/z and R/r would be reversed (with owned 23pt trumping 24pt).

It is no coincidence that (for #51) Z, V and R are stronger moves than their respective counterparts (z, U and r). In the early game, there is little difference in value between the owned 23pt and owned 23pt, and split back checkers are often worth more than either. With this knowledge, Nactation ignores whether the 24pt or 23pt is made.



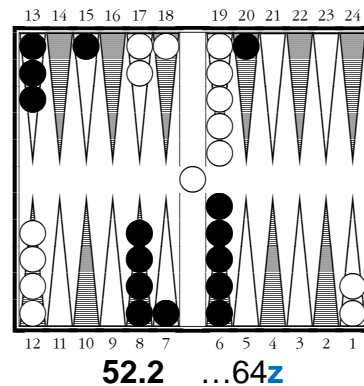
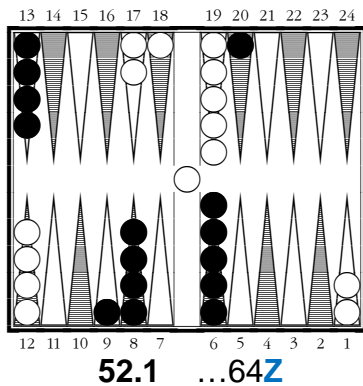
52 54S-43X-64R-64H-64H-61D-64

Position #52 (above) closely resembles position #46. If Black hits on the 20pt and then, instead of running with the 6 (as in 46.1), he comes *down* with the 6—he has made a move in the Z (reverse split) family. As with #51, both legal Z moves have the same status for hitting, for the more points convention, and for part 1 of the 6pt convention.

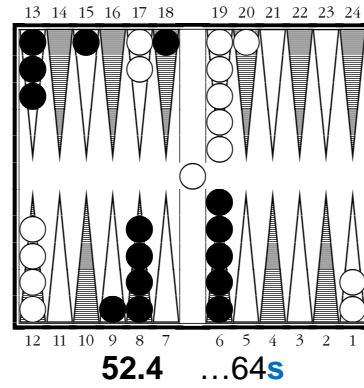
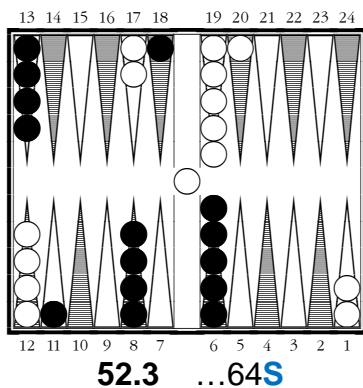
6pt convention (order of priority)

1. *Point owned*: closer to the 6pt (tie goes to the inside point).
2. *Blot/spare destination*: closer to 6pt trumps
(except in one's own outer board, where *farther* from 6pt trumps).

When the difference in blot/spare status is in one's own outer board, *farther* ranks higher (as indicated by the yellow-highlighted phrase above). The destination of the 9pt in 52.1, being farther from the 6pt (than the 7pt is in 52.2), ranks higher and earns the capital **Z**.



We solve the S family (Split: big number on far side, small number down) the same way. The destination of the 11pt, which is farther (than the 9pt is) from the 6pt, ranks higher; therefore, **S** is 24/18* 15/11 (see 52.3, below left) and **s** is 24/18* 13/9 (see 52.4).



I'll restate (though less eloquently) part 2 of the 6pt convention: Prioritize blot/spare destination in this point-by-point order: 6pt, 5pt, 4pt, 3pt, 2pt, 1pt, 12pt, 11pt, 10pt, 9pt, 8pt, 7pt, 13pt, 14pt, 15pt... 24pt. In short: 6pt → 1pt, 12pt → 7pt, 13pt → 24pt.

The reversal of the blot/spare destination paradigm in the outer board is sometimes called the “wrinkle.” The wrinkle exists for two important reasons:

- Moving from *behind* the midpoint (e.g., from the 15pt) typically rescues a *blot*. That blot naturally lands farther from the 6pt than does a midpoint spare.
- A blot closer to the 6pt (e.g., on the 7pt: vs 9pt, 10pt or 11pt) is more exposed.

For concrete examples, compare 52.1 to 52.2, and 52.3 to 52.4 (above). For both pairs, the left-hand move (with the capital letter) is greatly superior to the right-hand move.

The hit-more-6 rule is designed for areal letters, though P and @ conform. It also works in large part for the remaining style families H, X, K, T, L, \$, & and W (see section 13, including the “summary of conventions” at the end). The hit-more-6 rule should not be applied to numerals, except perhaps as a guideline (see section 9, paragraph 3).

For additional reinforcement, the entire hit-more-6 rule is repeated below:

Hit convention

Hit if possible, and on the higher point.
[Exception: An extra point in the home quadrant overrides *any* hit.]

More points convention

Making or retaining more points has next preference.
(The 24pt and 23pt do not count as owned points.)

6pt convention (order of priority)

1. *Point owned*: closer to the 6pt (tie goes to the inside point).
2. *Blot/spare destination*: closer to 6pt trumps
(except in one's own outer board, where *farther* from 6pt trumps).

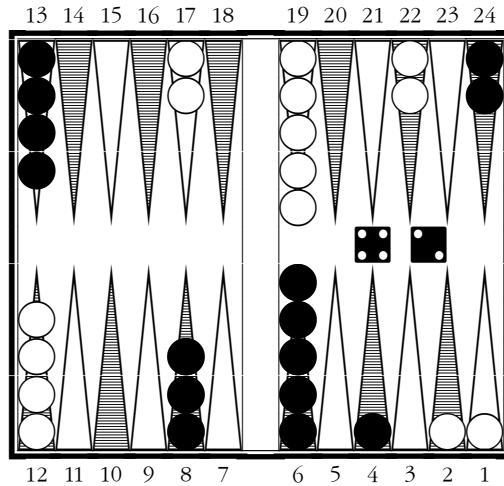
You may find it easier to combine the more points convention with part 1 of the 6pt convention. This gives you at most three bite-sized concepts to check:

- **Hits**: quantity and quality
- **Points**: quantity and quality
- **Blot/spare destination**: distance from 6pt

Section 11: Hit-more-6—Supplement

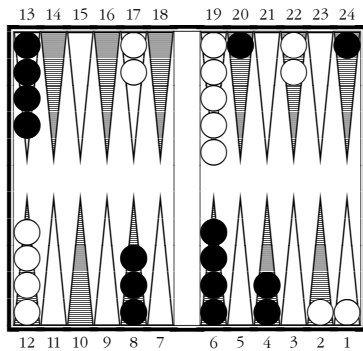
The previous section covers the overwhelming majority of hit-more-6 situations you are likely to encounter. In the interest of completeness, however, I provide this section to cover offbeat cases. In truth, it is only the first of these, the home quadrant exception, to which you should pay any real attention.

Home quadrant exception: This is an important corollary to the hit-more-6 rule: “An extra point in the home quadrant overrides *any* hit.” Without it, terrible moves that break (or fail to cover) an inside point—in order to hit—would often be awarded a capital letter, and stronger, structural candidate moves would be lower-ranked within their families.

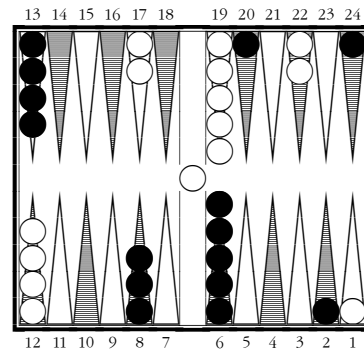


#53 63R-41S-51D-61H-43H-64H-51H-52P-42

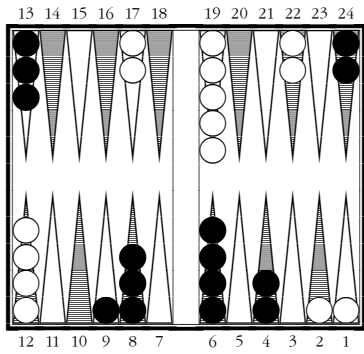
From position #53 above, we examine a few of the ways Black can play his roll of 42. For each pair below, the vastly superior move appears in the left-hand diagram, helping to demonstrate that an extra point in the home quadrant is typically worth more than a hit.



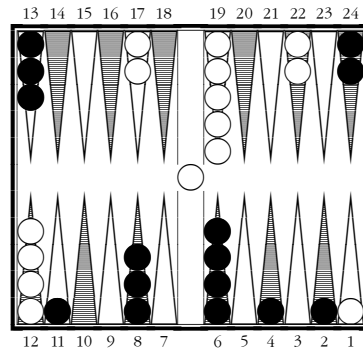
53.1 ...42E



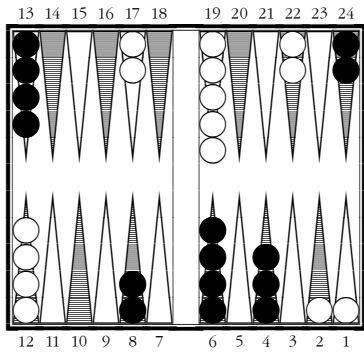
53.2 ...42e



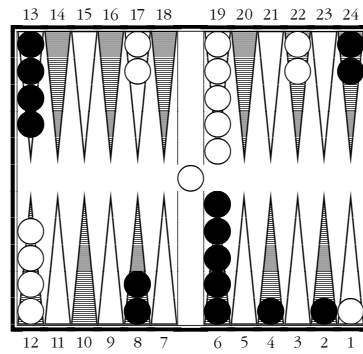
53.3 ...42N



53.4 ...42n

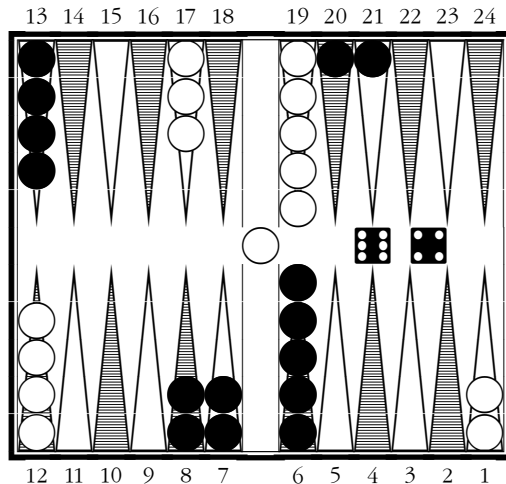


53.5 ...42A



53.6 ...42a

The scenarios subsequently presented are increasingly rare. Unless you are a theoretician, programmer or puzzle aficionado, you may prefer to skip the rest of this section. On the other hand, if you enjoy detailed clarity or esoterica, feel free to dive in!

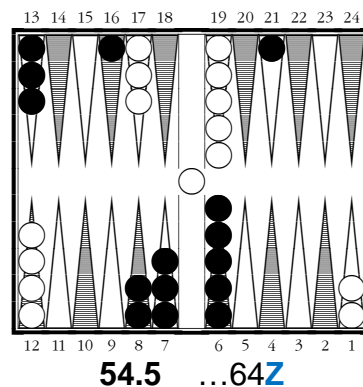
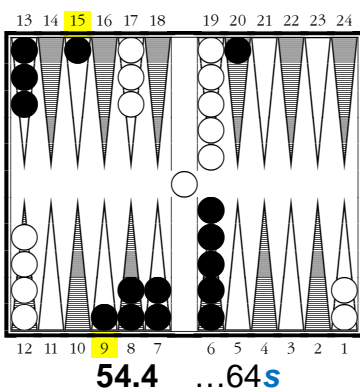
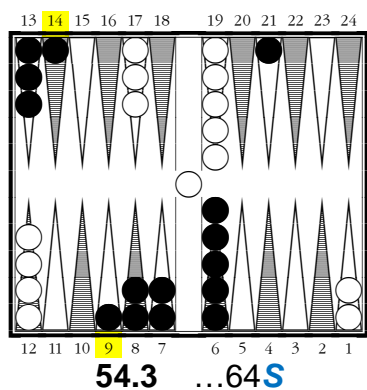
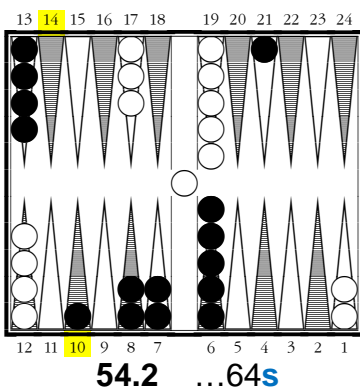
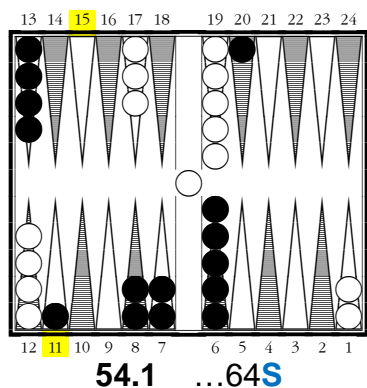


#54 32S-63H-53H-61U-41P-F-64

Lower quadrant dictates: In position #54 above, Black has 64 to play. Consider 54.1 versus 54.2. By 6pt convention, the 14pt (closer to the 6pt) trumps the 15pt—note that intermediate/temporary destinations *do* count. On the other hand, the 11pt (*farther* from the 6pt) trumps the 10pt. How is this apparent (6pt convention) conflict resolved?

The *lower* quadrant is given priority. Here, the near-side outer board is lower (has lower point numbers) than the far-side outer board. Therefore, 21/15/11 (in 54.1) is awarded the capital **S**, and 21/14/10 (in 54.2) gets the lower-case **s**. The 11pt beats the 10pt.

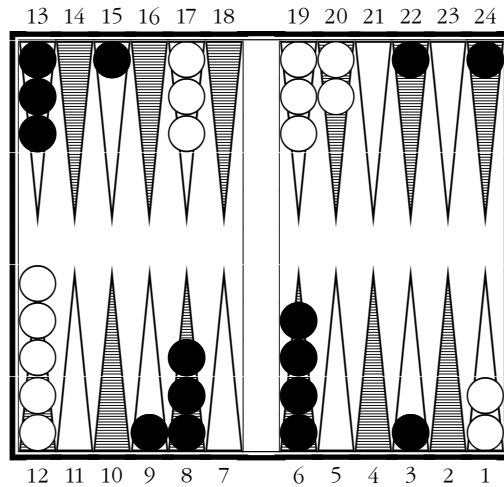
As the 9pt is less far (from the 6pt) than the 10pt and 11pt, the plays shown in 54.3 and 54.4 are third and fourth in the S family (italic *S* and *s*): The order of *these* two moves is determined by the secondary destination: the 14pt is closer (to the 6pt) than the 15pt.



The lower-quadrant-dictates directive helps to clarify the prioritization of blot/spare destination: 6pt → 1pt, 12pt → 7pt, 13pt → 24pt. (See also the last page of section 10.)

The sole member of the Z family is shown in 54.5 (far right). Note that the move in 54.2 is *not* in the Z family—you do *not* move the 4 before the 6 with 20/16/10—because of the high-number-first directive explained on the next page.

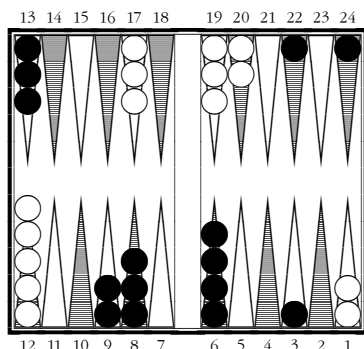
High number first: To prevent (non-doublet) areal letters from functionally overlapping (and rather to preserve more capitals), the following directive applies: When a single checker makes the entire move (without hitting mid-journey), the higher of the two numbers rolled is played first for purposes of determining that move's family.



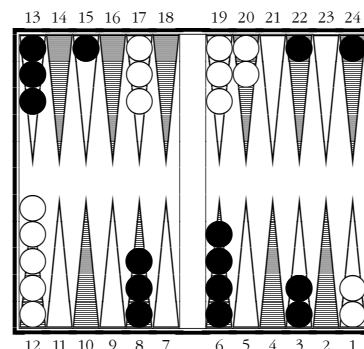
#55 63S-62X-63H-64H-55S-64H-63R-43K-11E-51 or -42

In #55 above, Black should play 13/9. Obeying the high-number-first directive, the 5 is played before the 1, and the 4 before the 2. Thus, with either 51 or 42, the move shown in 55.1 is D and *not* in the Z family. (Without this prudent rule, 15/9 would be in both families and the move in 55.4 would be demoted to third place in its ranking, italic Z.)

Likewise, if Black opts for 9/3, 51 is played 9/4/3 and 42 is played 9/5/3 (higher number first), not 9/8/3 and 9/7/3. That is, 9/3 (see 55.2) is in the A family and *not* the O family.

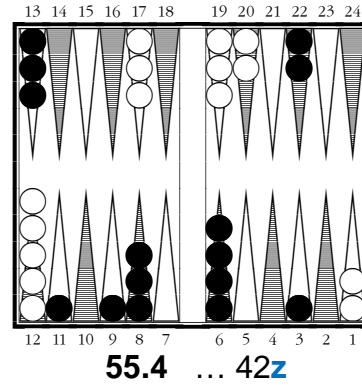
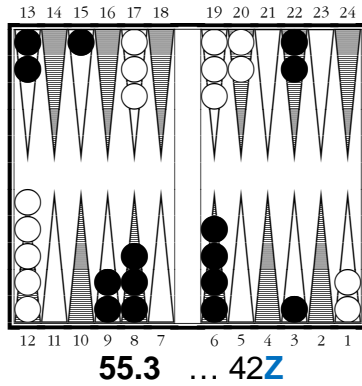


55.1 ...51**D** or 42**D**

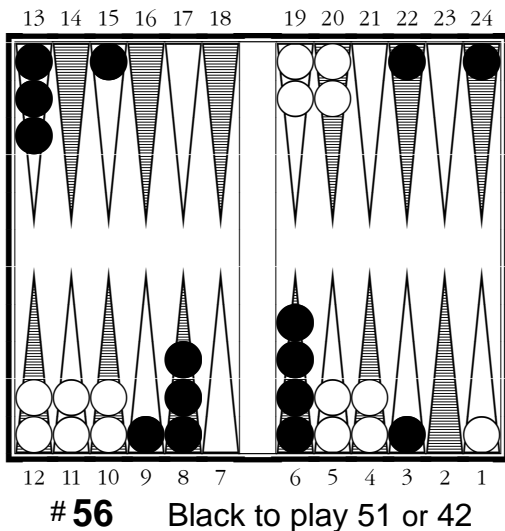


55.2 ...51**A** or 42**a**

This paragraph is a reminder that the more points convention trumps the 6pt convention. From position #55, with a roll of 42, moves in the Z family anchor with the 2 and come down with the 4. The move covering a fifth point (55.3, below left) earns the capital **Z**.



For additional clarity, below is a contrived variant of #55. (Black’s checkers are on the same points.) In position #56, Black’s 15/9 move is no longer in the D family because he cannot play 15/10 or 15/11 first. (Here, 51D is 13/8 9/8, and 51d or 42D is 13/7!)



Here, the only way to play 15/9 with 51 is 15/14/9, nactated Z—or optionally S by convenience clause (defined above #62).

In a similar vein, the only way to execute 15/9 with 42 is 15/13/9, nactated z or s. (Capital Z or S is reserved for 24/22 13/9, which makes an extra point.)

Likewise, because of White’s anchor blockade, Black’s 9/3 is no longer in the A family, and instead 9/8/3 or 9/7/3 is O. (Here, 51A = 8/3/2, and 42A = 8/6/2!)

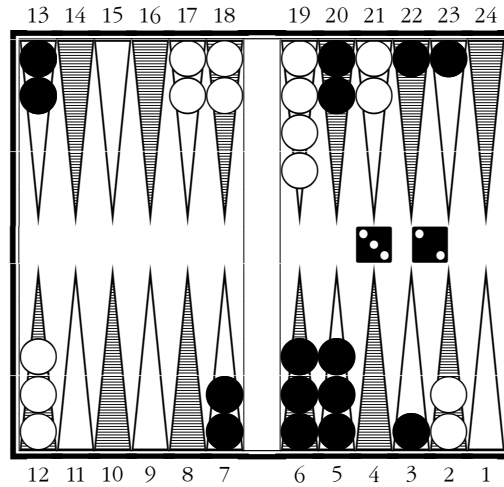
[For style letters such as P, “high number first” is irrelevant. In both positions with 51, or in #56 with 42, P = 9/3 and p = 15/9. Note, however, in #55 with 42, the vacant 4pt makes the ranking P = 8/4 6/4, p = 9/3, and (third member) P = 15/9. To verify these rankings, review the 6pt convention, part 1, including “(tie goes to the inside point)”.]

The high-number-first directive is relevant only if all three of these conditions apply:

- (1) One checker makes the entire move without hitting mid-journey, *and*
- (2) The high number is not initially blocked (as it is in #56), *and* either
- (3) (a) the high number can pass the 13pt or 7pt but the low number cannot, or
 (b) the second number played (high or low) passes the 13pt.

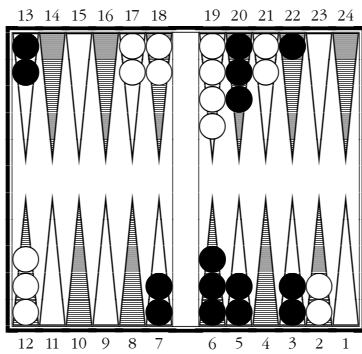
Please do not bother committing the above criteria to memory! I list it only to instill a sense of how infrequently the high-number-first directive actually matters.

High number from high point: Once in a blue moon, you'll encounter a situation (with a non-doublet) whereby two moves in the same family keep/make the same points *and* yield identical checker destinations! In such a case, final tie-break priority is given to the higher of the two numbers originating from the higher point (i.e., from farther back).

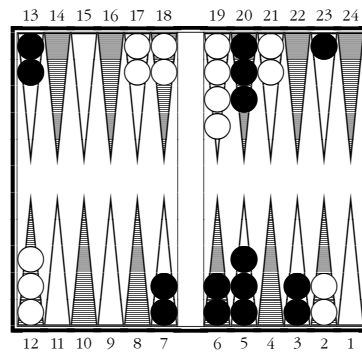


57 62S-61P-54@-11@-31P-61T-61N-31H-
-21H-61H-21H-54R-62K-F-61Z-22E-32

In #57 (above), Black can play up with the 3 and cover with the 2, or he can play up with the 2 and cover with the 3. The points owned and blot/spare destinations of both moves are the same. In this rare scenario, the capital **E** is awarded to 57.1 (below, left)—which plays the higher number (the 3) from the back, and the lower-case **e** is assigned to 57.2.

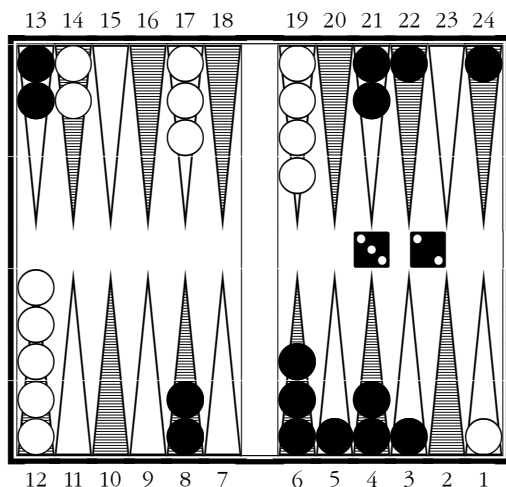


57.1 ...32**E**



57.2 ...32**e**

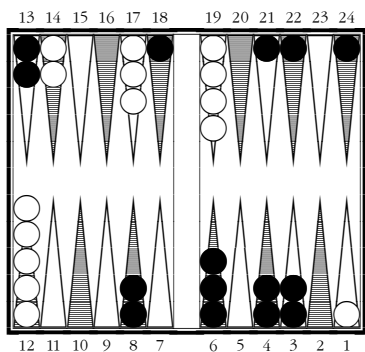
Logic Loop: The hit-more-6 rule contains an obscure logic loop that in theory creates a conflict in the way that some moves are ranked within a family.



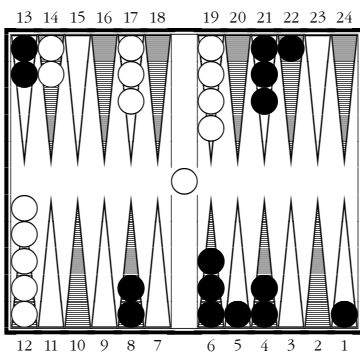
#58 43Z-43X-32H-42H-65R-55B-41-65R-22N-21U-51x-
-63R-22B-41U-55B-62@-43W-32r-42B-31H-61H-61D-32

For #58 (above), the two highest-ranked moves in the E family (not diagrammed) each move a back checker, cover the 3pt, and end up owning six or seven points on the board.

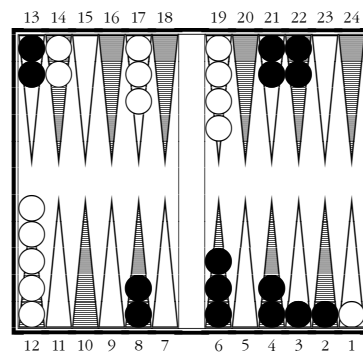
The conflict arises when we compare low-ranked moves to each other. The move in 58.1 adds an extra point to the home board, thereby overriding the hitting move in 58.2; that move in turn overrides 58.3 (which keeps the same two inside points *without* hitting). Yet 58.3 (which makes a sixth point) beats 58.1 by the more points convention!



58.1 ...32e



58.2 ...32E



58.3 ...32E

Something has to give. The rule patch is: *If and only if a logic loop arises, the move with the extra home board point (58.1, in this case) outranks the other two.*

In practice, it is extremely improbable you'll ever see a logic loop position, let alone that someone will make one of the (terrible) loop moves. The three moves above, ranked 4th, 5th and 7th in the E family, are strength-wise ranked 8th (whopper), 15th and 16th (triple whoppers). It is a safe bet that you'll never have to nactate such a move from a real game.

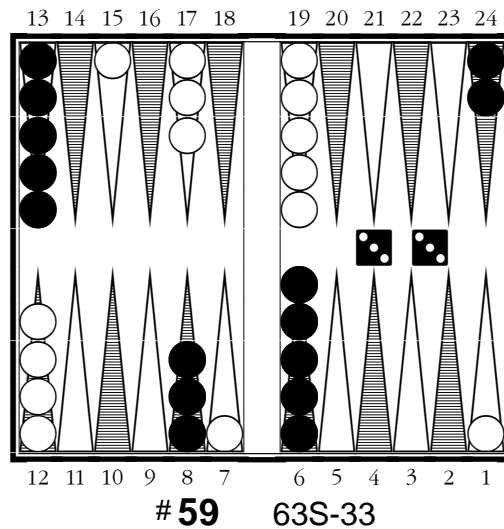
Section 12: Definitions—Movements

The early sections of this tutorial supply simplified definitions, so that it as easy as possible to understand and use Nactation on the first two or three moves of the game.

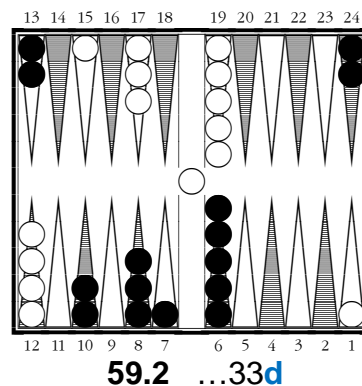
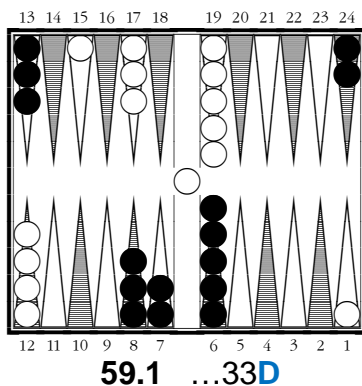
Broader functions of letters have been gradually incorporated into this tutorial, but not all high-level usages have yet been elucidated. Clarified definitions are provided in this section (for areal letters) and in the next section (for style letters).

Down

In traditional terminology, “down” refers to playing from the *far outer board* to the (near) outer board. In Nactation (except for non-doublet S and Z), down portions may optionally be played *within* (i.e., both from and to) the near outer board.



With Black’s 33 here, two D-family moves obey the “hit” and “more points” conventions. The 6pt convention breaks the tie. The owned 7pt is closer (than the 10pt is) to the 6pt; therefore, the move in 59.1 (below, left) is awarded **D**, and the move in 59.2 is **d**.

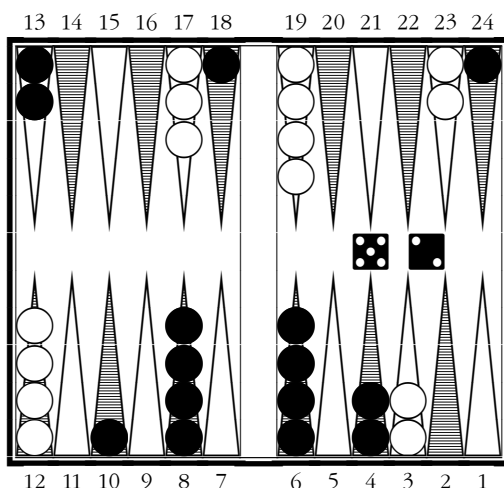


Here, two (in 59.1) or one (in 59.2) of Black's 3s are played from 10pt to 7pt: *within* the outer board. Such a movement is common for a down portion. Similarly, in #59, with 21D, 41D, 51D and 61D (respectively), 13/11 8/7*, 13/9 8/7*, 13/8/7*, and 13/7* 8/7 contain two down portions (one from the midpoint and the other from the 8pt).

Down portions are handled the same way for other areal letters (e.g., N and O), and for any style characters that are affected (e.g., H and \$). It is only non-doublet B, S and Z that have a *restricted* down portion, whereby either the near outer board or the far outer board is disallowed as a possible source quadrant (see #62).

Far-side Portions

Back checker movements (with the exception of the carefully partitioned R and U, which we'll get to) apply to the *entire far side*—not just to the rearmost quadrant.

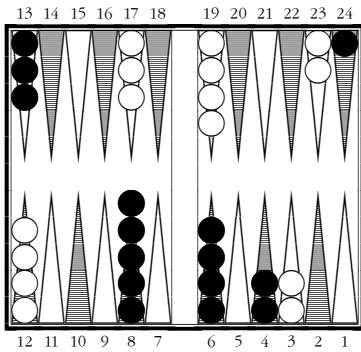


60 64P-54D-52S-52P-43R-63X-32@-52

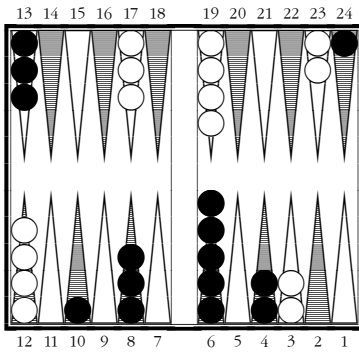
In sections 1–4, the far-side portions for all the illustrated moves were confined to the back quadrant. It is now time to expand our horizon to include the far outer board; to that end, position #60 (above) provides a useful backdrop.

With a roll of 52, Black should play 18/13 with his 5, which is as legitimate a far-side portion as any other far-side 5 (e.g., Bar/20 or 23/18 or 21/16 or 20/15) would be.

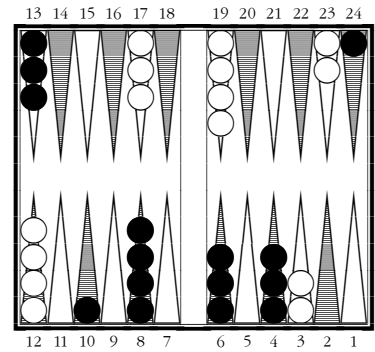
If the deuce is played within the outer board (most conservative but best), the move is **B** (shown in 60.1). If the 2 Crosses from outer to inner board, the move is **C** (60.2). If the 2 is played inside, the move is **E** (60.3). Note how similar these moves look to those shown in 17x, 16.2 and 15.1, once you perceive the far side as a single area of movement.



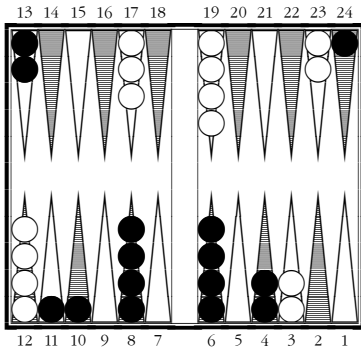
60.1 ...52B



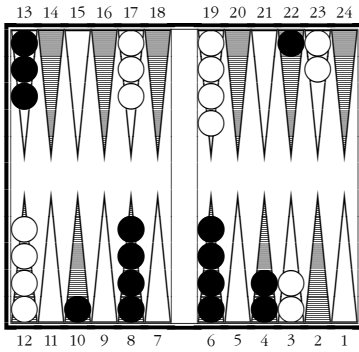
60.2 ...52C



60.3 ...52E



60.4 ...52S



60.5 ...52R

By the same token, a portion played in the far outer board can be the far-side part of an S (or Z) move. For convenience, the S diagram appears directly beneath the B diagram. The difference is that for B, the down portion is played *within* the outer board, whereas for S it is played *into* the outer board. (This difference will be reviewed shortly, in #62.)

[For purposes of assigning the right family, the move shown in 60.4 should be regarded as S = 18/13/11, *not* Z = 18/16/11. (Refer to #55 for the high-number-first directive.)]

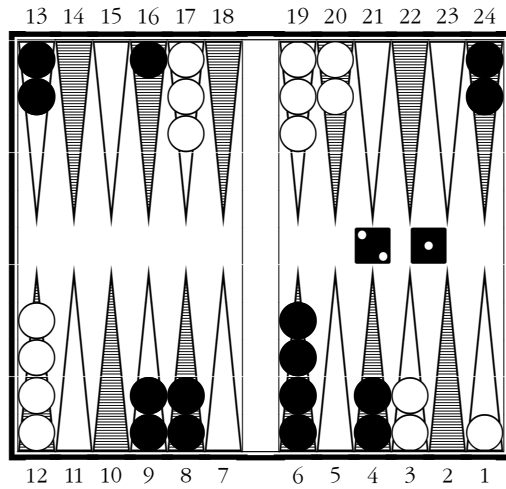
Diagram 60.5 is included only for reference. You might well have nactated this move (24/22 18/13) correctly a long time ago—after reading halfway through section 1.

The entire-far-side concept also pertains to the multi-areal families (Q, F, G, M and Y; see section 16). Applicable style families (e.g., W, X and @) fit the criteria as well.

Running

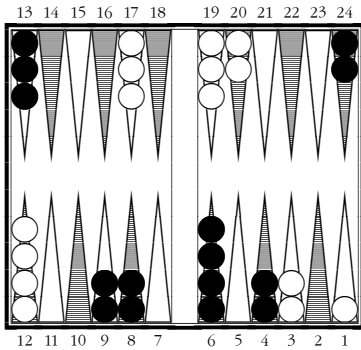
To “Run” means to advance one or more checkers on the far side, with at least one portion of the move played to or within the area from the 17pt to 13pt. (Many examples can be referenced: #3, 38.1, 45.1, 46.1, 51.6, 60.5, 74.1 and 89.1—plus 61.1 below.)

The next position helps to demonstrate the distinction between R and U.

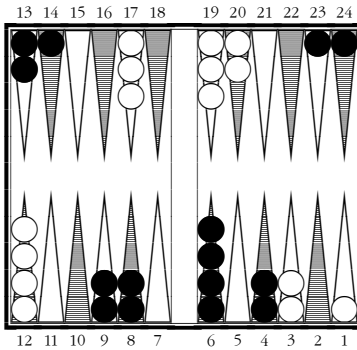


#61 43Z-43X-44M-32-54N-11E-51R-51S-21

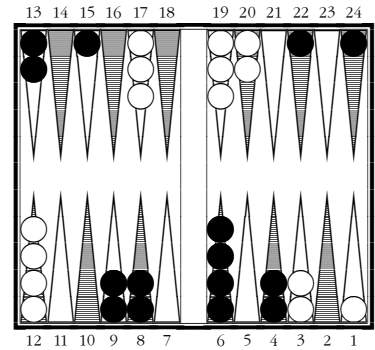
Consider #61 (above). The five best moves (below), all made on the far side, are ranked by hierarchy (determined by the 6pt convention) within each family.



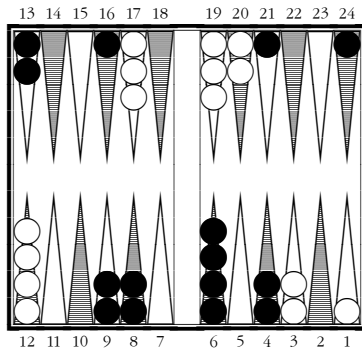
61.1 ...21R



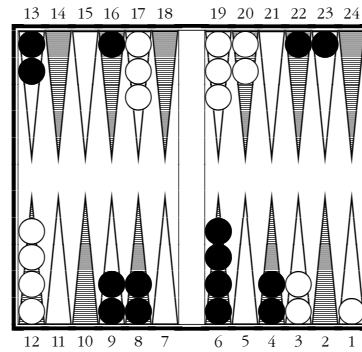
61.2 ...21r



61.3 ...21R



61.4 ...21U



61.5 ...21V

Recap: For moves played purely on the far side (with apologies to Gary Larson for yet another apparent reference to one of his cartoons), those that have at least one destination in the 17pt–13pt area are in the R family. Those that do not are in the U family.

In Nactation, there is no such thing as “running” past the midpoint. Review position #54 for clarification: there, R can only be 21/15 20/16 (not diagrammed), whereas 21/11 (shown in 54.1) and 20/10 (shown in 54.2) are in the S (split-and-down) family. Likewise, 60.4 is *not* an R move; the sole R-family option for #60 is shown in 60.5.

Splitting

In Nactation, “S” is short for “Split,” which in turn is short for “Split-and-down.” It refers to a (non-doublet) move that satisfies the two aspects below. It plays both

- (1) the larger number on the far side, and
- (2) the smaller number from the far outer board to the near outer board.

The first aspect includes the possibility of breaking an anchor (which is the traditional definition of split) but is actually very liberal: it refers to *any* far-side checker movement.

The second aspect is not the standard down portion (playing to or within the outer board), but rather a *restricted* down portion: the checker is played from the far outer board.

“Z” stands for “reverse split.” Its definition mirrors that of S above (under 1 and 2)—with the words “smaller” and “larger” transposed.

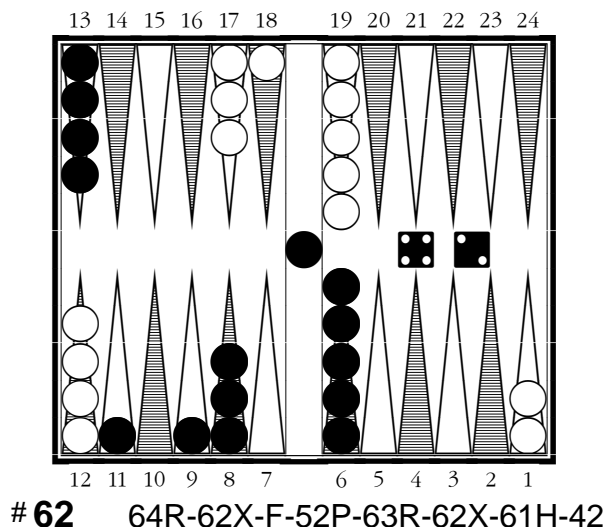
Convenience clause: When it is impossible to play the large number on the far side or the small number down to the near side, S may be used in lieu of Z. (See #6 and #56.)

Division of Labor for B, S and Z

B, S and Z are closely related letters that work in harmony to ensure that capital letters can be used a high percentage of the time.

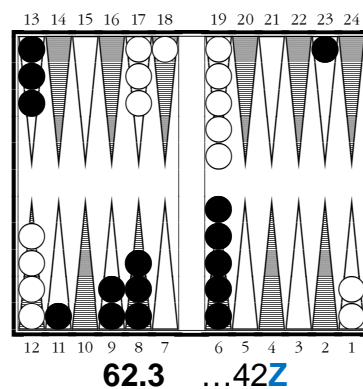
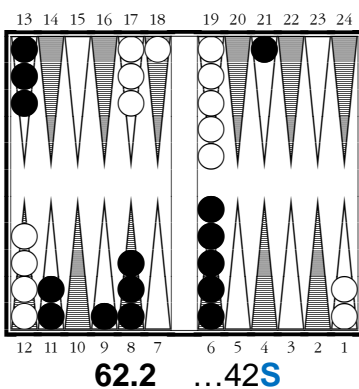
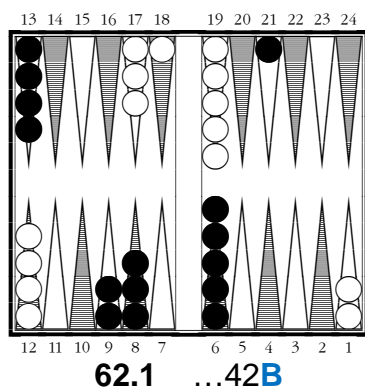
Non-doublet division of labor: B, S and Z are all composed of a far-side portion and a *restricted* down portion. For S and Z, the checker must come from the *far* outer board (as outlined a few paragraphs back). For B, the checker must come from the *near* outer board—the source and destination are both in the 12pt–7pt area.

For examples of B, S and Z non-doublet usage, see #5, #6, #17 #51–52, #54–56 and #60. The additional example below directly compares all three families.



In position #62, Black rolls 42. We will contemplate three moves.

If Black enters with the 4 (the far-side portion) and covers the 9pt with the 2 (*within* the outer board), he has played **B**, as shown in 62.1 (below, left). If he enters with the large number (the 4) and plays the small number (the 2) down from the midpoint, the move is **S**, as shown in 62.2 (middle). Finally, if he enters with the small number and brings the large number down, the move is **Z**, as shown in 62.3 (right).



In #62, what about bar/21 9/7 and bar/23 11/7? Those moves are in the B family because the front checker moves (with either the large or small number) *within* the outer board. In failing to cover a point (compare to 62.1), these horrendous moves (not diagrammed) are relegated to lower-case b and italic *B* (see section 14), respectively.

Doublet division of labor: For doublets, B, S and Z *all* play the front checker(s) “down” in the unrestricted (standard Nactation) sense; i.e., *to or within* the outer board.

For doublets, B has the highest profile of the three letters, but S and Z each handle a slice of B’s responsibility. B refers to two “runs” (far-side portions) and two “downs” (down portions); S refers to three runs and one down; and Z refers to one run and three downs. For examples of B, S and Z applied to complex doublets, refer to #77 and #83.

To view a helpful BSZ crosstable for both non-doublets and doublets, refer to this post: http://www.bgonline.org/forums/webbbs_config.pl?noframes;read=150096

Run, Down, Jump and Inside

Most of this section has been devoted to explaining and qualifying the Run and Down portions of moves. It is worth a reminder that, while they may require less explanation, Jump and Inside portions are an integral part of Nactation’s areal design.

“Jump” (introduced in #21) means to Jump over the bar—to play a portion (or portions) from the outer board to the inner board. “Inside” (introduced in #23) means to play inside—to play a portion (or portions) entirely within the inner board. [I modify the traditional definition of the “inner board” to include the 0pt (the bear-off tray).]

In the quest to thoroughly understand Run, Down, Jump and Inside portions and the areal letters they affect, the material at the end of section 5 and beginning of section 15 (with graphic illustrations in both places) is worth reviewing more than once.

Complex Doublets

Complex doublets are moves for which checkers are not played in simple pairs. If you dislike assumption, or if you aspire to nactate even the trickiest moves for a literal reader or computer in a way that is totally free of ambiguity, sections 15 and 16 are for you!

There are 35 ways to combine the four categories of checker movements—run, down, jump and inside. For two-category moves, BEACON letters (along with doublet S and Z) are used. R and U handle moves where all portions are on the far side. D, J and I take care of near-side possibilities. Q, F, G, M and Y cover the rest. Again, see sections 15–16.

Learning complex doublets is the most challenging part of Nactation, but keep in mind:

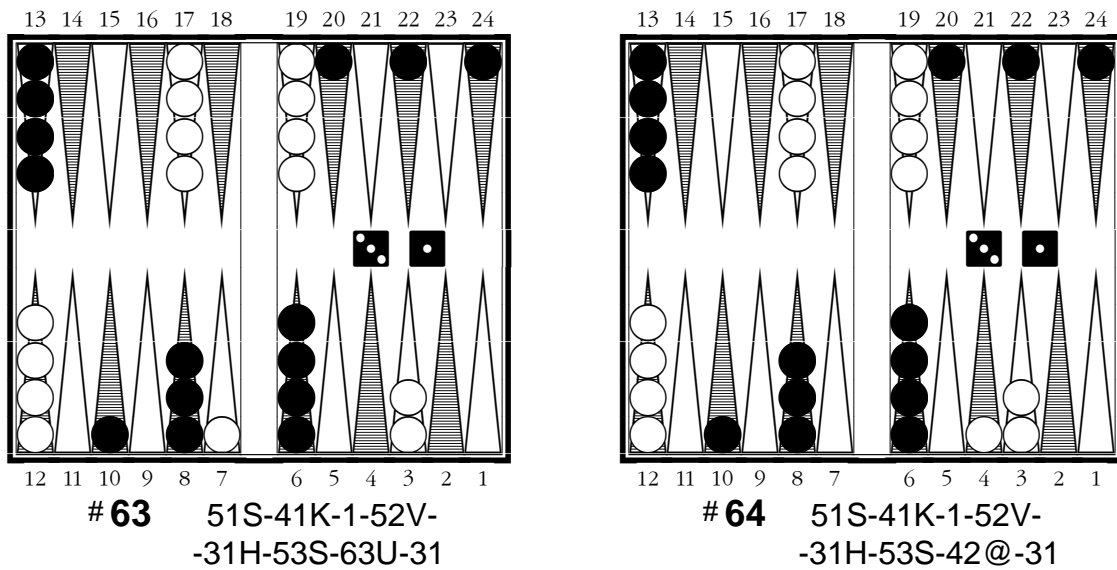
- Complex doublets represent only a small percentage of moves made.
- You can nactate *without* such advanced knowledge (unless interfacing with a computer). Virtually all moves, even those with complex doublets, can be adequately communicated by judicious use of “assumption” (see sections 8–9).

Section 13: Definitions—Style Characters

The previous section clarifies the definitions of movements, which mainly affect areal letters. This section clarifies the definitions of style characters.

P, **p** and **@**, **#** “P” (Point) is introduced in section 1 (#3), and @ (anchor) in section 7 (#33). However, an important prerequisite, called the “dedication clause,” is that the *entire move* is used to make (or cover) a single point. Entering or forced portions of a move are waived.

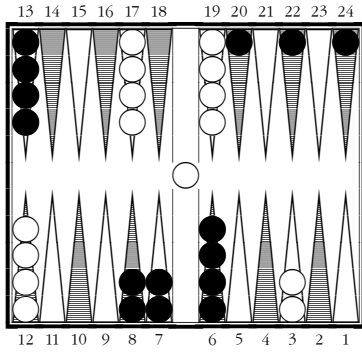
For position #63 or #64 below, Black can cover his 10pt with the 3. However, there is an ace left over. Therefore, the P family cannot be properly used for any move that includes 13/10. The P (or @) family is reserved for moves that are *dedicated* to making a point.



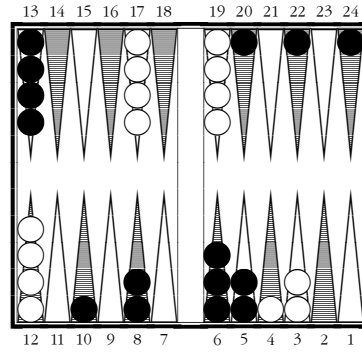
This pair of diagrams affords you the opportunity to practice using the hit-more-6 rule. In each of the two positions, can you identify the moves that are fully dedicated to making a point and determine their rankings within the P or @ family?

In position #63 (above, left), a hit trumps no hit. **P** refers to making the 7pt while hitting—known as “pointing on” the 7pt, and **p** refers to making the 5pt (without hitting). The resulting moves of 63.1 and 63.2 are diagrammed in the left-hand *column* below.

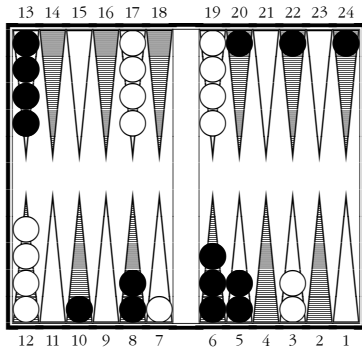
In position #64 (above, right), Black must settle for making a point without hitting. The 7pt and 5pt are equidistant from the 6pt, but as part 1 of the 6pt convention states (see the clause highlighted above #50), tie goes to the *inside* point. Therefore, **P** refers to making the 5pt in 64.1, and **p** refers to making the 7pt in 64.2—see the right-hand *column* below.



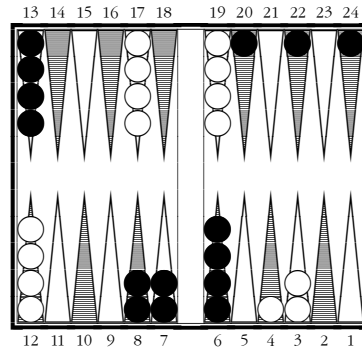
63.1 ...31P



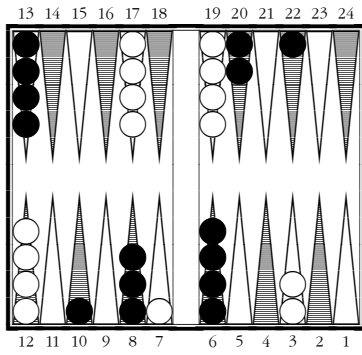
64.1 ...31P



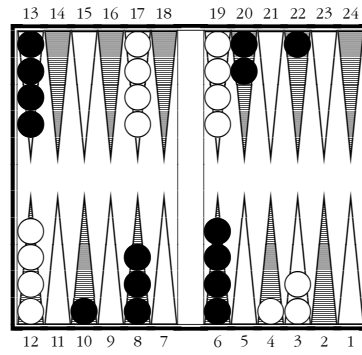
63.2 ...31p



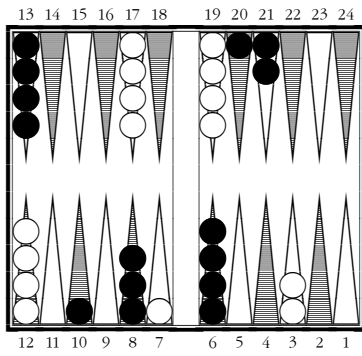
64.2 ...31p



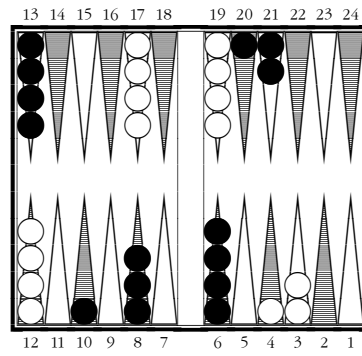
63.3 ...31@ or P



64.3 ...31@ or P



63.4 ...31# or p

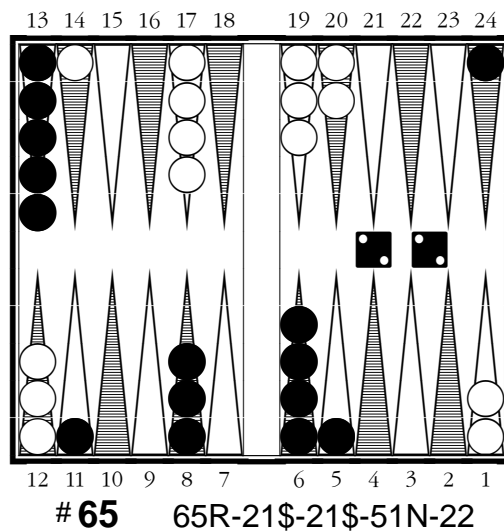


64.4 ...31# or p

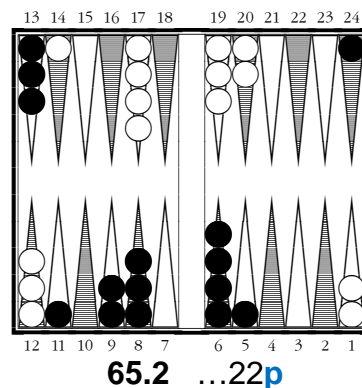
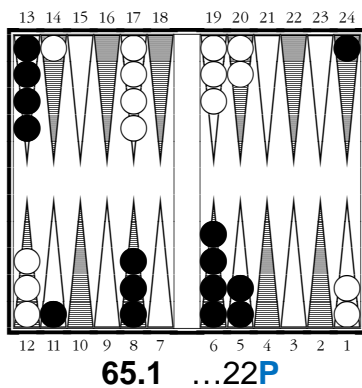
For covering the 20pt in 63.3 and 64.3 you can use italic *P*, and for making the 21pt in 63.4 and 64.4 you can use italic *p* (the third and fourth members of the P family; see #76).

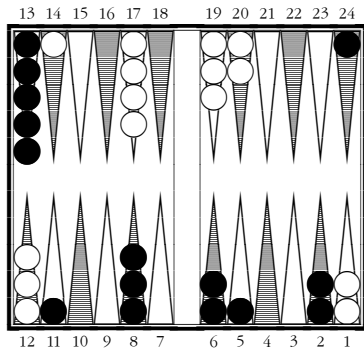
However, there is no prize for showing off. If, instead of *P* and *p*, you wisely select the Nactation symbols of @ (anchor) for 63.3 and 64.3, and # (alt-anchor) for 63.4 and 64.4, you spare both yourself and your reader from having to first find, count and/or compare the point-making possibilities on the near side. (See also #33.)

Primary members of an areal family often communicate more clearly than non-primary members of a style family. For example, instead of *p*, you can use A for 63.2, and D for 64.2. (You can similarly replace the primary members—D for 63.1 and A for 64.1—but with less purpose.) Even more cogently (putting aside @ and # for a moment): for 63.3 and 64.3, U is easier to grasp than *P*; and for 63.4 and 64.4, V is easier to grasp than *p*.

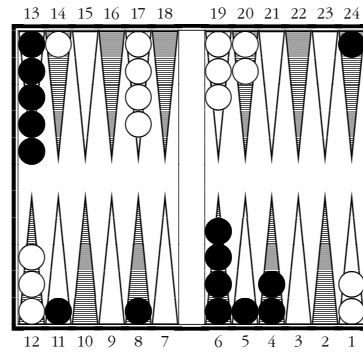


Position #65 (above) spotlights a subtlety. Covering the 5pt requires just three deuces; however, playing “through” the existing 11pt checker with 13/5 (shown in 65.1, the top left diagram of the four below) does qualify as a dedicated Point-making move. Conversely, a move that combines 11/5 with a 2 *other* than 13/11 is *not* in the P family.





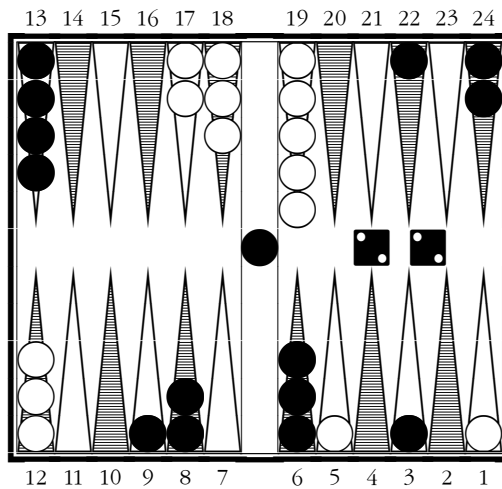
65.3 ...22P



65.4 ...22p

All four P-family candidates legally playable from #65 are shown above. The 65.4 move is ranked last by the more points convention: it fails to *add* a new point. The other three plays are ranked by ownership of a point closest to the 6pt (part 1 of the 6pt convention); they make the 5pt, 9pt and 2pt, respectively. (For italics, see section 14.)

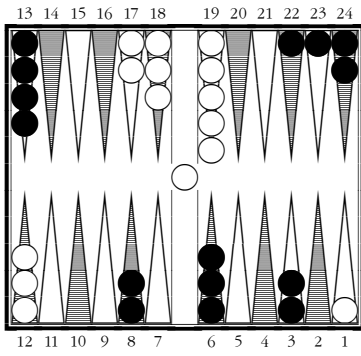
The moves shown in 65.2, 65.3 and 65.4—which admittedly are horrendous alternatives to 65.1—have areal Nactations of D, I and A, respectively.



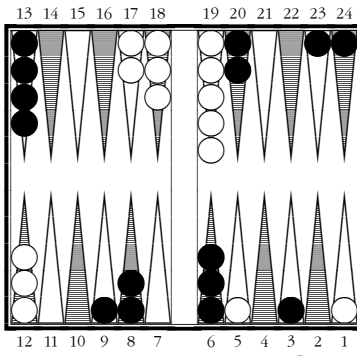
66 61P-63R-64Z-41H-43H-61H-32H-31H-63R-54K-51-22

In position #66 (above), Black enters with one deuce. This entering portion of the move is waived (an allowance that is included in the definition paragraph above #64). With the *remainder* of the move, we consider only portion(s) that conspire to make or cover a single point. It happens that two such moves are very close in value.

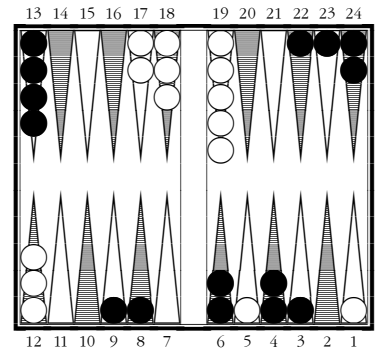
The 9/7/5*/3 move in 66.1 (below, left) earns the capital P because it hits. (Even if it did not hit, the owned 3pt is closer to the 6pt than the owned 20pt is for the **p** move in 66.2.)



66.1 ...22P



66.2 ...22p or @



66.3 ...22P

The move in 66.3 dedicatingly makes the 4pt (playing “through” the 6pt qualifies). Even so, it is outranked by 66.2 because, in giving up the 8pt, it ends up with three points instead of four. (Remember, the 24pt does not count.) Refer to section 14 for italics.

H, h

“H” (introduced in section 2) means to **Hit** *loose*, and also to hit only *once*. If, in doing so, there is a single leftover portion of the roll (not counting entering or forced portions, which are waived), it must be played *down* (to or within the outer board). This is the “down clause.”

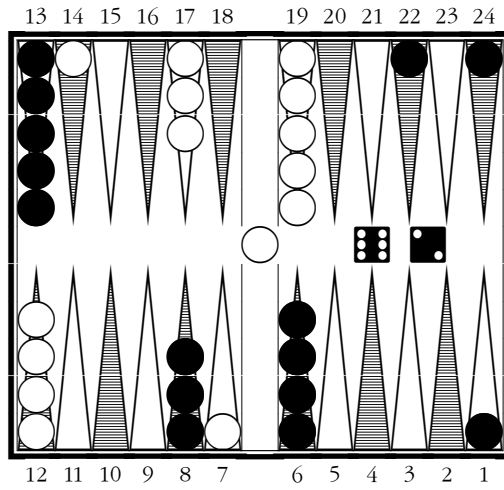
I’ll clarify by referencing a few moves. H can be used for 13/10*/9 in #1 or for 13/11*/10 in #70 (where the continuation to a vacant point is an accompanying down portion that honors the down clause); or for 89.1 (by waiving the entering portion). However, H may *not* be used for 63.1 and 69.1, where the checker that hits fails to stay *loose*.

Given that (in part) H and X are defined as hitting exactly once, and K is defined by hitting exactly twice, the number of hits does not figure into their familial rankings. We can therefore strip away all but the final nine words of the italicized paragraph above #45 (the clarifying expansion of the “hit convention”), and rephrase to:

Hit on the higher-numbered point (i.e., to gain more pips).

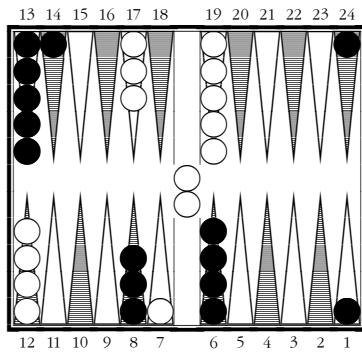
For simplicity’s sake, this “higher point” subset convention can and should be used in lieu of the entire hit convention for H, X and K.

After honoring the underlying definition of H, X or K and the above sub-convention, any tie is broken by the more points convention, followed by the 6pt convention. In other words, the rule for H is “higher-more-6” (instead of hit-more-6).

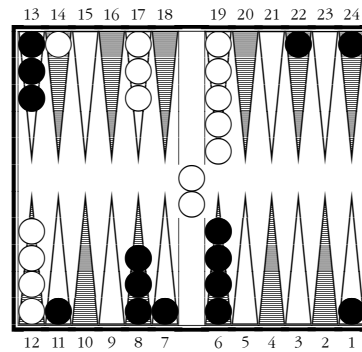


#67 62S-52X-F-62

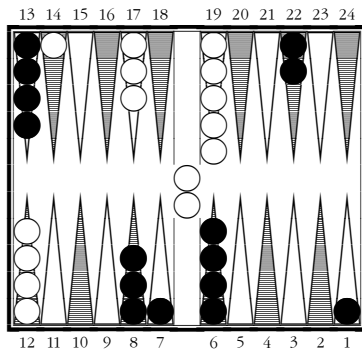
In position #67 above, Black has 62 to play. Hitting on the (higher) 14pt as shown in 67.1 (immediately below, left) is **H**. Hitting on the (lower) 7pt and using the “down clause” for the non-hitting portion of the move as shown in 67.2 (right) is **h**.



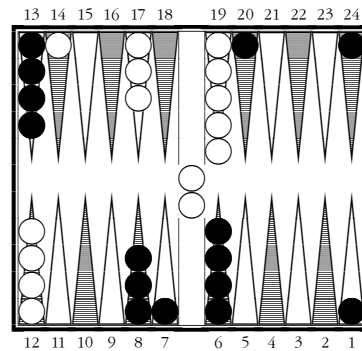
67.1 ...62H



67.2 ...62h



67.3 ...62X



67.4 ...62x

X, x

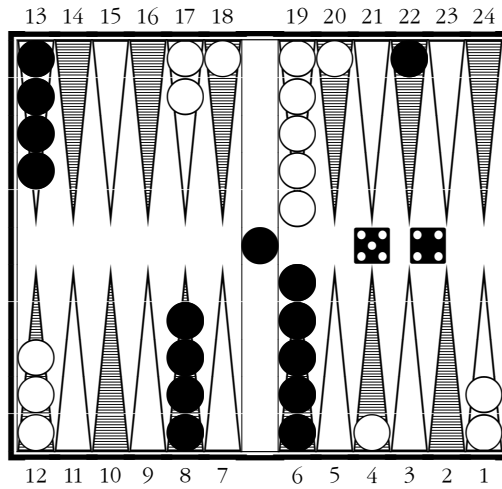
“X” means **hit and split**. Unlike H, there is no down clause. (An X move splits instead.) In 67.3 and 67.4 (above), Black hits with the 6 and “splits” (see section 12) with the 2. **X** (anchoring in 67.3) obeys the more points convention, thereby trumping **x** (in 67.4).

To avoid functional overlap, X never hits on the far side (see #8). Do *not*, for example, claim that 67.1 is also an X move because Black splits with 22/20 then hits with 20/14*.

The four moves above earn the same Nactations (H, h, X, x) with a roll of 22 as with 62. However, take great care using style letters for doublets. If, after obeying the underlying definition and any explicitly stated convention, there is *still* a leftover portion, a style letter is technically improper—in that case one is invoking assumption (see section 8).

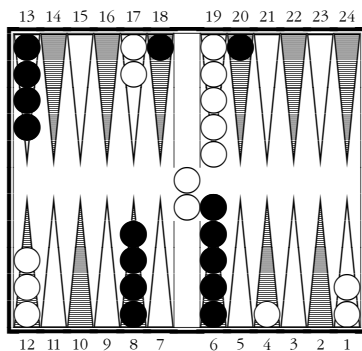
K, k

K (introduced in 8.1) stands for **Kill**, which means to hit exactly twice (with no leftover portion, unless it enters or is forced).

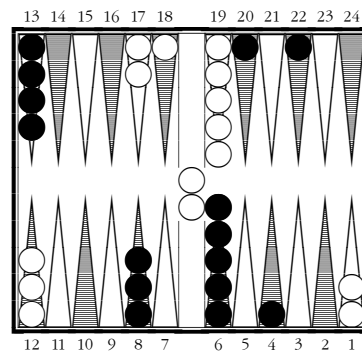


68 54S-63H-63H-64H-54 (or -52)

In #68, after Black hits from the bar with the 5, he has a close choice of *which* second checker to hit. Because the 18pt is higher than the 4pt, the move shown in 68.1 (below, left) is **K**, and the move in 68.2 is **k**. This hierarchy for a roll of 54 applies likewise to 52.



68.1 ...54**K**

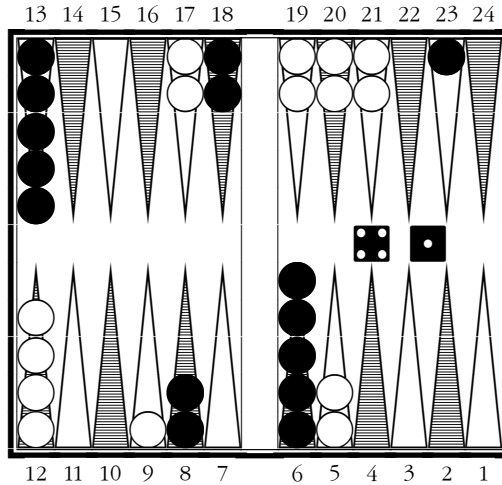


68.2 ...54**k**

L, 1

“L” is introduced in #26. It means to **Lift** a blot to an owned point (thereby increasing the number of checkers on it to at least three).

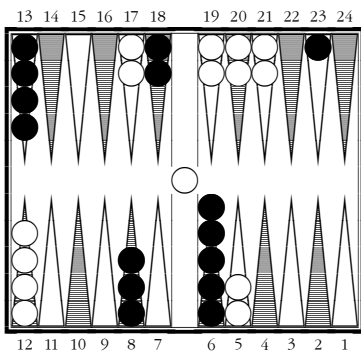
Particular to L and T, an extra convention is inserted into the hit-more-6 rule, in this way: Hit-more-**fewer**-6. The “fewer” stands for *fewer blots*.



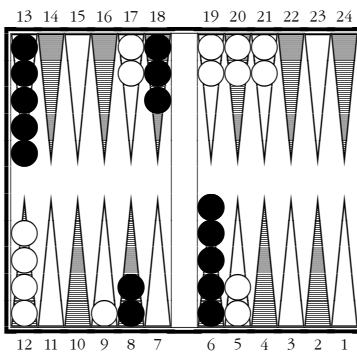
69 43Z-43X-42K-4-53H-5-42e-61U-31P-62@-61R-41

To qualify a move for the L family, it is permissible (from #69, above) to *create* a blot with part of the move (13/9*) in order to Lift it (9/8) as shown in 69.1 (L, below, left).

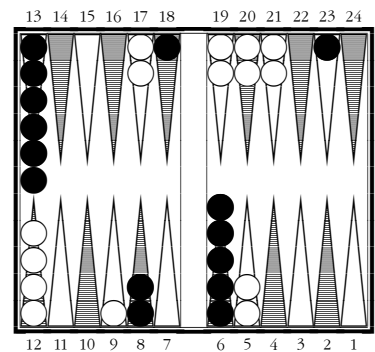
The move that lifts the 23pt blot, shown in 69.2 (below, middle), is the secondary member of the L family (1), only because 69.1 *hits*. If 69.1 did not hit, then instead 69.2 would be primary because it is the only move that leaves zero blots.



69.1 ...41L

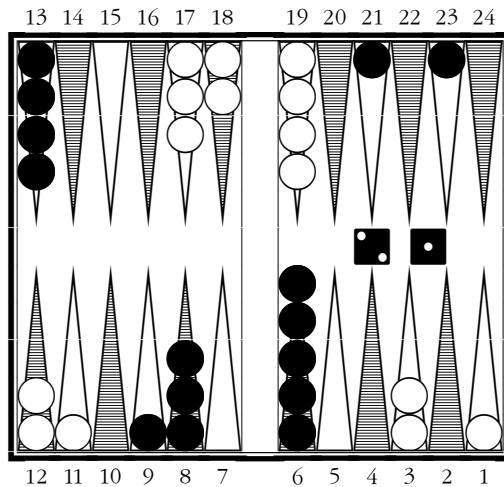


69.2 ...411



69.3 ...41L

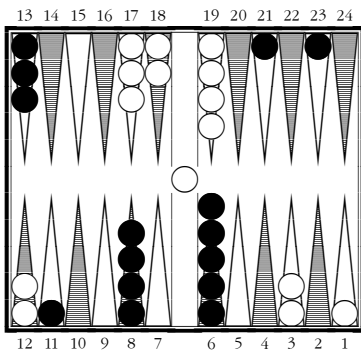
The 69.3 candidate (right), which can be nactated R or T, also qualifies as a Lifting move because its 14/13 portion lifts a (created) blot. Granted, 69.3 is reprehensible: it is outranked by 69.1 using any one of the four conventions in the hit-more-fewer-6 rule!



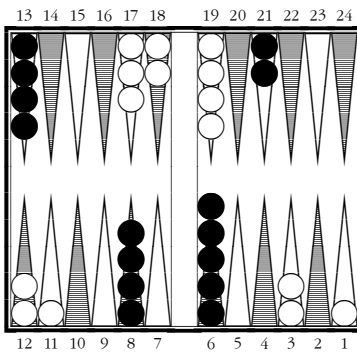
#70 64R-64S-33D-64R-21H-64H-63H-64H-21H-32H-32@-21

In position #70 (above), Black, with his roll of 21, has a few different ways he can safety the blot on the 9pt. One way is to use the blot as a builder to make the 7pt. However, he has two superior moves, both of which include Lifting his blot to the 8pt with the ace.

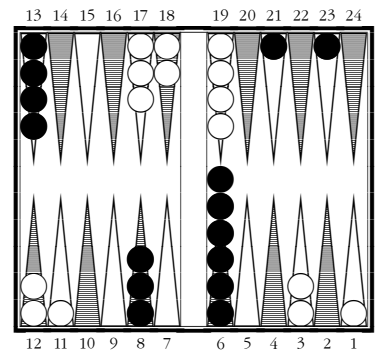
It comes down to how the deuce is played. Hit-and-Lift (see 70.1, below left), which honors the hit convention, earns the capital **L**. Anchor-and-Lift (see 70.2), which honors the more points convention (and fewer blots convention), gets the lower-case ranking (**l**).



70.1 ...21**L**



70.2 ...21**l**



70.3 ...21**L** or **T**

Lifting the blot to the 6pt, shown in 70.3 (right), obeys the low-priority 6pt convention, but its only real “virtue” is that it leaves fewer blots than 70.1. This pathetic move, which neither hits nor makes a point, is firmly demoted to third place in the L family.

Strictly speaking, the T family is off limits for the moves in 70.1 and 70.2. [It can be used with assumption (see section 8) *if* you believe your reader will interpret T and t as you intend!] The only actual T move is shown in 70.3. Refer to the upcoming segment.

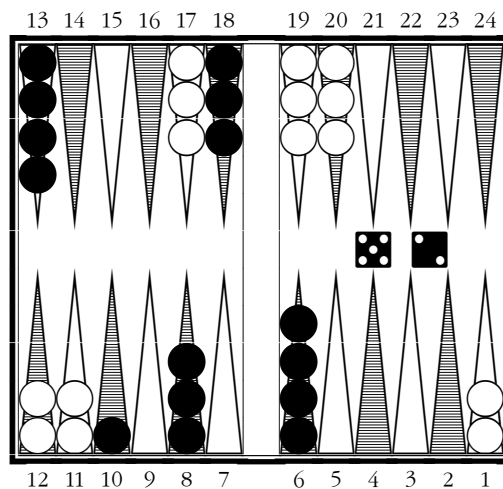
Areal Nactations for the above three moves are d, B and O, respectively.

T, t

“T” (sTack or Tower) was introduced in #25. Explained for the first time here, the definition of T includes a form of the *dedication clause*: all checkers played must end up on points that (when the move is complete) will contain four or more checkers. Entering (or forced) portions are waived.

Apply the same set of conventions to T that you do to L: Hit-more-**fewer**-6.

Usually, T is a simple, straightforward move that sTacks one checker onto a single point (for example, 13/8 in diagram 25x). For the position shown below, some of the resulting T-family moves stack two checkers onto a point, or stack checkers onto two points.



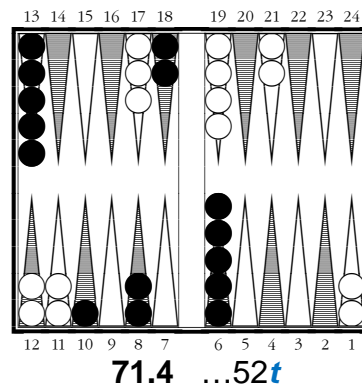
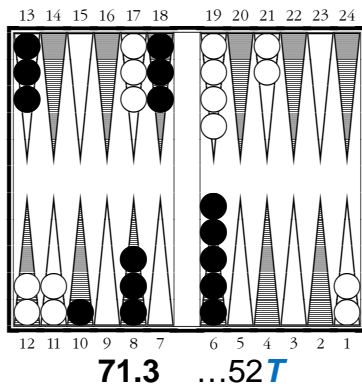
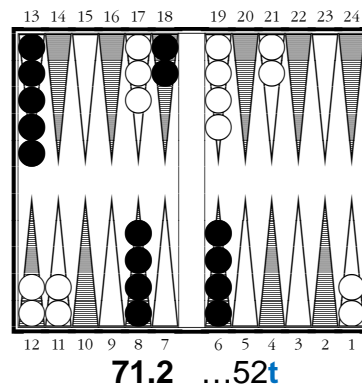
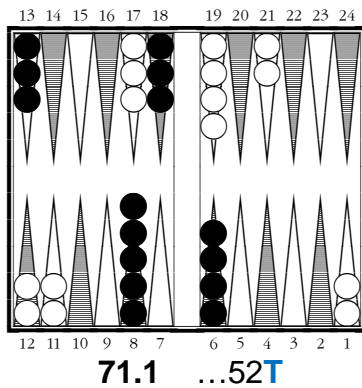
#71 21\$-62S-61N-61H-61H-61H-52V-21K-
-3-64@-63C-65S-62H-61U-62P-52

In #71 (above), Black’s best four moves, all of which sTack, appear—in order of both backgammon strength and T-family ranking—on the next page.

None of the moves shown below hit or end up with more points than any of the others. The hit and more points conventions are thus irrelevant, and we move on to the third criterion of the hit-more-**fewer**-6 rule: fewer blots. In that regard, the two plays in the top row, which safety the 10pt blot, rank higher than the two plays in the bottom row.

To compare within each row, we finally check the second part of the 6pt convention (blot/spare destination), and as Black’s 2 is played the same way within each pair, we actually need to examine only how he plays his 5. The 8pt destination outranks the 13pt destination; therefore, in each row, the play on the left outranks the play on the right.

Putting together the previous two paragraphs makes it easy to determine rankings for the four plays, which can be seen in the captions: **T**, **t**, *T* and *t*. (For italics, see section 14.)



Areal Nactations for the above four moves are D, B, O and C, respectively,

Why is it that T has a dedication clause included in its underlying definition, while L does not? There are two reasons:

- (1) This difference decreases the functional similarity of L and T. For example, if L had a dedication clause, then *both* these style letters (instead of just T) would be unusable for moves like 70.1 and 70.2.
- (2) If T had no dedication clause, its value would be diluted by move portions that strip one point and over-stack another. For example, for #25, (capital) 32T would be 24/21 8/6 instead of the much stronger 13/8 move shown in 25x; the hitch is that T is largely *destination*-oriented, and by 6pt convention the 6pt beats the 8pt. By contrast, L focuses more on the *source* (a blot in need of being safetied); its lack of a dedication convention does not incur a dilution of such magnitude.

\$, %

“\$” (previously described in sections 1 and 7), is the primary member of the Slot family; “%” is the secondary member.

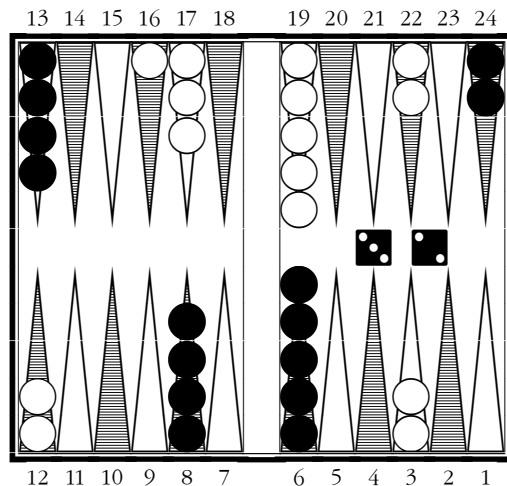
Definition of \$: Playing a checker to a vacant *forward* point (7pt or lower). If there is then one leftover portion of the roll (not counting entering or forced portions, which are waived), it must be played *down* (to or within the outer board). [“Down clause.”]

The slot families (\$, &, W) apply chiefly to non-doublers. They may be used properly for doublers when two or three portions are forced (e.g., bar/23(2) 13/11 6/4), or loosely with assumption (see sections 8 and 9). Generally, though, to precisely nactate a doublers move (one that slots or otherwise), avoid style letters and refer to sections 3, 15 and 16.

The Nactation of slotting moves boils down to three conventions, in this order of priority:

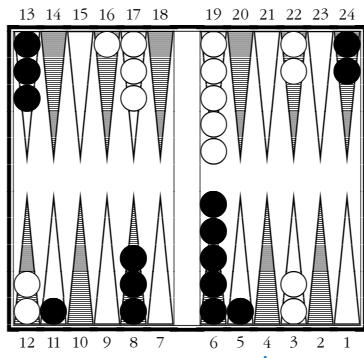
Slotting Priority

- (1) *More points* convention: make or keep the most points.
- (2) *Which point* slotted: 5pt, 4pt, 7pt, 3pt, 2pt, 1pt (order of preference).
- (3) *6pt* convention. (See section 10.)

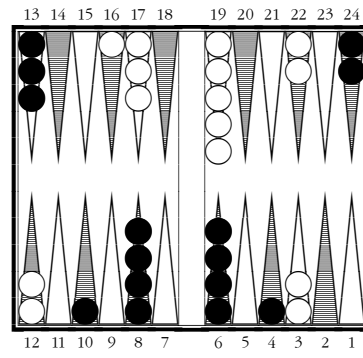


#72 64R-52D-62U-54K-32-61U-55P-41R-41S-32

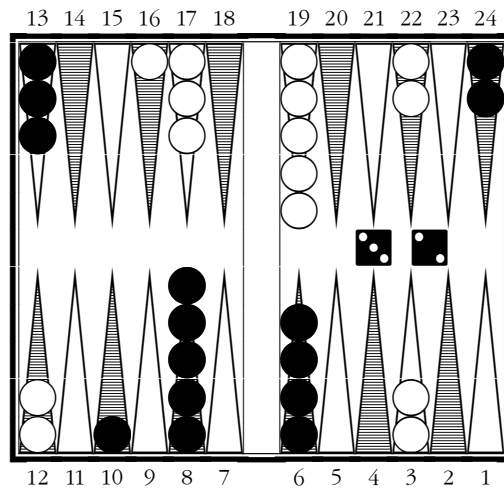
In #72 above, Black has 32. To honor the down clause of \$’s underlying definition, Black slots with one number and comes down with the other. By “which point,” the 5pt outranks the 4pt; thus, \$ is as depicted in 72.1 (below, left) and % is as depicted in 72.2.



72.1 ...32\$

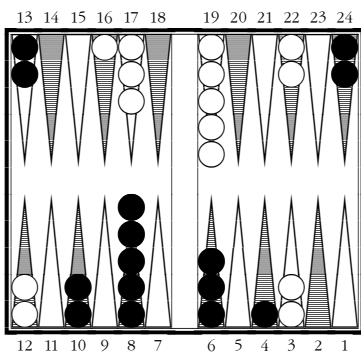


72.2 ...32%

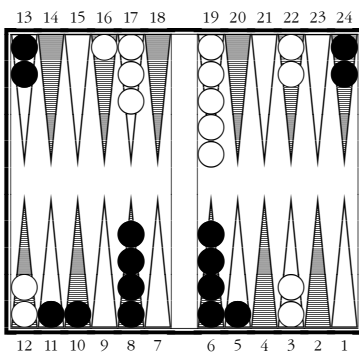


#73 32Z-41T-55P-65R-43R-21H-31B-32K-1-51D-32@-32

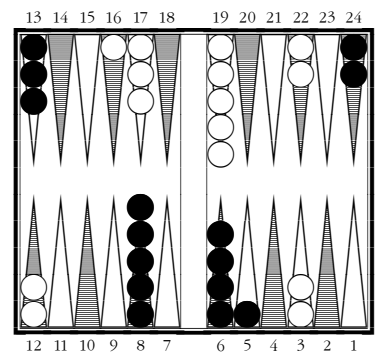
In #73 above, Black again has a roll of 32. This time it is possible to cover an extra point (the 10pt), thereby honoring “more points.” In this case, therefore, slotting the 4pt is \$ as shown in 73.1, and slotting the (otherwise preferred) 5pt is % as shown in 73.2.



73.1 ...32\$



73.2 ...32%



73.3 ...32\$

With the 3 slotted 8/5, either of two deuces honors the down clause. By the 6pt convention (final tie-break), in the outer board the 11pt is farther (than the 8pt is) from the 6pt, and therefore 13/11 (see % in 73.2) ranks higher than 10/8 (see italic \$ in 73.3).

Instead of the \$ family for the above five moves, you can use the N family (for some) or O family (for others). For definitions of areal letters, see sections 4 and 5. For selecting the proper member of a family, see sections 10 (upper/lower case) and 14 (italics, etc.).

Because hitting and slotting generally fail to support each other tactically, the families of \$, & and W disregard the hit convention. By definition, a “slot” goes to a *vacant* point and therefore cannot hit; and if there is a non-slotting portion of the move, the fact that it might hit is incidental and irrelevant to the familial ranking.

[At one point in the evolution of Nactation, there were six slotting rules (one of which related to unstacking tall points). The extra rules further helped the best move to earn the capital letter, but they confused people. It is substantially easier to implement today’s set of three conventions (listed above position #72).]

Summary of Conventions

The **hit-more-6** rule (explained in section 10) applies in pure form to all areal letters, and to style characters P and @. Highest priority is a “hit” (overridden only by an extra inside point), next is “more” points; then break ties by “6pt.” The two parts of the 6pt convention are not difficult to understand but should be carefully reviewed.

To accommodate the specialties of style characters, the main conventions (hit, more points, 6pt) selectively cooperate with other conventions:

Because they already hit, H, X and K are modified to **higher-more-6**. (Above #67.)

L and T have a “fewer blots convention” inserted: hit-more-**fewer-6**. (See #69–71.)

For \$, & and W, use: more-**which-6** (see conventions listed above #72). For & and W, mainly focus on “which point”—as more points and 6pt seldom come into play.

The underlying definitions of H (see #67) and \$ (see #72) include the “down clause.” The definitions of P, @ (see #63–66) and T (see #71) include the “dedication clause.” The latter is also implied for H and \$ as long as the down clause is taken into account.

Assumption: To nactate loosely, using few or no conventions, see sections 8 and 9.

Section 14: Italics (and other hierarchy)

In Nactation, each letter has its own family, for which upper case (capital) is primary and lower case is secondary. (Many examples are illustrated in sections 10–13.)

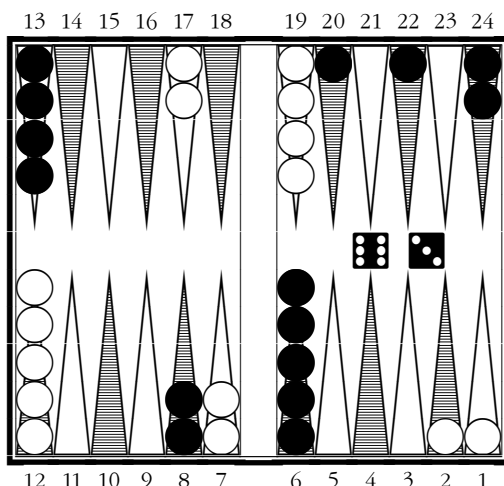
Occasionally, you might want to resort to the third (tertiary) and fourth (quaternary) members of a letter family. For these, you use *italics*.

Examples of italics that have already appeared in this tutorial are *4*, *S*, *R*, *P*, *L*, *T* and *\$*. (They caption various after-diagrams under #41, 54, 61, 63–66, 69–71 and 73.)

R, r, R, r

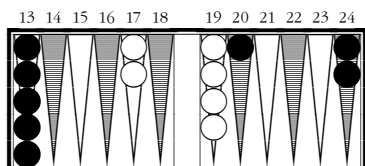
“R” (Run), which was discussed in #3, #45–46, #51, and #60–61, is defined precisely here:
The destination of at least one portion is in the

17pt–13pt area; remaining destinations are entirely (and anywhere) on the far side.

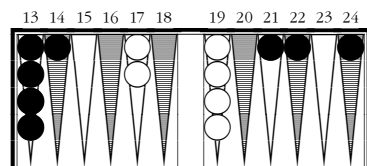


#74 63R-21H-63U-41K-51-54K-31-53-51K-5-61U-21H-42@-63

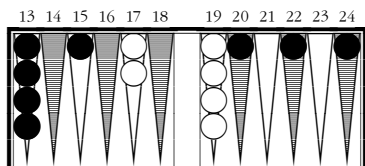
In position #74 (above), there are exactly four R-family moves (shown below). As there is no action on the near side (it remains unchanged), I diagrammed only the far side of the board for each move. Isolating the far side simplifies the comparisons.



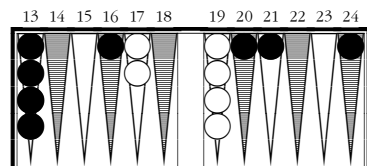
74.1 ...63R



74.2 ...63r



74.3 ...63R



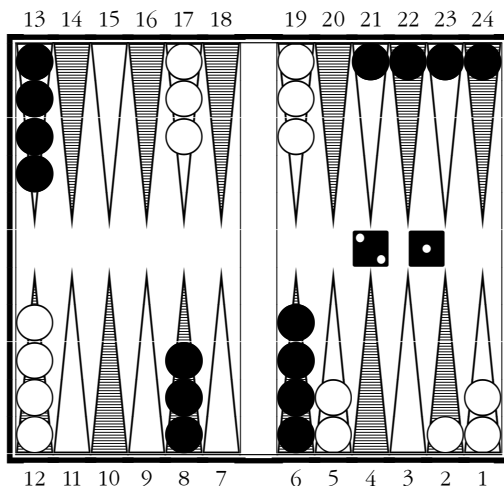
74.4 ...63r

For the set of four plays shown above, the 6pt convention is applied. It is the destinations of the 13pt, 14pt, 15pt and 16pt that determine the familial rankings of R, r, R and r.

In #74, the fifth and sixth best moves (not shown) are: U = 24/21 24/18, and S = 20/11. To verify these moves are not in the R family, review the definition above position #74.

U, V, u, v, U, V, u, v

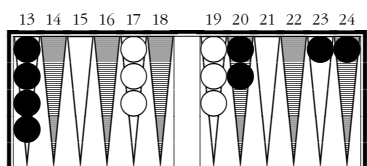
You will seldom encounter a situation with more than two strong moves for a family, but it is a less rare event with UV. Positions with extra recycled checkers may generate many back-quadrant moves that are not easy to describe with other letters. Hence the double-sized family. Lower case buys you four members, and italics eight members.



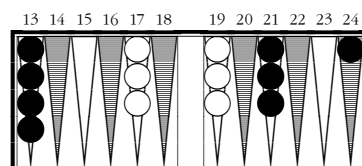
#75 N 41Q-21K-43-53@-21

Position #75 (above) occurs on the fifth roll of a Nackgammon opening. Black's best eight moves all play Up. Again, I've isolated the far side of the board for each diagram.

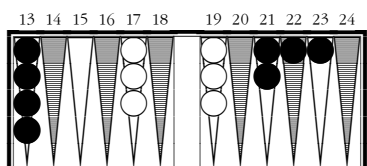
The 6pt convention—for points, then blots/spares—determines ranking in this example. (The 23pt is not an owned point; two checkers there are classified as spares.)



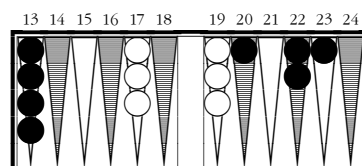
75.1 ...21U



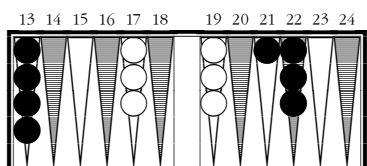
75.2 ...21V



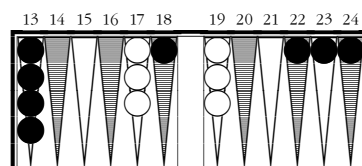
75.3 ...21u



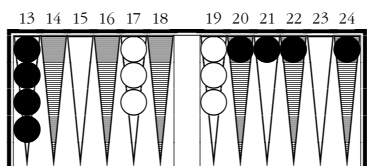
75.4 ...21v



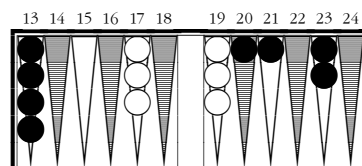
75.5 ...21U



75.6 ...21V



75.7 ...21u



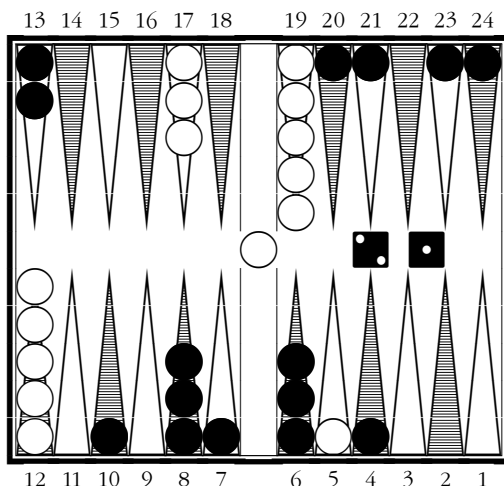
75.8 ...21v

In live play, positions with more than four competitive moves within the same family practically never arise. Indeed, in the example above, there is only one: The U move in 75.1 towers in value above the other seven.

Notwithstanding, to demonstrate the depth of Nactation, I'll provide an example (below) of an eight-member situation in which the common basis is a family other than UV.

P, p, **P**, **p**, **P**, **p**, **P**, **p**

“P” (for Point) is introduced in section 1 and expounded upon in #49–50 and #63–66. Keep in mind the “dedication clause,” as it applies to P (and to @): the *entire move* (except for portions that enter from the bar or are forced) *is used to make a single point*.



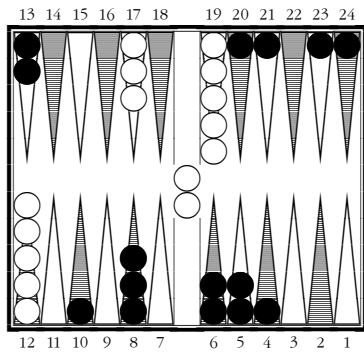
#76 21S-64H-42H-64R-31P-64U-32K-4-52H-5-21

As illustrated, both in the large-font P-letter sequence above and in the series of moves (76.1–76.8) captioned below, the fifth, sixth, seventh and eighth family members are written the same as the first four except they are **emboldened** (i.e., in bold font).

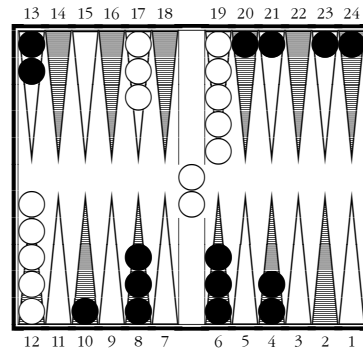
To determine hierarchy in a family, use the hit-more-6 rule. For example, 76.2 outranks 76.3 because the former hits and the latter does not. Making the 7/4 move *without* the hit as in 76.4 ranks below 76.3 because the (owned) 4pt is trumped by the 7pt.

In a real game, of course, only the first two moves (P and p) are worth considering; and, as a practical matter, you have no need to nactate moves that people never make!

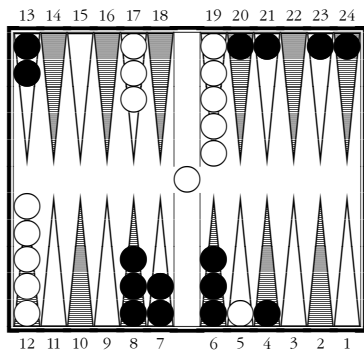
Even if you did need or desire to nactate the other six moves, it would be unnecessary to resort to such low-ranked members. Instead, for example, you could use D, A, @, # and v (respectively) for 76.3, 76.4, 76.5, 76.6 and 76.7, and numeral 0 for 76.8.



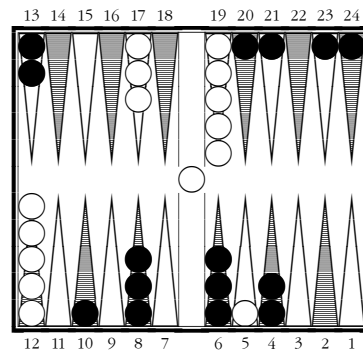
76.1 ...21P



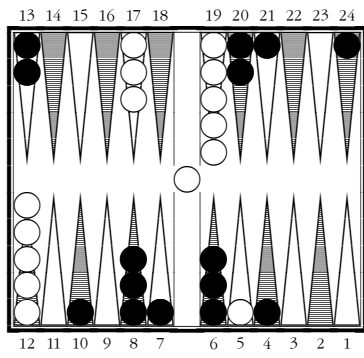
76.2 ...21p



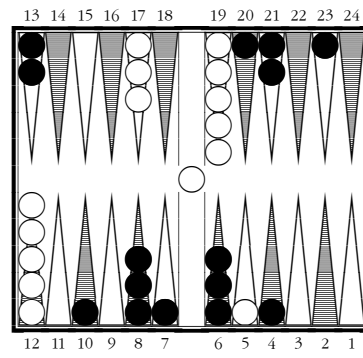
76.3 ...21P



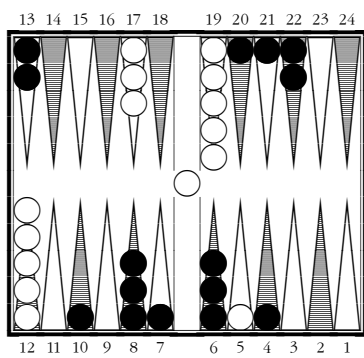
76.4 ...21p



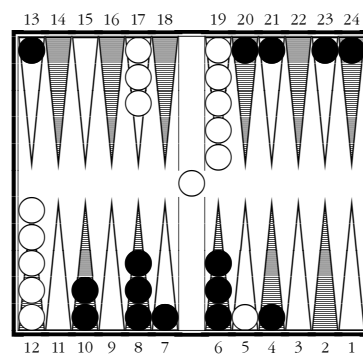
76.5 ...21P



76.6 ...21p



76.7 ...21P



76.8 ...21p

Most of the time, emboldening can be safely used for *emphasizing* or spotlighting moves in a Nactation sequence. However, if a highly atypical move does arise—one that needs to be emboldened due to its low ranking in a family, you should find some other way to distinguish the moves you want emphasized (e.g., by highlighting or adding an asterisk).

Beyond that, changing color can in theory generate an infinite number of members; e.g., for the A family, the hierarchy is: A a A a A a A a A a A a A a A a A a A a A a A a ...

In this tutorial, for visibility, I embolden letters in diagram captions (and tables). I have suspended that formatting convention for this entire section to eliminate confusion, especially so that the characters captioning 76.5–76.8 can be distinguished from those in 76.1–76.4. For good measure (given that color is discussed here), I’ve also suspended the blue typeface formatting that I use in the rest of the tutorial (except for #58).

In short, Nactation hierarchy is: Upper/lower case, italics, bold, and (unlimited) colors. Again, though, you will seldom require italics, let alone the subsequent levels.

Symbols and numerals: Lower case does not exist for non-letter characters. For the slot family (\$, %) and anchor family (@, #), there is a second symbol in lieu of lower case. For other symbols, and for numerals, the family sizes are essentially cut in half: italics is the secondary ranking (and boldface is third/fourth, and colors are fifth-plus).

Some symbols can be clearly distinguished from their italic counterparts only when handwritten. While \$ % \$ % and & & are passable hierarchies, italic @ # (when typed) too closely resembles non-italic @ # (see?). Conversely, numerals italicize and embolden distinctively (e.g., 8 8 **8 8**), but the assumptive application can cause uncertain rankings.

In truth, it is a reach to use a member ranked below secondary for symbols and numerals. Satisfactory alternatives are always available in any case.

File names (for computers): The standard for use of Nactation in naming files is relaxed. Aside from typing the correct dice rolls and choosing characters that aren’t entirely misleading, you basically just need to avoid creating identical file names.

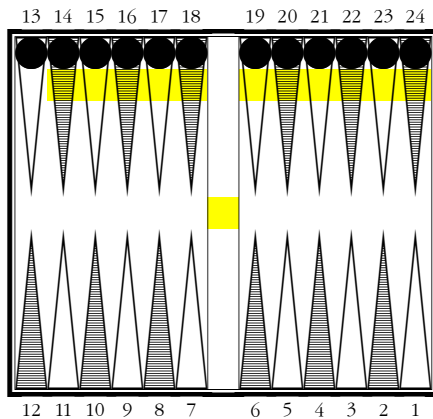
The only real conundrum you might encounter is that most operating systems do not distinguish upper- and lower-case letters. (Moreover, you cannot italicize, embolden, color or underline.) For example—though such pairs rarely arise—32Z-41H-11 and 32Z-41h-11 are different positions but you’ll be prompted to overwrite. One way to resolve the conflict in this example is to change H to A, or h to I (or preferably both). Another way, perhaps easier but less elegant, is to name the second file 32Z-41hh-11.

For more on file names, refer to the end of section 7.

Section 15: Doublets Table—BEACON

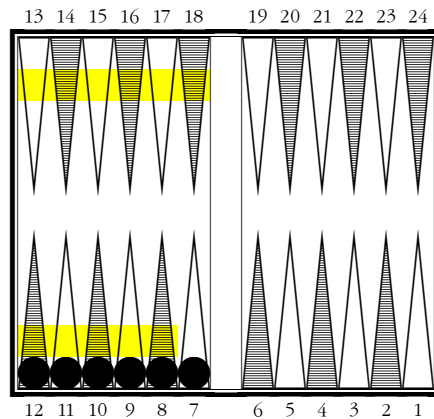
If you are adept with implementing and interpreting assumption (see sections 8–9), you can manage well enough without this section and the next. On the other hand, complex doublets are the most interesting to nactate, and if you prefer to extinguish any possible ambiguity in your Nactation, you will find these sections useful (if not vital).

As outlined at the end of section 5, a doublets move is composed of four “portions.” Each portion performs one of four basic checker movements (which can be used as nouns).



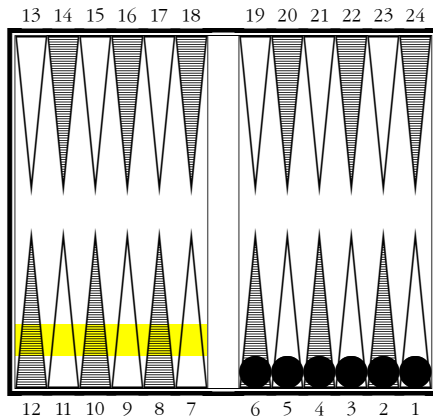
Run

On the far side of the board



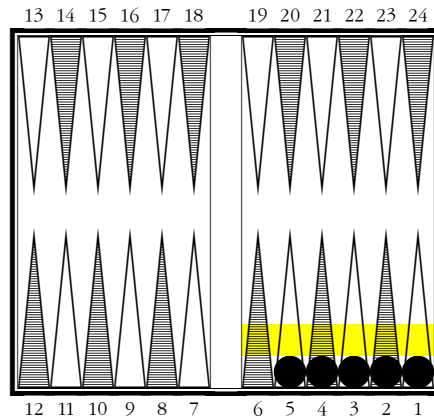
Down

To or within the outer board



Jump

From outer board to inner board



Inside

Within the inner board

In each diagram above, the yellow highlight identifies all possible points from which a Black checker might *originate* (for a given move portion), and the checkers identify all possible Black *destinations* (for that same move portion). The captions further elucidate.

Every doublets move is a combination of four movements. There might be three “downs” and one “jump.” Or two runs, one down and one inside. These are just two examples.

It should be clarified that “Run” has two definitions:

Run A move played entirely on the far side of the board, for which the destination of at least one checker is lower than the 18pt—i.e., to the 17pt, 16pt, 15pt, 14pt or 13pt. [To review the distinction between Run and Up, see #3 vs. #7, #51, #61, and #74–75.]

Run Any *portion* of a move played on the far side of the board. [This definition, introduced at the end of section 5, is the one primarily used in this section and the next.]

All 35 possible permutations of four-portion moves are represented in the table below. The half on the right is a continuation; the gray “Q” row is the 19th of 35 rows.

Table of Doublets

Letter	Run	Down	Jump	Inside
B	2	2		
S	3	1		
Z	1	3		
E	2			2
E	3			1
E.	1			3
A			2	2
A			3	1
A.			1	3
C	2		2	
C	3		1	
C.	1		3	
O		2	2	
O		3	1	
O.		1	3	
N		2		2
N		3		1
N.		1		3

Letter	RUn	Down	Jump	Inside
Q	1	1	1	1
R*	4			
D		4		
J			4	
I				4

R*	2	0	1	1
D	0	2	1	1
J	0	1	2	1
I	0	1	1	2
F	2	1	0	1
G	1	2	0	1
M	1	0	2	1
Y	1	0	1	2
F	2	1	1	0
G	1	2	1	0
M	1	1	2	0
Y	1	1	0	2

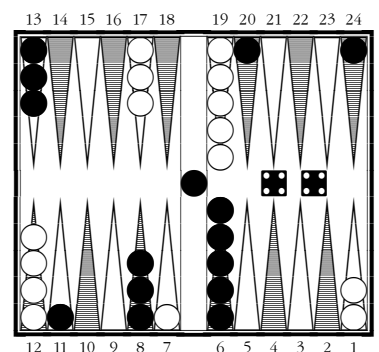
* R row: If all portions are played to the 18pt or higher, use the U family (it’s a subset).

* R row: If both far-side portions are played to the 18pt or higher, use the U family.

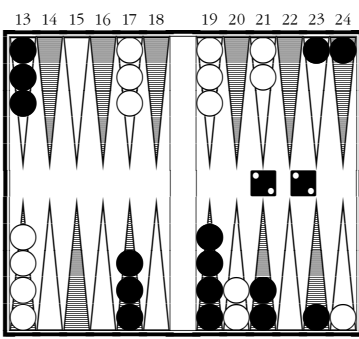
The cell-filled colors of the rows (yellow, blue, gray, orange, pink, green) serve merely to distinguish parts of the table and similar letter groupings. The yellow-highlighted numbers on the right help to identify patterns. An empty cell implies a zero.

The easiest and most fun way to learn the doublets table is not to memorize it, but rather to understand the logic and absorb it through practice. With illustrated examples, I will explain the doublets table in three pieces, starting with the left half.

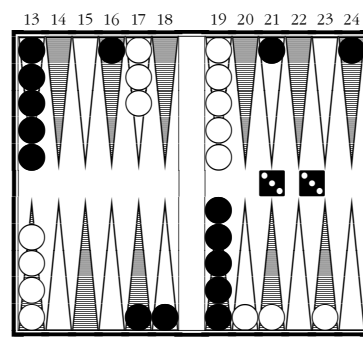
In the left half of the above table, find B, E, A, C, O and N (no underline, no dot) in the first row of each trio (22--, 2--2, --22, etc.). Elementary (simple doublet) examples of BEACON appear in positions #9–14. Refined (complex doublet) examples appear below.



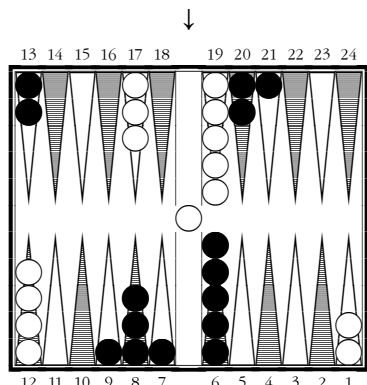
#77 54S-62H-41H-61U-
-21H-61H-44 (B)



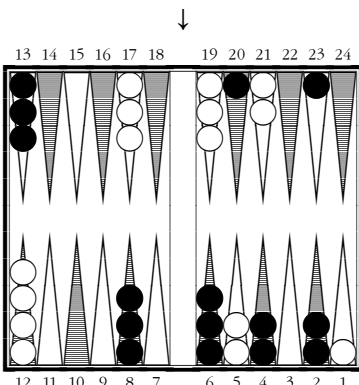
#78 21S-53S-52H-62H-62K-
-51-43P-22E-22 (E)



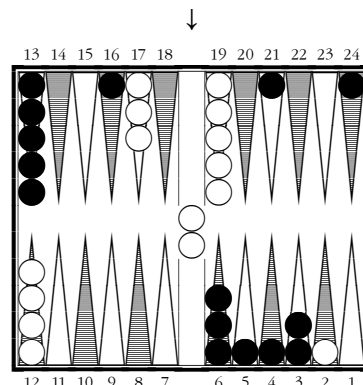
#79 64S-31X-62H-21H-
-F-43H-54-33 (A)



77.1 ...44B



78.1 ...22E



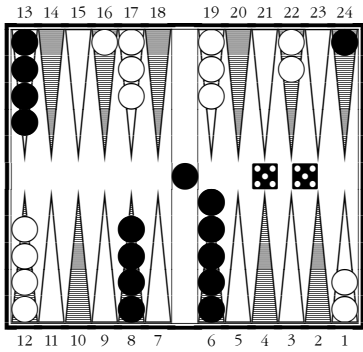
79.1 ...33A

The upper row of each diagram set (above and below this paragraph) has three positions. In each position, Black is to play the letter in parentheses. Test yourself, if you like. The lower row shows each of the positions *after* Black has played the indicated letter.

A 2:2 ratio is applied in all positions. That is, for each of two selected areas (run, down, jump, inside), two (of four) doublet portions are played—and in one of three ways:

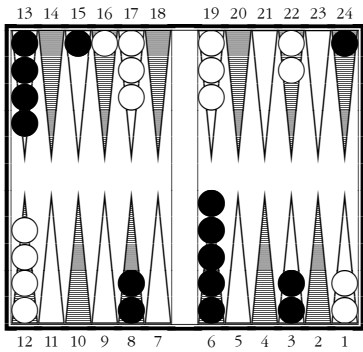
1. Simple pair: two checkers on a point move together, one portion each (e.g., 6/5(2)).
2. Two checkers from different points move one portion each (e.g., 24/22, 23/21).
3. One checker moves both portions (e.g., 13/10/7).

All possible ways to combine the move halves (1+1, 1+2, 1+3, 2+2, 2+3 and 3+3) are represented in diagrams 77.1 through 82.1. The elementary case of 1+1 (simple pair for both halves of the move) is represented in 81.1—as it is in positions #9 through #14.

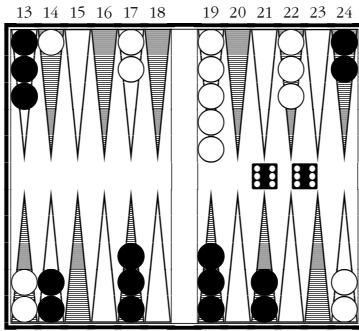


80

52S-43H-F-21p-55 (C)

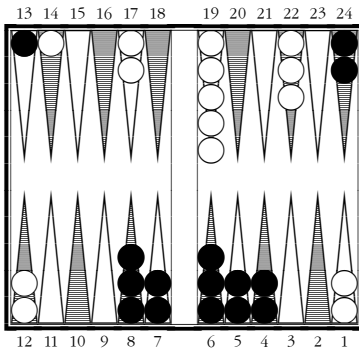


80.1 ...55C

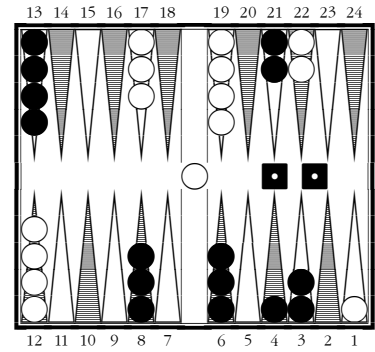


81

52D-22N-55o.-66 (O)

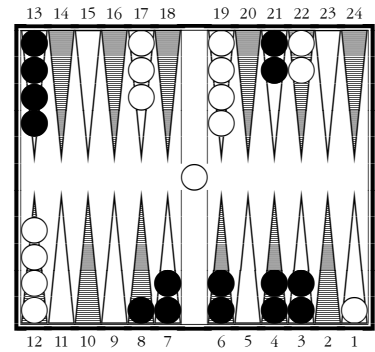


81.1 ...66O



82

53P-53P-53S-53S-32X-F-11 (N)



82.1 ...11N

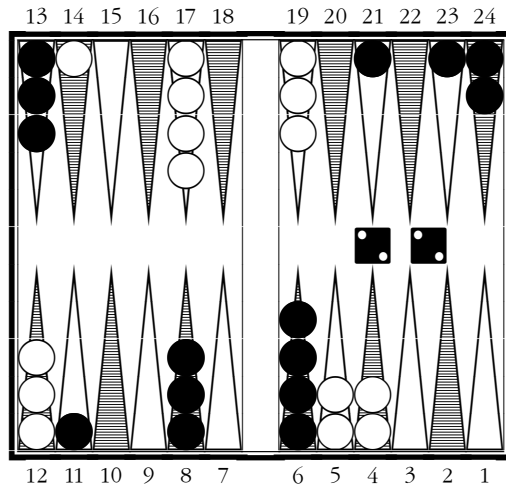
To grasp the basic idea, compare the move in #9 to the move made in 77.1 and observe the conceptual similarities. Likewise, compare #10 to 78.1, #11 to 79.1, and so on.

To determine (or verify) a capital letter, apply the hit-more-6 rule (refer to section 10). For example, in #77, Black's two fours played "down" (to or within the outer board) prioritize hitting with 11/7* over making point(s); hence B = bar/21 24/20 13/9 11/7*. (Indeed, even b = bar/21 20/16 13/9 11/7* outranks B = bar/21 24/20 13/9(2).)

So far in this section, we have examined only doublet moves for which two portions are played in each of two areas, covered by the letters in BEACON. For example, B (as seen in #9 and 77.1.) is composed of 2 runs, 2 downs, 0 jumps and 0 insides. This combination can be abbreviated "22--" (or "2200") as it appears in the first row of the doublets table, the top three rows of which have been isolated below (left).

Letter	Run	Down	Jump	Inside
B	2	2		
S	3	1		
Z	1	3		

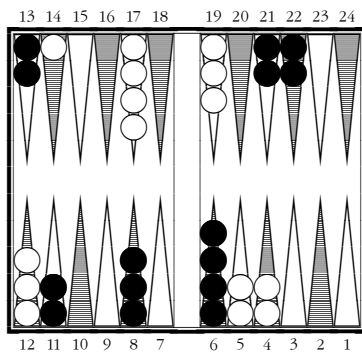
If (instead of two runs and two downs), three runs and one down are played (represented by "31--" in the table), the proper letter is S. If there are one run and three downs (13--), the appropriate letter is Z. Examples follow.



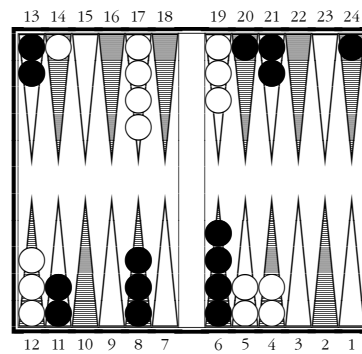
#83 52D-21\$-43U-64H-52K-4-42H-41-62R-21x-53@-22

In #83 (above), Black rolls 22. How do we nactate his four best moves (83.1–83.4)?

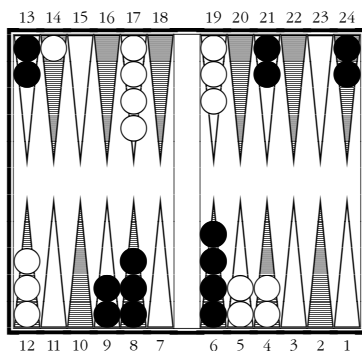
The moves shown in the top two diagrams (of the four-diagram set below) are in the S family by virtue of having three runs and one down. The moves in the bottom two diagrams are in the Z family by virtue of having one run and three downs. In this set, the more points convention (see section 10) determines the ranking within each family.



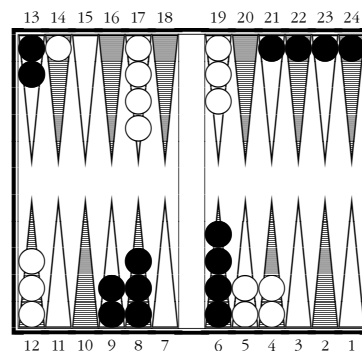
83.1 ...22S



83.2 ...22s



83.3 ...22Z



83.4 ...22z

As noted, the correct usage of B, S and Z for doublets differs from that of non-doublets. However, it helps to remember that in both cases, S plays more pips (i.e., the majority of the pips rolled) on the far side, whereas Z plays more pips in the outer board.

For usage consistent with the five B-related trios (E, A, C, O, N) in the first half of the doublets table, it is permissible to use B (underlined) for 31-- and B. (dotted) for 13--. However, the more elegant replacement letters of S and Z (respectively for B and B.) do have the excellent mnemonic support explained in the previous paragraph.

Next, let us examine the E, A, C, O and N trios, appearing beneath the B(SZ) trio in the first half of the table, which is reproduced below.

Letter	Run	Down	Jump	Inside
B	2	2		
S	3	1		
Z	1	3		
E	2			2
<u>E</u>	3			1
E.	1			3
A			2	2
<u>A</u>			3	1
A.			1	3
C	2		2	
<u>C</u>	3		1	
C.	1		3	
O		2	2	
<u>O</u>		3	1	
O.		1	3	
N		2		2
<u>N</u>		3		1
N.		1		3

The plain letters (B, E, A, C, O, N) cover all situations in which two portions are played in one “area” (run, down, jump or inside) plus two in another area. (Review Section 3.)

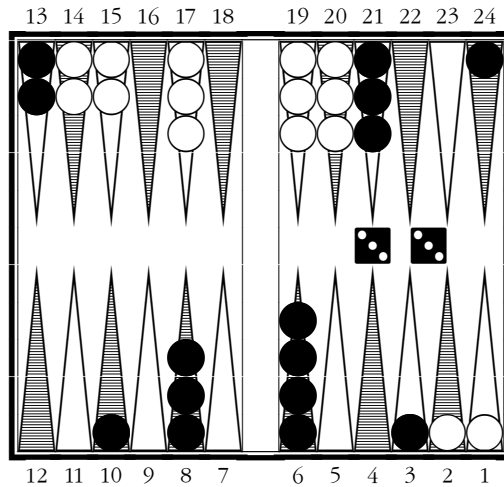
The idea behind the underlined and dotted variants is straightforward. They cover all possible situations with *three* portions played in one area and *one* in another area.

For such moves (i.e., with a 3:1 or 1:3 ratio):

- When *three* portions are played in the higher-point area, *underline* the letter.
- When *one* portion is played in the higher-point area, add a *dot* (period).

“Higher-point” relates to the highest point from which checkers might originate. In that respect, areas are ranked from left to right in the table: run, down, jump, inside.

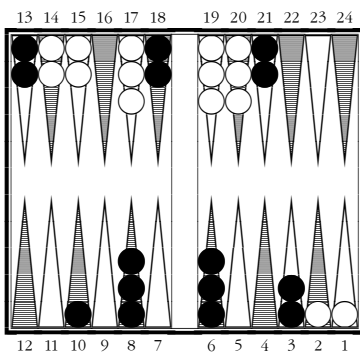
A diagram is worth a thousand words.



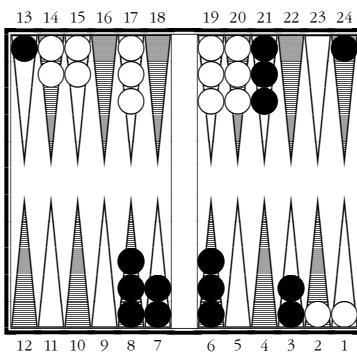
#84 32D-63H-32H-42H-11E-61U-62O-42@-
-42S-53H-42H-F-64S-43S-51U-64K-21-33

In position #84 (above), Black has a roll of 33. His best moves are diagrammed below. In each case, three 3s are played with a particular movement—run (in 84.1), down (in 84.2), or jump (in 84.3)—and the fourth 3 is played inside (6/3), in the lowest area.

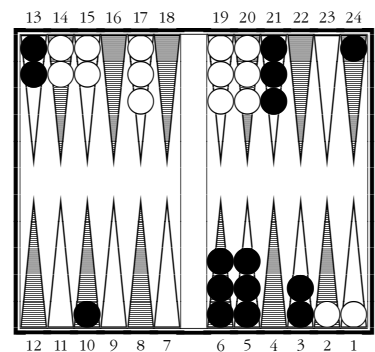
The function of the underlined (B)EACON letters is similar to that of the plain letters used in 77.1 to 82.1 (and in section 3). The difference is that they apply to a 3:1 ratio (instead of 2:2): the letters captioned below—E, N and A—are underlined accordingly.



84.1 ...33E



84.2 ...33N



84.3 ...33A

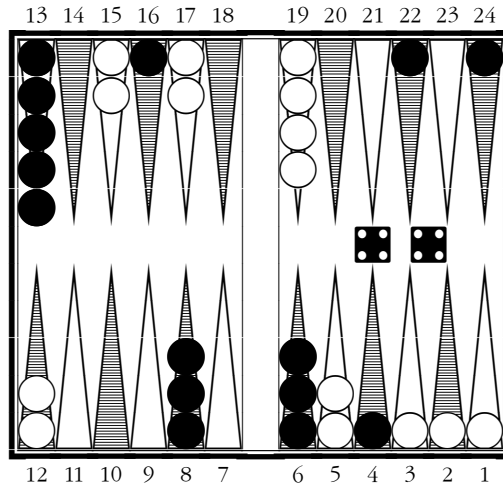
In the “mini-table” below, I’ve extracted every third row of the main table (and changed the order to match the order of the diagrams). To reinforce your understanding, compare the E, N and A moves made above (noting the 3:1 ratios) to the E, N and A rows below.

For example, following the main position #84 → 84.1, Black played E, which consists of three “runs” (24/21 21/18 21/18) and one “inside” (6/3). In the corresponding E row of the mini-table, there is a 3 (three) in the Run column and a 1 (one) in the Inside column. (The move has no downs and no jumps: those cells are blank.)

Letter	Run	Down	Jump	Inside
<u>E</u>	3			1
<u>N</u>		3		1
<u>A</u>			3	1
<u>C</u>	3		1	
<u>O</u>		3	1	
<u>S</u>	3	1		

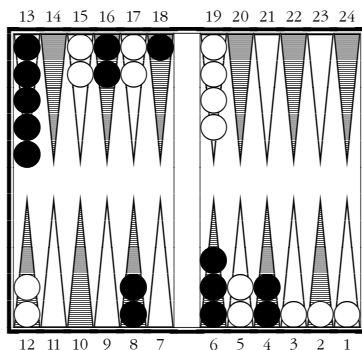
To show that all 3:1 ratio possibilities have been covered, I have included the row for S (which is preferred as a substitution for B).

An example of S appears earlier, in 83.1. From #83 → 83.1, Black played three runs (24/22 24/22 23/21) and one down (13/11).

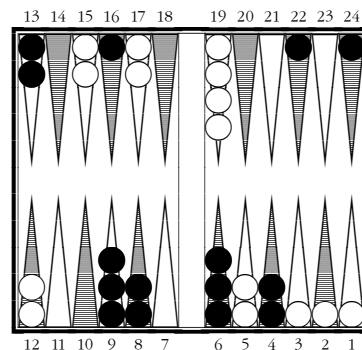


85 21\$-31H-32P-32R-31P-63R-32X-32H-54K-43-52@-52K-32-44

In #85, Black’s roll is 44. His best moves are diagrammed below. You can (and should) verify that these C and O moves correctly correspond to the run/down/jump/inside representations in the C and O rows of the mini-table (posted above #85).

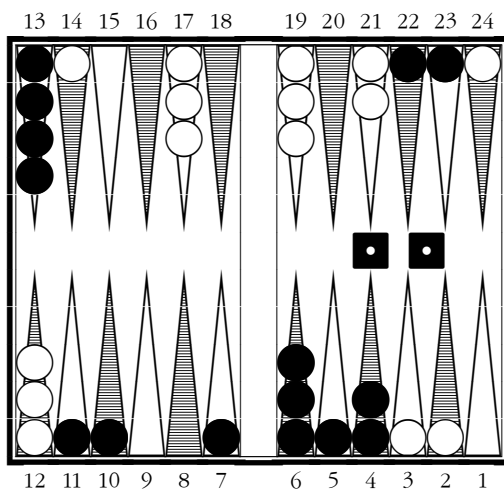


85.1 ...44C



85.2 ...44O

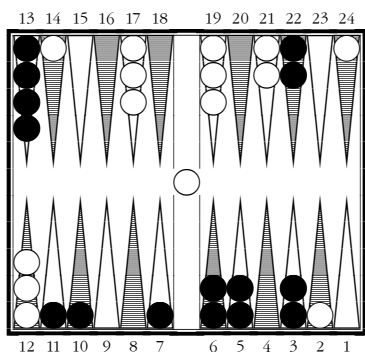
Positions #84 and #85 generated (best) moves with 3:1 ratios. The next two positions (#86 and #87) will generate 1:3 ratios: moves for which *one* portion is played in a higher area of the board and *three* portions are played in a lower area of the board.



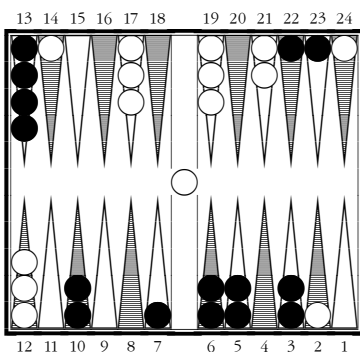
86 51S-41K-31-F-65S-F-51S-43@-54R-55P-61U-31H-61H-52E-41K-32-42P-41O-65H-62K-32-11

In position #86 above, Black has a roll of 11. His best moves are shown below. In each case, one ace is played with a particular movement—run (in 86.1), down (in 86.2) or jump (in 86.3)—and the other three aces are played inside (6/5 4/3* 4/3).

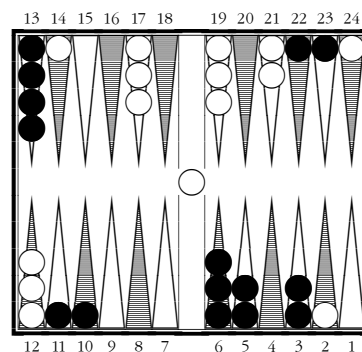
The function of the (B.)E.A.C.O.N. letters is similar to that of the plain letters (#9–14 and 77.1–82.1) and underlined letters (83.1–85.2), but with a 1:3 (instead of 2:2 or 3:1) ratio. The letters below are accordingly “dotted” (i.e, each one has a dot/period after it).



86.1 ...11E.



86.2 ...11N.



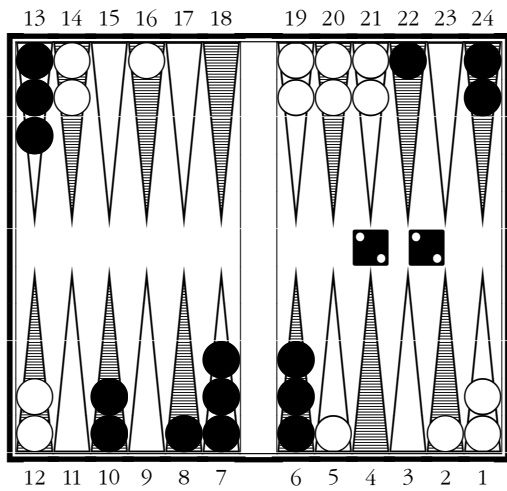
86.3 ...11A.

For practice, please verify that the E., N. and A. moves shown above correspond to the run/down/jump/inside allocations in the E., N. and A. rows of the mini-table below.

Letter	Run	Down	Jump	Inside
E.	1			3
N.		1		3
A.			1	3
C.	1		3	
O.		1	3	
Z	1	3		

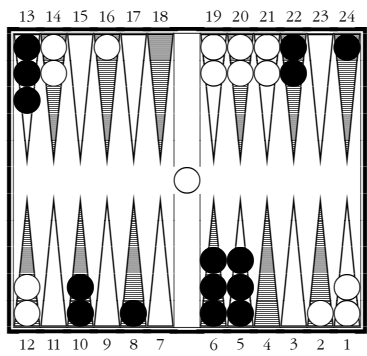
To show that all 1:3 ratio possibilities have been covered, the Z row is included (Z being the preferred substitution for dotted B.).

An example of Z appears earlier, in 83.3. From #83 → 83.3, Black played one run (23/21) and three downs (13/11 11/9 11/9).

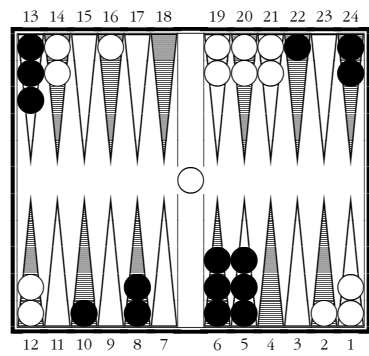


#87 32S-21X-41U-51H-53K-54-51H-54@-F-55B-21P-43R-64X-11Z-44C-51H-31H-53H-11E-22

In #87, Black's roll is 22. His best moves are diagrammed below. You can (and should) verify that these **C.** and **O.** moves correctly correspond to the run/down/jump/inside allocations in the C. and O. rows of the mini-table (posted above #87).



87.1 ...22**C.**



87.2 ...22**O.**

Technically, a dotted letter (such as E.) is two characters, though a dot (period) is forgivably small. That said, purists may prefer the single-character alternative of: Ẹ

The dot underneath the E is called a “combined ring below.” To create it, I place my cursor *after* the E, then in Microsoft Word (2007), I navigate as follows: Insert / Symbol / More symbols / Symbols / Combining Diacritical Marks. There, in the bottom middle box I type the character code 0325 and click on Insert. Whew!

If you use the ỌÇẸẠṆ letters regularly, you can save time by leaving the Combining Diacritical Marks window open, or by storing those five characters somewhere (e.g., in a macro or at the bottom of your current document) and copy/paste as needed.

The copy/paste idea is even more practicable if your medium is html. Store this string: `E̥` Replacing the E in turn with A, C, O and N creates the other four strings.

Vertical spacing is an issue. When a diacritical mark is used in text, the line above is pushed upwards, and the line below downwards. To fix this in Microsoft Word (2007), position the cursor within (or highlight any part of) the paragraph. Open the Paragraph formatting dialog box, under the Index and Spacing tab set Line Spacing to Exactly, and to its right select a height (“16 pt” in my case) that achieves the desired reduction.

Letter	Run	Down	Jump	Inside
Ẹ	1			3
Ṇ		1		3
Ạ			1	3
Ç̣	1		3	
Ọ		1	3	
Z	1	3		

In the left column of the table above #87, replacing E.N.A.C.O. with ẸṆẠÇ̣Ọ causes those five rows to swell to twice their height.

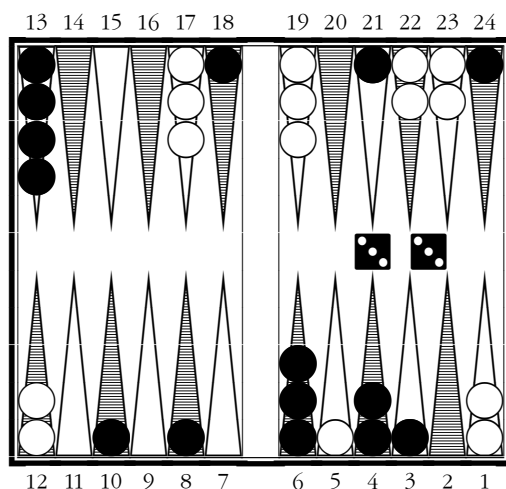
I reduced the inflated ẸṆẠÇ̣Ọ rows (so that they match the height of the Z row) by using the method described previously (Paragraph / Indents and Spacing / Line Spacing / Exactly).

Overall, I find the single-character version (with “combined ring below”) more aesthetic as a reader, and as a writer I’ve gotten comfortable with it. However, I expect most people will adopt the more user-friendly after-dot. I am happy seeing either.

If your Nactation is handwritten, spacing is no problem, nor is there additional work: you simply jot the dot underneath (instead of to the right of) your OCEAN letter, giving you the visually preferred placement. Regard this “underdot” (designating the 1:3 ratio) as a contracted version of the underline (which designates the 3:1 ratio).

Section 16: Doublets Table—R and F groups

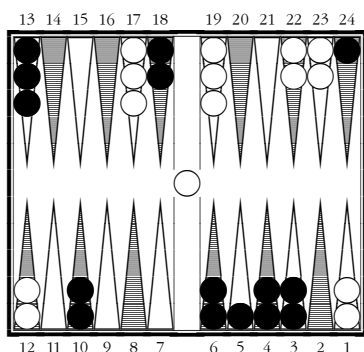
The previous section covers the various BEACON families. This section finishes the doublets table with the “R” and “F” groups.



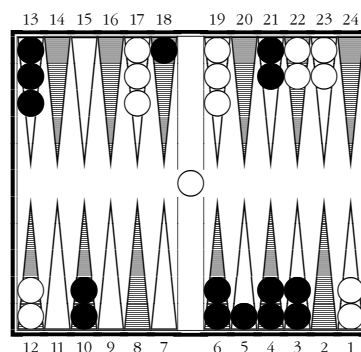
#88 41\$-54S-32H-44E-53-55m-51-53R-55P-
-64D-42H-61H-64H-F-64P-53-21K-51-33

Let us first dispense with Q, which is in a row by itself (see the next mini-table below). Q stands for “Quarters,” as one quarter of the move is played in each area.

In #88 (above), Black rolls 33. For his best moves (diagrammed below), he plays one 3 in each area (run = 21/18 or 24/21, down = 13/10, jump = 8/5*, inside = 6/3). By the 6pt convention: the (owned) 18pt earns the capital Q, and the 21pt gets the lower-case q.



88.1 ...33Q



88.2 ...33q

For purposes of defining one of the four main areas, “run” applies to any movement on the far side of the board, including the back-quadrant portion of 21/18 or 24/21 shown above. The letter U (up) distinguishes itself only as a non-doublets family (e.g., see #75), and as a refinement to the R and R rows of the doublets table (see #89–90, upcoming).

Uni-areal Doublets (4:0 ratios)

Next, let's consider the 4:0 ratio moves. (Relevant rows are colored in orange.)

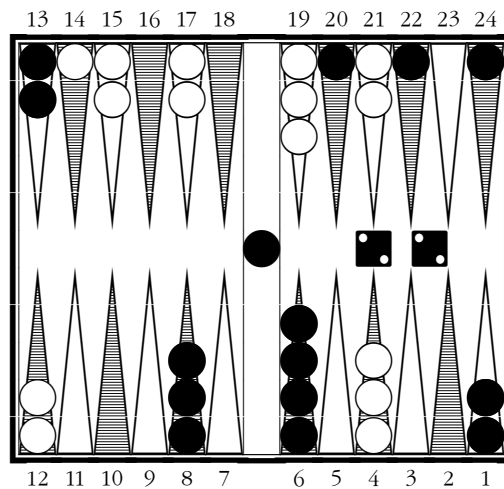
Conveniently, the column and row headers of the table both supply the letters: R (or U), D, J and I.

Letter	RUn	Down	Jump	Inside
Q	1	1	1	1
R*	4			
D		4		
J			4	
I				4

Use one of these families when all four portions of a doublet share the same type of movement. For example if a move has four Downs, use D.

*If all destinations are the 18pt or higher, use U.

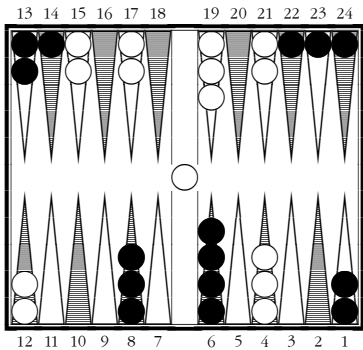
Here is a doublet position that further clarifies which of the R or U family to use:



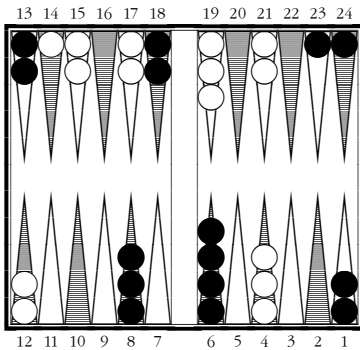
89 41S-63S-66P-43-62K-43-53-32K-43-
-22E-65R-64H-53@-31Z-42H-42H-22

In #89 (above), Black rolled 22. His best moves play all four portions on the far side.

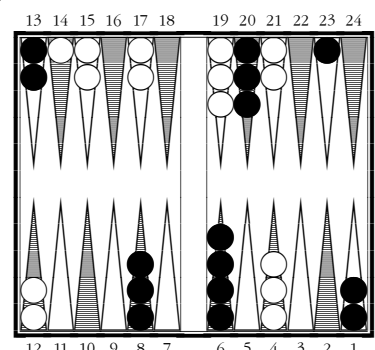
In 89.1 (below, left), where one or more of Black's destinations (the 14pt) is on a point numbered lower than the 18pt, the move is nactated **R**. In 89.2 and 89.3, where *no* destination is lower than the 18pt, the moves are nactated with the **U** family (also known as the UV family), which can be reviewed at #18-20, #47-48 and #75.



89.1 ...22R



89.2 ...22U



89.3 ...22V

The three R- and U-family moves above exemplify 4:0 ratios. Each move is composed of 4 RUns and 0 (zero) other movements—no Downs, Jumps nor Insides.

Similarly, D, J and I each describe moves with all four portions played in its area. You can find such examples for D in diagrams 37.2 and 59.1, for J in 22.1, and for I in 24.1.

Tri-areal Doublets (2:1:1 ratios)

The remaining doublet possibilities are all 2:1:1 ratios. They are represented in the final twelve rows of the main table, reproduced in the subtable on the right.

Commit to memory the letter sequences **RDJI** and (the alphabetic) **FGMY**:

Picture yourself on a hot day in Yosemite National Park, looking down at a cool, refreshing lake. It makes you want to

Run Down, Jump Inside

These words match the column headers of the table, in order. Perfect!

After your swim, you crave a better view of some distant scenery. Fortunately, you have binoculars, and voila!

Field Glasses Magnify Yosemite

Letter	RUn	Down	Jump	Inside
<u>R</u> *	2	0	1	1
<u>D</u>	0	2	1	1
<u>J</u>	0	1	2	1
<u>I</u>	0	1	1	2
<u>F</u>	2	1	0	1
<u>G</u>	1	2	0	1
<u>M</u>	1	0	2	1
<u>Y</u>	1	0	1	2
<u>F</u>	2	1	1	0
<u>G</u>	1	2	1	0
<u>M</u>	1	1	2	0
<u>Y</u>	1	1	0	2

* If both far-side destinations are the 18pt or higher, use U.

Another option is “**F**irst **G**raders **M**emorize **Y**ankee-doodle.” (At least, they did when I was in school. “Yankee-doodle went to town...”) With either mnemonic, the first word has one syllable, the second word has two syllables, and so on. If you don’t care about the 1-2-3-4 syllabic scheme, choose one of the mnemonics below or create your own.

French Girl Massages You; Fairy Godmother Misses You; Fool’s Gold, Minimum Yield; Foolish Girls Marry Young; Far Gone, Many Years; Funny Guy, Master Yoda; Forest Green, Mustard Yellow; Flash Gordon’s Misspent Youth; Fancy Gadget Makes Yogurt; Fatigued Guests May Yawn; Funny Groucho Marx Yacks; Foster Grants Mystify You; Field General Must Yell; Fit Guy Mauls You; Forrest Gump Moons You; Frosty Glass Mirrors You.

When nactating any doublets move, you should, naturally, count the number of portions in each area. If it is uni-areal (a 4:0 ratio), use R (or U), D, J or I. If the move is bi-areal (2:2, 3:1 or 1:3), use a plain, underlined or dotted BEACON family (SZ inclusive).

If, on the other hand, the move is *tri-areal* (i.e., played in three areas and therefore a 2:1:1 ratio), I recommend you count the portions in each area (from back area to front) and translate it to a four-digit code—exactly as it appears in the table above.

For example, if there is 1 run, 0 downs, 2 jumps and 1 inside, think of it as “1021.” With enough practice, you will instantly recognize that the corresponding letter for 1021 is M, but until that day comes you can adopt this two-step procedure:

- (1) Ignore the 2 for a moment. Where is the 0 (zero) *relative* to the 1s?
 If the 0 is first, use RDJI. If it is Flanked, use FGMY. If it is Final, use FGMY.
 (All three key words begin with “f,” but there is an R only in the first!

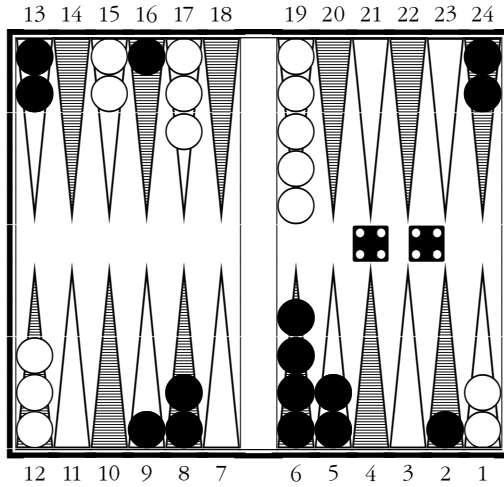
0 11	(zero is f irst)	<u>R</u> sequence	→	<u>RDJI</u>	(Run Down, Jump Inside)
1 01	(zero is f lanked)	<u>F</u> sequence	→	<u>FGMY</u>	(Field Glasses Magnify Yosemite)
1 10	(zero is f inal)	<u>F</u> sequence	→	<u>FGMY</u>	" " " "

- (2) Identify whether the 2-portion area is in first, second, third or fourth position.
 This tells you which letter of your (four-letter) sequence to use.

Returning to the example cited, your code is 10**2**1. The 101 part (zero is **f**lanked) tells you that it must be one of the letters in the FGMY sequence, and the placement of the 2 in third position tells you to use the third letter of that sequence, which is M.

With practice, this two-step procedure will become second nature.

Positions #90–93 (illustrated below) generate moves for all twelve 2:1:1 ratio families, plus U (a variant of the R family). To make this procedure easier to follow, I’ve included traditional notation and highlight. The “**0**” (zero) area is placemarked by green, both the “1” areas are colorless, and the portions in the “**2**” area are highlighted in yellow.



90 54D-62H-41H-63H-52V-32K-43-63@-65@-63P-52H-62U-51K-1-31P-51D-44

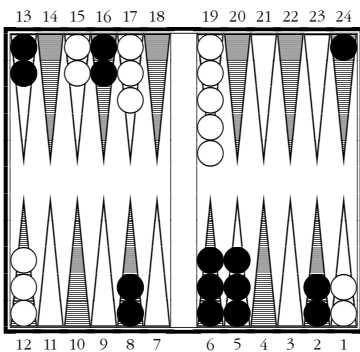
In #90 (above), Black rolled 44. His three best moves (shown below) are all 2:1:1 ratios. How do we nactate them?

Below, left, the 90.1 move (24/20/16 9/5 6/2) has 2 runs, 0 downs, 1 jump and 1 inside, giving us a code of 2011. The 011 part (zero is first) gives us the RDJI sequence. As 2 is in the first area, the first letter R is the appropriate Nactation.

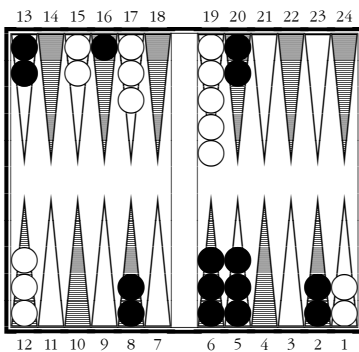
[For any 011 code (i.e., 2011, 0211, 0121 or 0112), the 2-portion area tells you the letter: 2 Runs is R, 2 Downs is D, 2 Jumps is J, or 2 Insides is I. Cool, eh?]

The 90.2 move (24/20(2) 9/5 6/2), also with a 2011 code, is solved the same way, except with neither far-side destination below the 18pt, you use the variant of R, which is U.

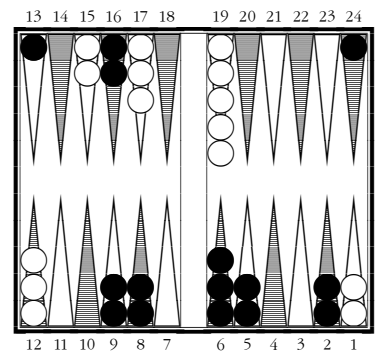
The 90.3 move, 24/20/16 13/9 6/2, has a code of 2101. The Flanked zero (101) signals the FGMV sequence. As the 2 is in the first area, you use the first letter, F. Catching on?



90.1 ...44R



90.2 ...44U



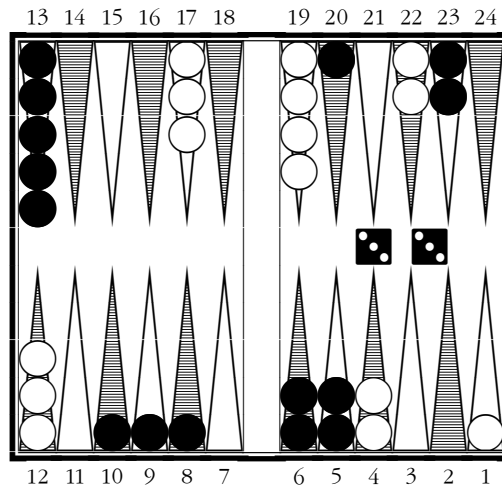
90.3 ...44F

The (rather distant) fourth best move is 24/20(2) 13/9 6/2. It has the same 2101 code as 90.3 and is therefore in the same F family. That move (not diagrammed) is dealt the lower-case “f” because the owned 20pt is farther (than the owned 16pt is) from the 6pt.

Again, the two-step procedure is:

- (1) Where is the **zero** (relative to the 1s):
 $\underline{fi}Rst$ (011 = RDJI), Flanked (101 = FGMY), or Final (110 = FGMY)?
- (2) Where is the **2**: in the first, second, third or fourth area?

Let's look at another batch of moves.

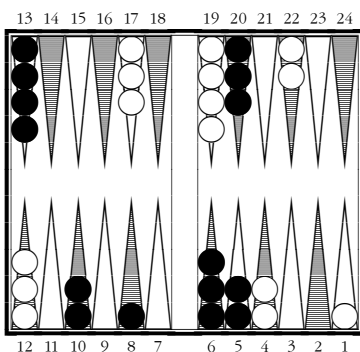


#91 52S-32X-55M-51-53Z-51H-65r-32H-41H-
-51V-659-64Z-F-65H-5-31P-22@-33

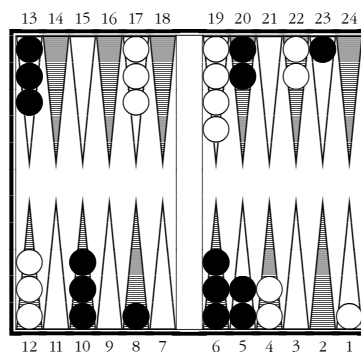
In position #91 (above), Black rolled 33. How do we nactate his three best moves?

The moves shown in 91.1 (23/20(2) 13/10 9/6 **2**), 91.2 (23/20 13/10(2) 9/6), and 91.3 (23/20 13/10 9/6 8/5 **2**), respectively, yield codes of **2**110, **12**10 and **112**0.

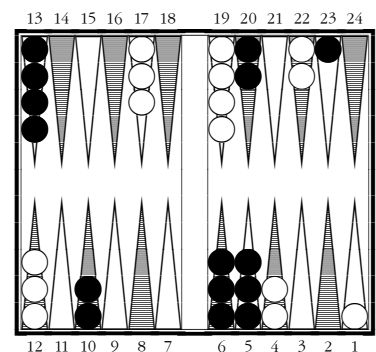
For all three codes, the 110 part (zero is Final) is the same, yielding a sequence of FGMY. For 91.1, the **2** is in the *first* position of its code; hence **E**. For 91.2, the **2** is in the *second* position; hence **G**. For 91.3, the **2** is in the *third* position; hence **M**.



91.1 ...33**E**



91.2 ...33**G**

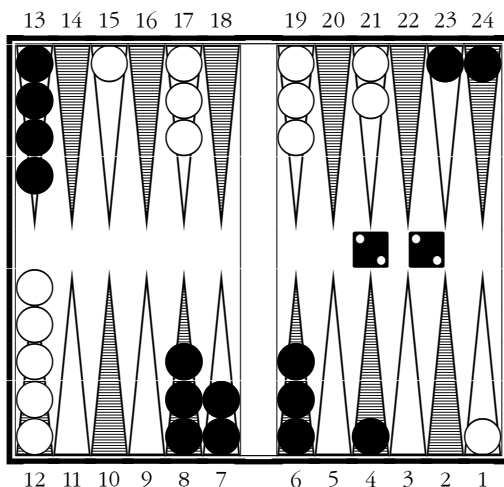


91.3 ...33**M**

Once again, the two-step procedure is:

- (1) Where is the **zero**? 011 = RDJI, or 101 = FGM**Y**, or 110 = FGMY.
- (2) Where is the **2**: in first, second, third or fourth position?

Here is yet another batch of moves:

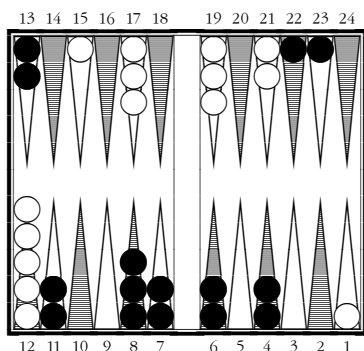


#92 41\$-64R-53U-51T-62P-32K-51-42E-21X-63R-61R-42Z-22

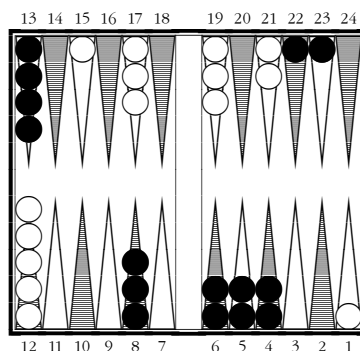
In position #92 (above), Black rolls 22. How do we nactate his four best moves?

For 92.1 (24/22 **13/11(2)** 6/4) and 92.2 (24/22 **7/5 7/5** 6/4), respectively, we have **1201** and **1021**. For both codes, the 101 part (zero is Flanked) gives us FGM**Y**. For 92.1, the **2** is second; hence **G**. For 92.2, the **2** is third; hence **M**.

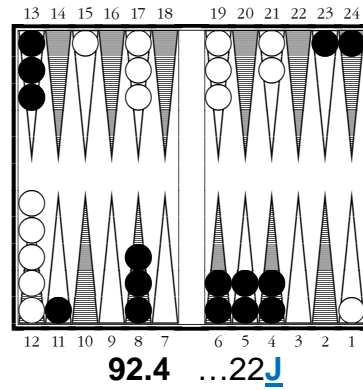
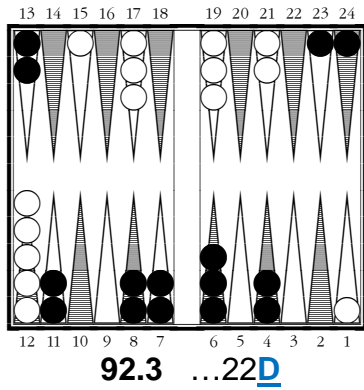
For 92.3 (**13/11(2)** 8/6 6/4) and 92.4 (**13/11 7/5(2)** 6/4), we have respective codes of **0211** and **0121**. For both, the 011 (zero is fi**R**st) gives us the RDJI sequence. For 92.3, the **2** is second; hence **D**. For 92.4, the **2** is third; hence **J**.



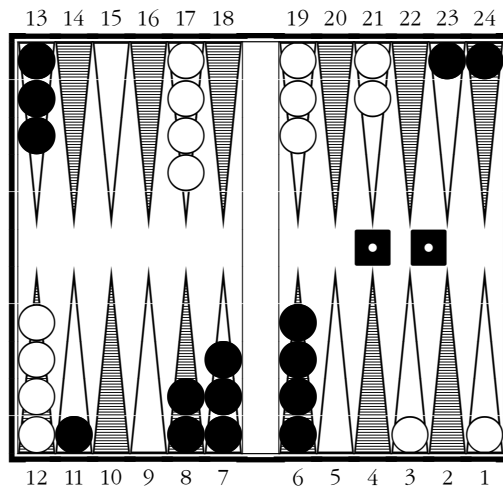
92.1 ...22**G**



92.2 ...22**M**



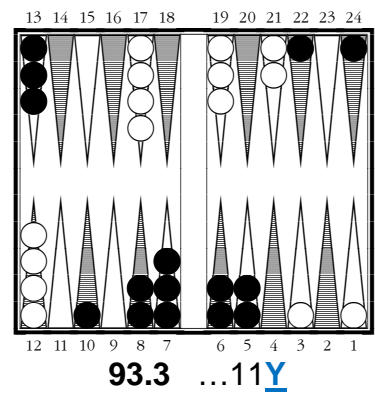
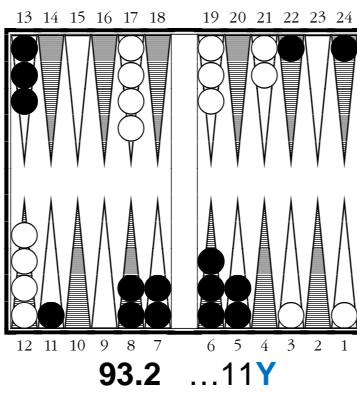
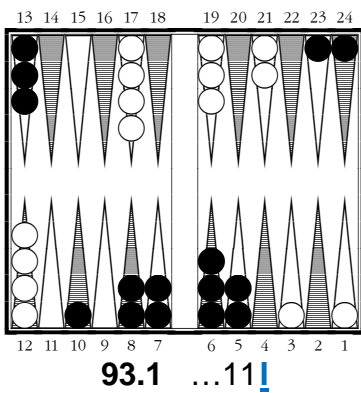
Here is the final batch of moves:



#93 61P-62R-43Z-52H-21H-52E-52B-65s-63H-21U-11

In position #93 (above), Black rolls 11. How do we nactate his three best moves?

For 93.1 (11/10 7/6 6/5(2)), 93.2 (23/22 7/6 6/5(2)), and 93.3 (23/22 11/10 6/5(2)), the respective codes are 0112 (zero is first), 1012 (Flanked) and 1102 (Final), which yield respective sequences of RDJI, FGM \underline{Y} and FGM \underline{Y} . In each case, the 2 is in fourth position, corresponding to the fourth letter. That is, 93.1 is \underline{I} , 93.2 is \underline{Y} , and 93.3 is \underline{Y} .



Doublet moves with 2:1:1 ratios are the most difficult of all moves to nactate. Once you can handle these with confidence, you will be a true master of Nactation.

For reference, here again is the complete table of doublets:

Table of Doublets

Letter	Run	Down	Jump	Inside
B	2	2		
S	3	1		
Z	1	3		
E	2			2
<u>E</u>	3			1
E.	1			3
A			2	2
<u>A</u>			3	1
A.			1	3
C	2		2	
<u>C</u>	3		1	
C.	1		3	
O		2	2	
<u>O</u>		3	1	
O.		1	3	
N		2		2
<u>N</u>		3		1
N.		1		3

Letter	RUn	Down	Jump	Inside
Q	1	1	1	1
R*	4			
D		4		
J			4	
I				4

<u>R</u>*	2	0	1	1
<u>D</u>	0	2	1	1
<u>J</u>	0	1	2	1
<u>I</u>	0	1	1	2
F	2	1	0	1
G	1	2	0	1
M	1	0	2	1
Y	1	0	1	2
<u>F</u>	2	1	1	0
<u>G</u>	1	2	1	0
<u>M</u>	1	1	2	0
<u>Y</u>	1	1	0	2

* R row: If all portions are played to the 18pt or higher, use the U family.

* R row: If both far-side portions are played to the 18pt or higher, use the U family.

Section 17: Rollouts

I gratefully acknowledge Ken Bame and Mike Mannon for their tireless assistance in generating rollouts for this tutorial.

Diagrams for all positions in this tutorial, and the move sequences that reach them, are reproduced below. Beneath each one, rollout result(s) are represented by “nacbracs” (Nactation brackets). Within the brackets, the best moves (in bold red typeface) are listed in descending order of strength. After each individual move (except the first one), the error size is expressed in thousandths of a point (e.g., “12” means .012).

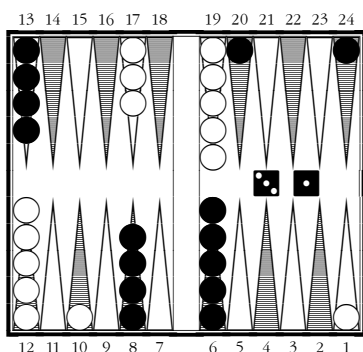
After the brackets, the blue typeface conveys some bot-related information along with the number of trials in thousands rounded down—e.g., 20736 trials is expressed as “20.”

For example, the #1 position (of the tutorial) is 54S-63R-31. The nacbracs [**P @87 H94 X101**] " ≤ 5 " means: the best move is P (Point); the second, third and fourth best moves are @ (anchor), H (Hit) and X (hit and split), respectively, which have relative equities of $-.087$, $-.094$ and $-.101$. Each of the moves is rolled out 5000+ times (5184, actually).

The above synopsis provides what you need to know (and then some) to glean the important information about the positions: the order and relative strengths of the moves. If you would like to read about nacbracs in greater detail, I recommend these posts:

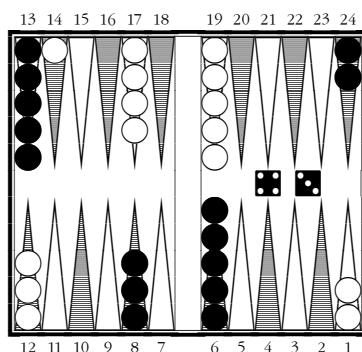
http://www.bgonline.org/forums/webbbs_config.pl?noframes;read=111254

http://www.bgonline.org/forums/webbbs_config.pl?read=147386



#1 54S-63R-31

[**P @87 H94 X101**] " ≤ 5 "

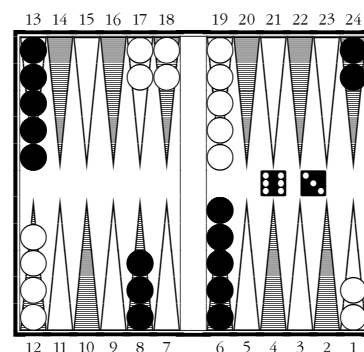


#2 White's opening 52

[**S D12 \$45**] "+28*5"

52D-43 [**D Z31 S59 \$85 U97**]

"<31*5"



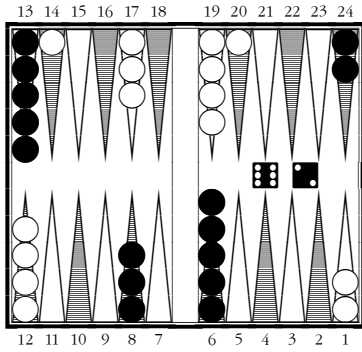
#3 White's opening 61

[**P U227 S228 N248**]

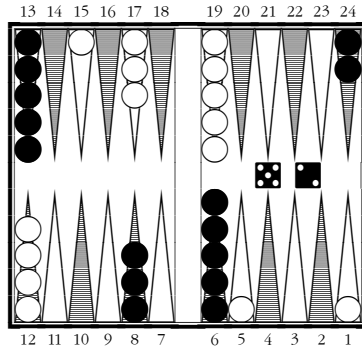
T273 B297] '^62"

61P-63 [**R Z48 D105 \$107**]

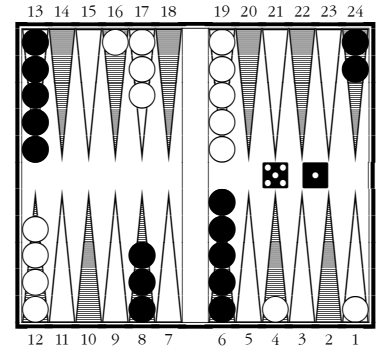
"<=5"



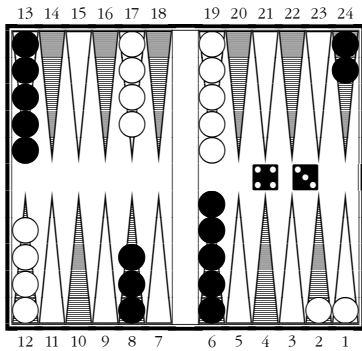
#4 White's opening 21
 [\$ S8] "+46,
 [\$ S8 U48 D51 V64] ~80*5
 21\$-62 [S Z10 &13 \$21
 D26 R28 U43] '<46**31



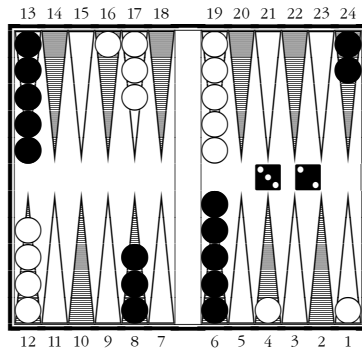
#5 White's opening 43
 [D Z3 S10 U23] "+46*12 7
 43S-52 [S X42 \$66] "<=5



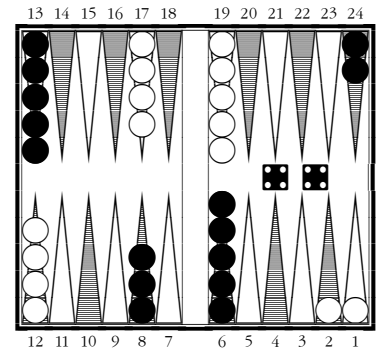
#6 White's opening 43
 [D Z3 S10 U23] "+46*12 7
 43Z-51 [S X21 U33 \$45
 D76] '<62*31 5



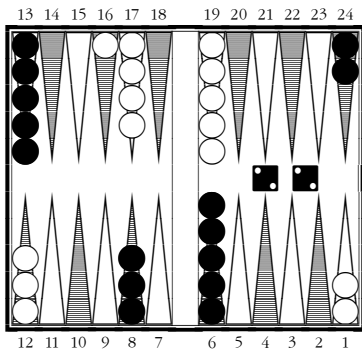
#7 51S-43
 [U D2 S5 Z9 X12] "^46**31 20,
 [U...N43 T65] "<=5



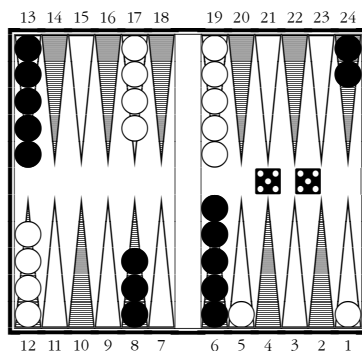
#8 43Z-32
 [H X8] '^46,
 [H X4 K46] '<62*15
 43Z-62 [H h314 X331 S348] "<=5



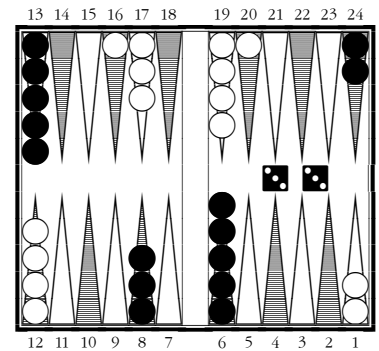
#9 51S-44
 [B A23 E58 N83] '<31*10
 g[A P70 N76 B109] "<=5



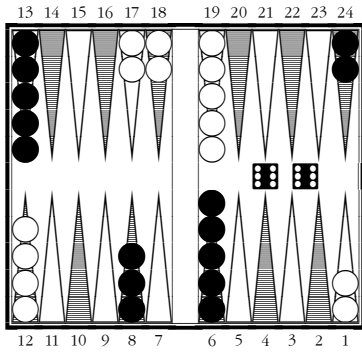
#10 54D-22
 [E N34 H96] '<15*5



#11 54S-55
 [A N43 P59 J102] '<5
 54S-33
 [A C174 O175] "<=5

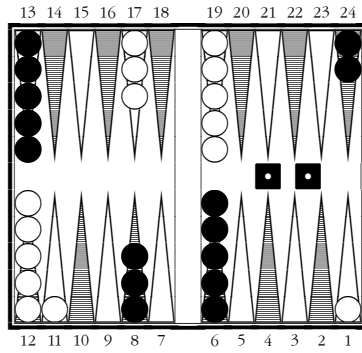


#12 41\$-33
 [C E4 B25] '^46*5,
 [C...A60 U88] '<5



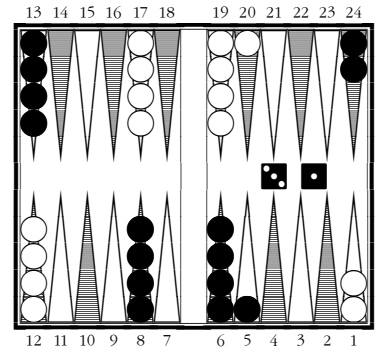
#13 61P-66

[O Q42 D45] '^15



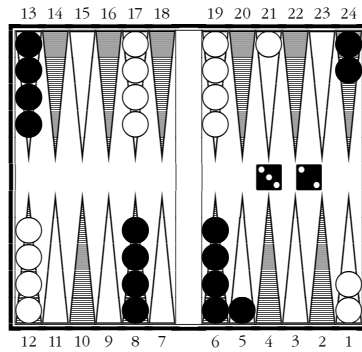
#14 64R-11

[N E50 E.75 Y81 P100 e101]
'<10**5



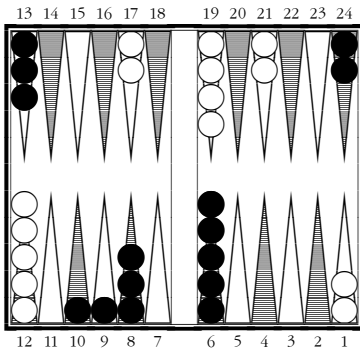
#15 51\$-51\$-31

[E N3 A16 C28 H72]
'<62***5



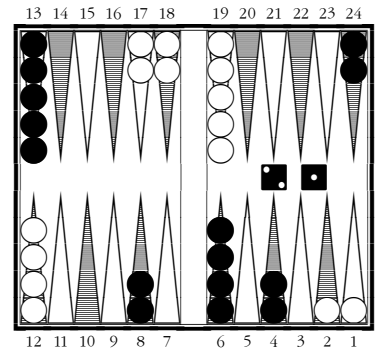
#16 51\$-52\$-32

[O C2 A13 H70 U101]
'<62**5



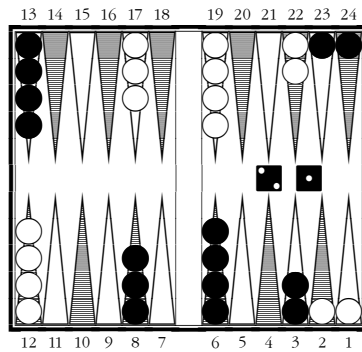
#17 43D-42P-21

[B P23 d79 092 N93] '<31*5*
43D-42P-61 [B P4] '<62



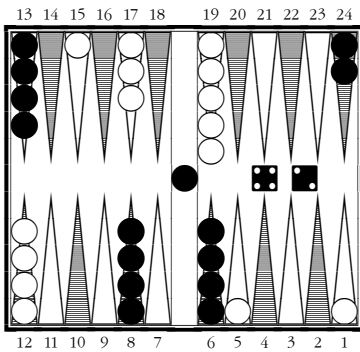
#18 41S-42P-21P-21

[U V2 S11 D38 e60]
'<=62*31 5



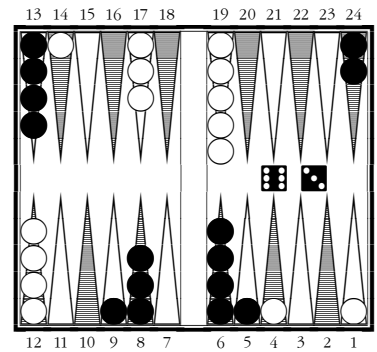
#19 51S-51S-53P-53P-21

[U V6 S25 D51]
'<=62*15 5



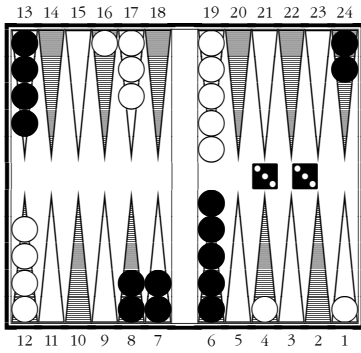
#20 51\$-43S-42

[U V13 Z28 S50 c50]
'<62**15



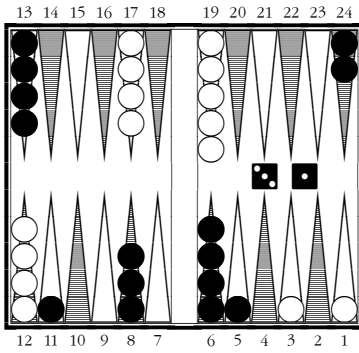
#21 41\$-32S-63

[J C14 O46] '<62



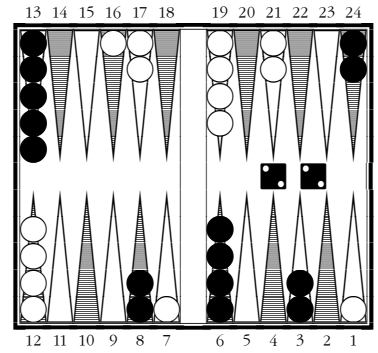
#22 61P-43Z-33

[J A17] '<20



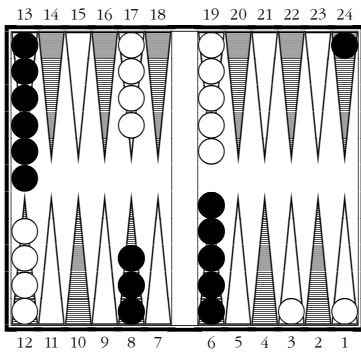
#23 21\$-52S-31

[IN19 E19 A42 C71 n84 O98]
'<62***5



#24 42P-53P-64S-22

[I @25 H27] '"<=15



#25 65R-52S-43

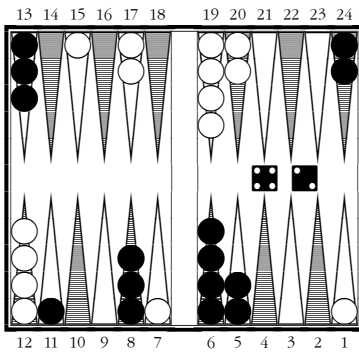
[T H29 S61 X74] '<31*15

65R-52S-41

[T h150 S160 H167] '"<=5

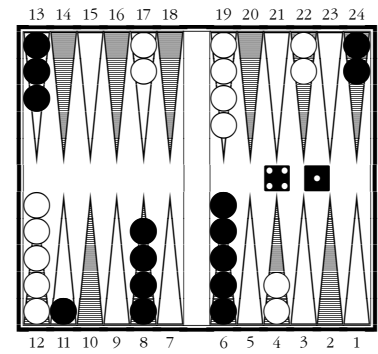
65R-52S-32 [T S21 K28

D63 H64 Z90 X106] '<31**5



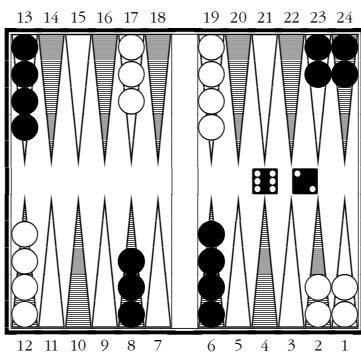
#26 52D-63S-31P-31P-42

[L X18 H108] '"<=31*5



#27 65R-53P-52D-64H-
-21H-43@-41

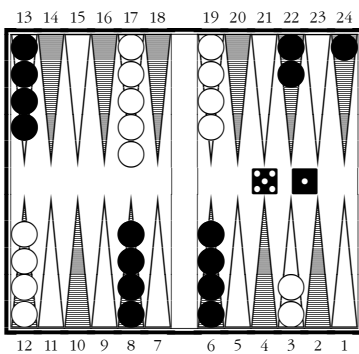
[W P18 U33 B67] '"<=20*5



#28 N 62

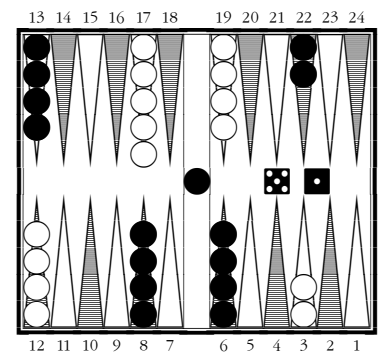
[S Q1 R2 r11 V26 C64]

'<103**20 10



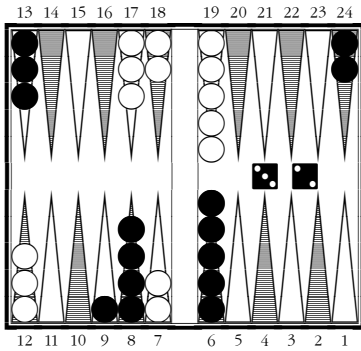
#29 51S-41K-1-52V-21H-43H-
-63R-65H-31@-51T-51

[\$ %1 U7 S30 269 R82 s93]
62**10



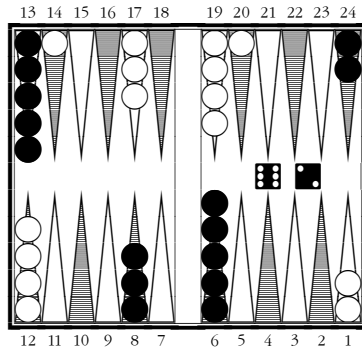
#30 52S-32X-21H-42@-62X-
-54R-32@-52H-F-51T-51

[\$ %10 S19 U63] '"<=62*20 5



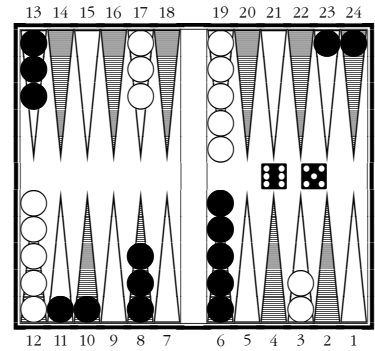
#31 54D-66B-32

[&=E W6 U30 e39 c56 C68]
"≤62**15 5



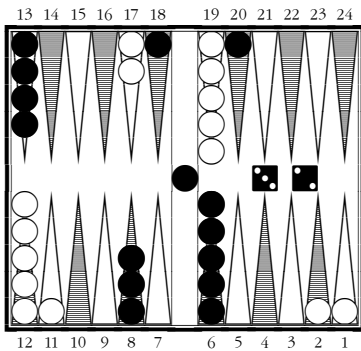
#32 21\$-62 (same as #4)

[S Z10 &13 \$21 D26 R28 U43]
'<46**31



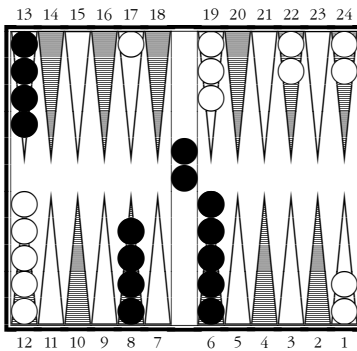
#33 21S-63R-21H-32@-65

[@ P23]'<62



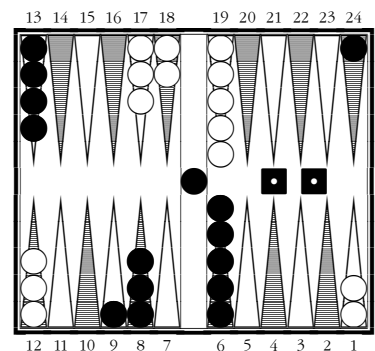
#34 62S-41X-65H-62H-32

[@ #10 H46]'<62*15



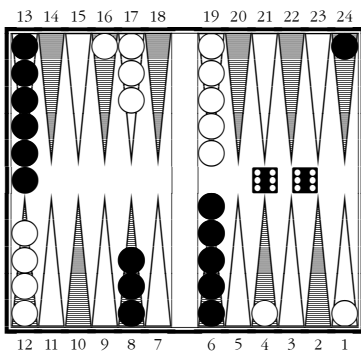
#35 52S-55A-??

(31^, 21< and 42> are forced
fanning or entering moves)



#36 64S-33D-11

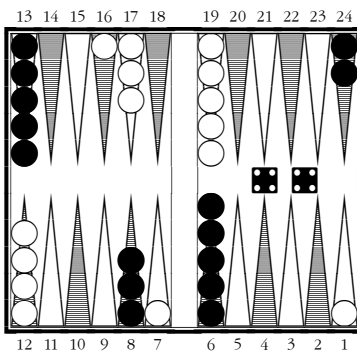
[E. E14 Y50 y54]'<41*5
or [I U14 \$50 L54]'<41*5
by assumption



#37 65R-43Z-66

[D Z23 P26]'<31,
or [D U23 P26] by assumption

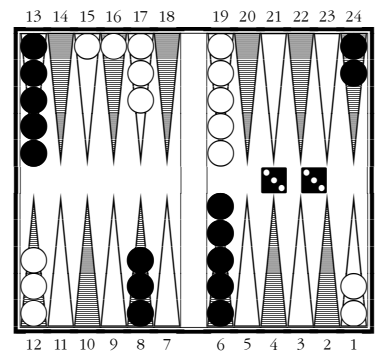
d[Z D7]'<62
s[Z D4]'<62
g[P D38]'<5



#38 64S-44

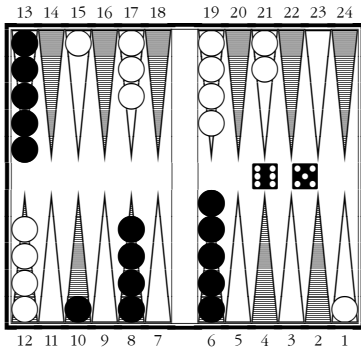
[R B19]^'25
or [R D19] by assumption

g[B E30 R57 C58]"≤5,
or g[D 230 R57 458]"≤5
by assumption

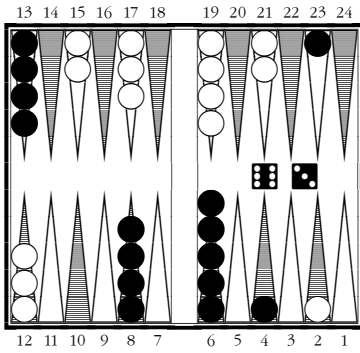


#39 43D-33

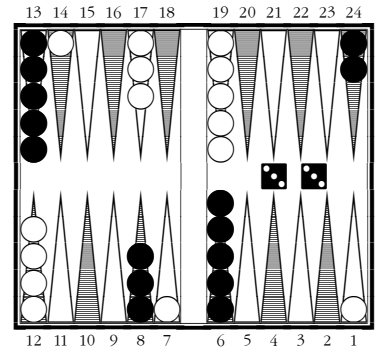
[C E19 R28 B29
H33 A53]'<62****10
or [...U28 B29 D33...] assumption
d[C B2 E4 R7 H10 A21]^'62*15
s[E C3 B7]'<31
g[A C7 H43 E47 R63]'<31*5



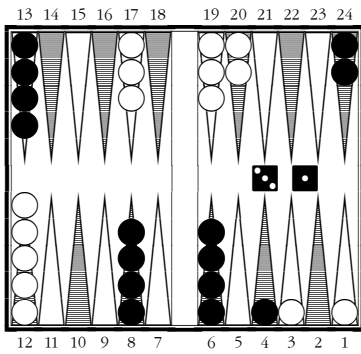
#40 65R-65R-65R-43D-
-53D-52P-65
[**\$ H2 D36 \$64**] " ≤ 44
or [**4 1-2 D36 264**] " ≤ 44
by assumption



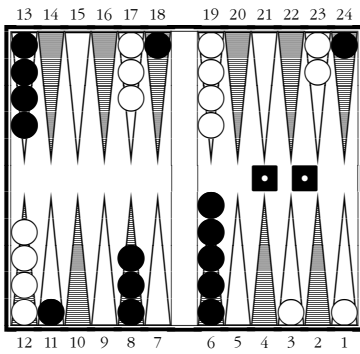
#41 65R-65R-65R-43D-53D-
-52P-654-21H-42H-32P-63
[**P R11**] " ≤ 62
or [**4 411**] " ≤ 62



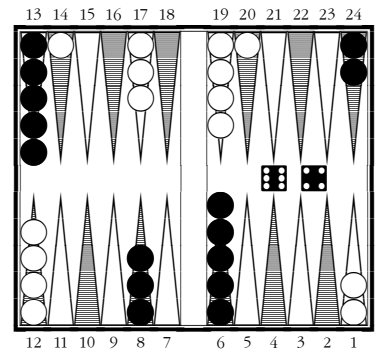
#42 62S-33
[**D O17 N28 B95 E101**] " $\leq 62^{**}5$
or [**7 517 328...**] by assumption



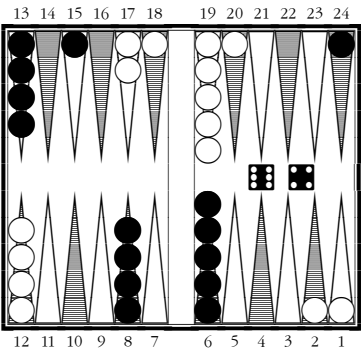
#43 65R-54S-62H-32H-
-41H-21H-31E-31
[**I a8 A60**] " $\leq 62^{*}10$
or [**3 4-8 560**] " $\leq 62^{*}10$



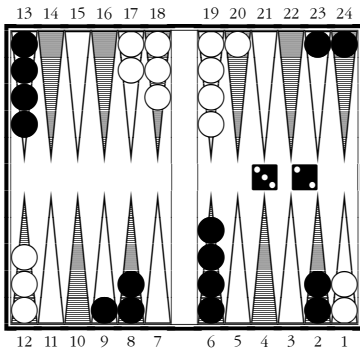
#44 64P-62S-52S-11
[**P O.4 n56 p62 N114**] " $\leq 62^{*}31 5$
or [**6 0-4 956 462...**] " $\leq 62^{*}31 5$
by assumption



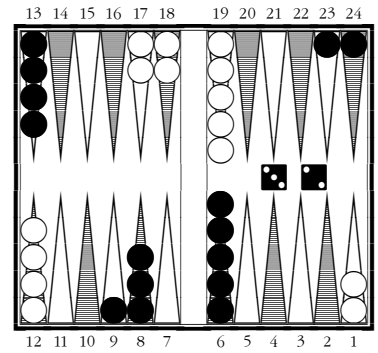
#45 21\$-64
[**R Z304 U311 r327**] " ≤ 5



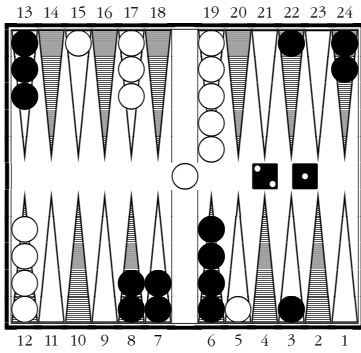
#46 54S-43X-64R-64H-
-64H-62D-64
[**R Z7 S14 K29 r37 k46 s74**]
" $\leq 62^{**}10 5$
(similar to #52)



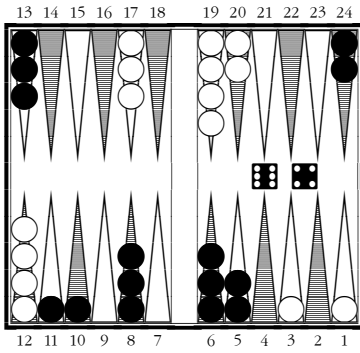
#47 41S-61P-64P-61\$-32
[**U S51 B113 V154**]
 $\leq 62^{*}5$



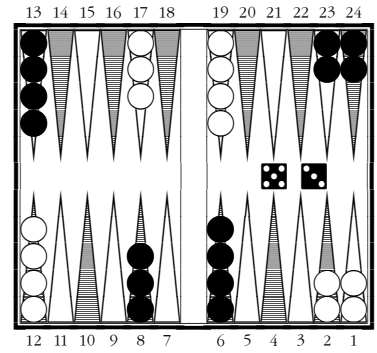
#48 41S-61P-32
[**U V232 s241 z261 8264
Z271 S287**] " ≤ 5



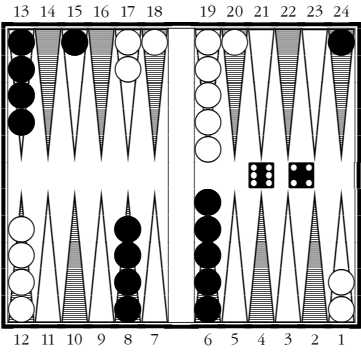
#49 63S-51H-62H-31H-F-
-51P-41V-21K-5-21
[P p6] "<=62



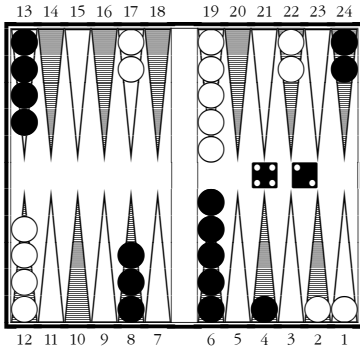
#50 21\$-51\$-31N-32C-64
[P p1] "<=62



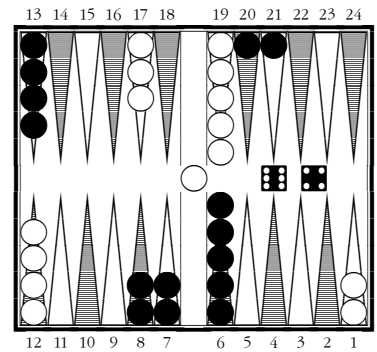
#51 N 53
[Z P12 z15 R41 Q41 r49
S58 U62] '<62**31**15



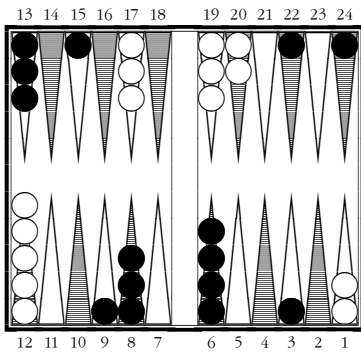
#52 54S-43X-64R-64H-
-64H-61D-64
[Z R2 S5 r36 s72 z137]
"<=62**5
(similar to #46)



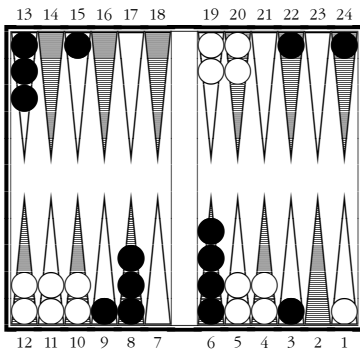
#53 63R-41S-51D-61H-43H-
-64H-51H-52P-42
[E N6 A51 P85 I86 O88]
"<=62*5



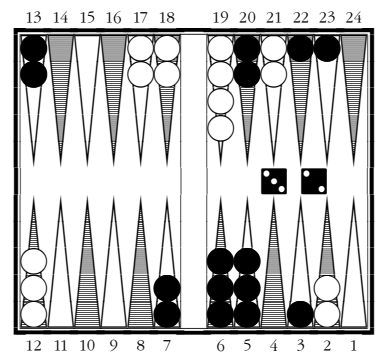
#54 32S-63H-53H-61U-
-41P-F-64
[S s1 R7 Z24 S46 s50]
"<=62**15 5



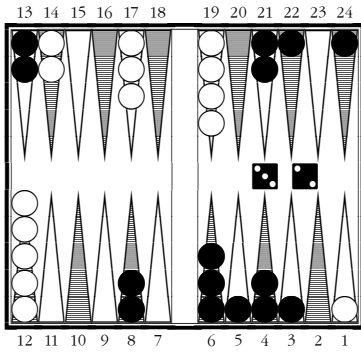
#55 63S-62X-63H-64H-55S-
-64H-63R-43K-11E-
-51 [D C13 A15 c49 C76]
"<=31**5
-42 [D a17 Z37 z42] "<=20*5



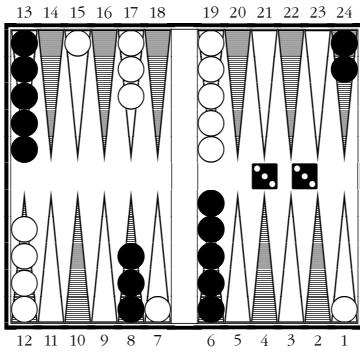
#56 ...-51 [Z O168 c198
C216 C220] "<=5
...-42 [zN120 Z144 O161]
"<=5



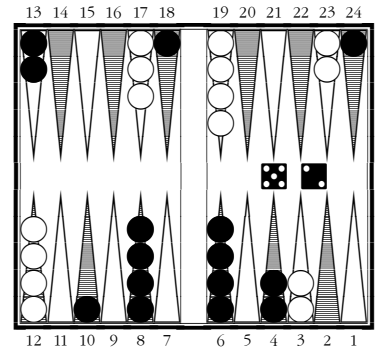
#57 62S-61P-54@-11@-31P-
-61T-61N-31H-21H-61H-
-21H-54R-62K-F-61Z-22E-32
[E e19] "<20



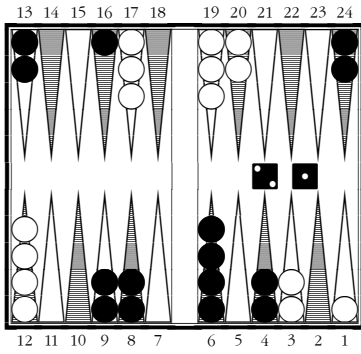
#58 43Z-43X-32H-42H-65R-
 -55B-41-65R-22N-21U-51x-
 -63R-22B-41U-55B-62@-
 -43W-32r-42B-31H-61H-61D-32
 [A C38 E49 J57 c77 a89 E110
 e124 I144 e148...E327 E352] "<5



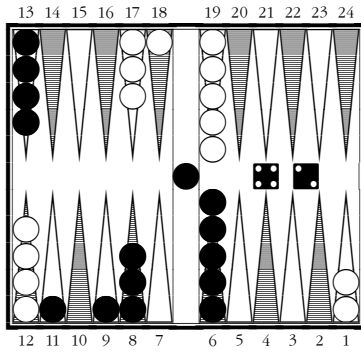
#59 63S-33
 [D O34 N51 R80 B87 H89]
 '<31**5



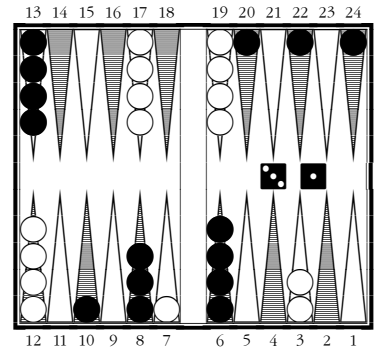
#60 64P-54D-52S-52P-
 -43R-63X-32@-52
 [B C27 E28 R32 S48] '<31



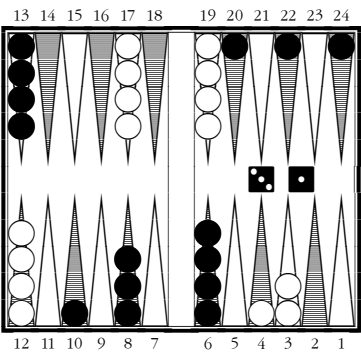
#61 43Z-43X-44M-32-
 -54N-11E-51R-51S-21
 [R U9 V19 r32 R39]
 "<=62*20 10 5



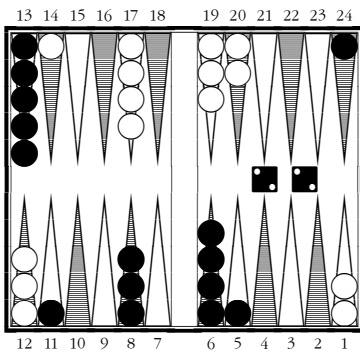
#62 64R-62X-F-52P-
 -63R-62X-61H-42
 [B Z22 S85] "<=15*5



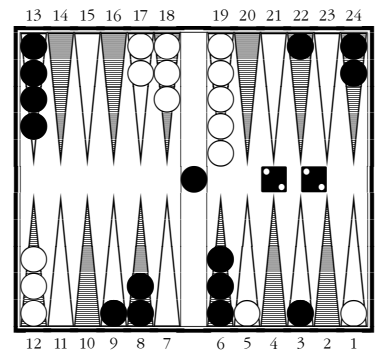
#63 51S-41K-1-52V-
 -31H-53S-63U-31
 [P H100 p107...@188...#272]
 "<=5



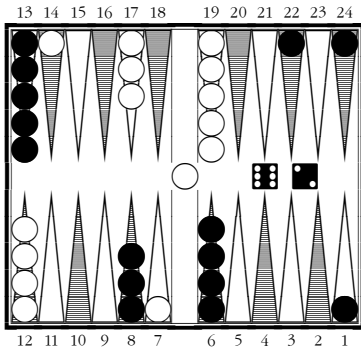
#64 51S-41K-1-52V-
 -31H-53S-42@-31
 [P p54 S56 @65 s65
 \$160 #163] "<=5



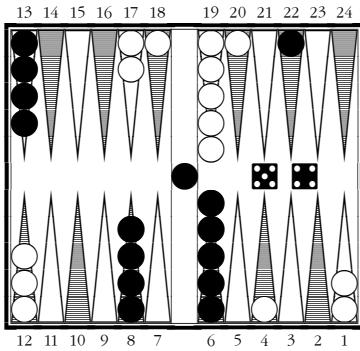
#65 65R-21\$-21\$-51N-22
 [P G20 N87...p310
 ...p434...P523] "<=20*5
 or [...D310...A434...I523]...



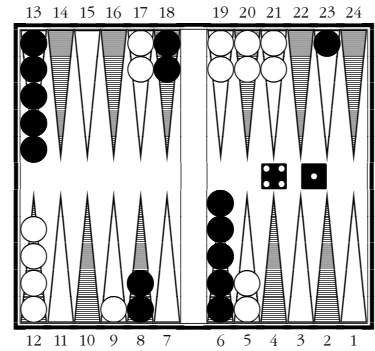
#66 61P-63R-64Z-41H-
 -43H-61H-32H-31H-
 -63R-54K-51-22
 [P p4 F70 B85...P191] "<=62*5



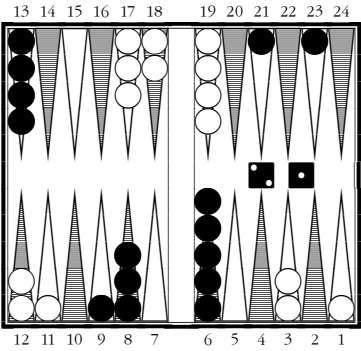
#67 62S-52X-F-62
 [H x29 h59 X70] '<62*15



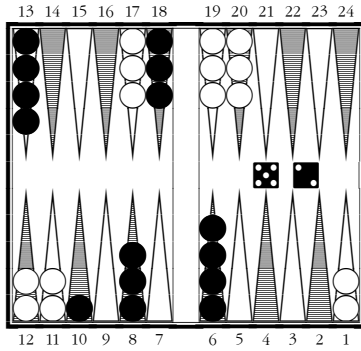
#68 54S-63H-63H-64H-54
 [K k23] '<31
 54S-63H-63H-64H-52
 [k K12 @57] '<62*5



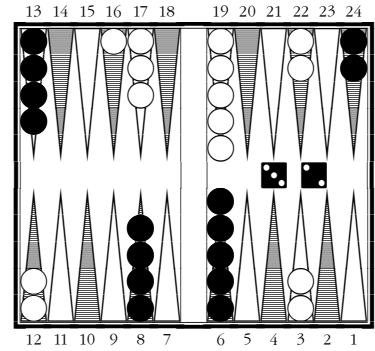
#69 43Z-43X-42K-4-
 -53H-5-42e-61U-
 -31P-62@-61R-41
 [L 119 X105] '<31*5



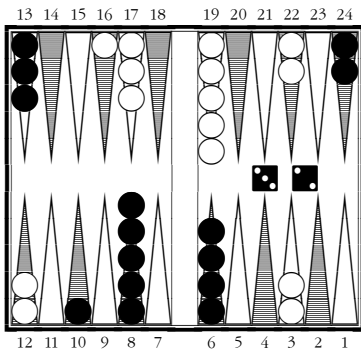
#70 64R-64S-33D-64R-
 -21H-64H-63H-64H-
 -21H-32H-32@-21
 [L 11 P34 x50 H81 X88]
 or L B1...or d B1... '<62*5



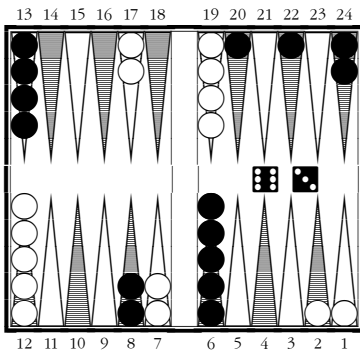
#71 21\$-62S-61N-61H-61H-
 -61H-52V-21K-3-64@-
 -63C-65S-62H-61U-62P-52
 [T t1 T24 t62] "<62*15 5
 or [D B1 O24 C62] "<62*15 5



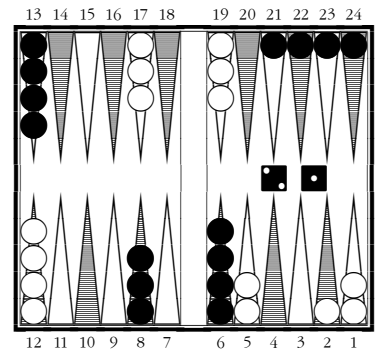
#72 64R-52D-62U-54K-32-
 -61U-55P-41R-41S-32
 [\$ %4 &21 D21] "<62*15



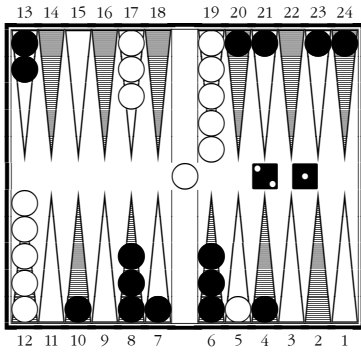
#73 32Z-41T-55P-65R-
 -43R-21H-31B-32K-
 -1-51D-32@-32
 [\$ T28 %48 &76 J84 D117
 o117 D118 \$118] "<10*5



#74 63R-21H-63U-41K-51-
 -54K-31-53-51K-5-
 -61U-21H-42@-63
 [R R10 r10 r14 U17 S52]
 '<62**41



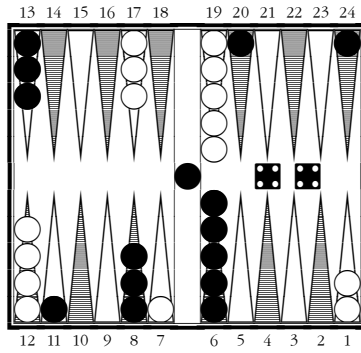
#75 N 41Q-21K-43-53@-21
 [U u56 V67 u68 V75
 v82 v112 U116] "<=5



#76 21S-64H-42H-64R-31P-
-64U-32K-4-52H-5-21

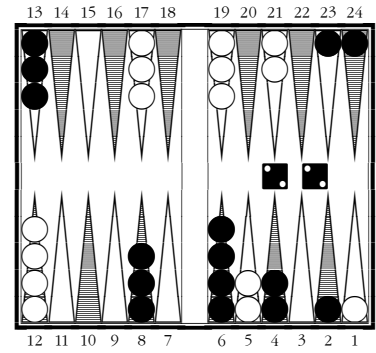
[P p32...p316...P520 P533
...p601 P633 p673] "<=5

or A316 @520 D533 #601 v633 0673



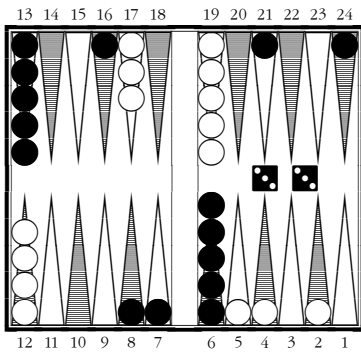
#77 54S-62H-41H-61U-
-21H-61H-44

[B E8 Y23 M38 f44 C75]
"<=62*15 12 5



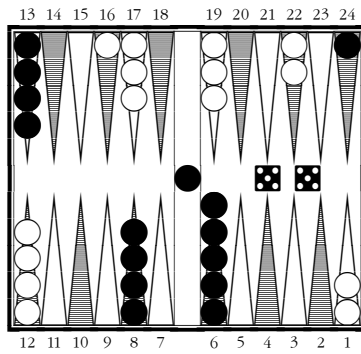
#78 21S-53S-52H-62H-
-62K-51-43P-22E-22

[E Y19 A.41 E.50] "<="20*5



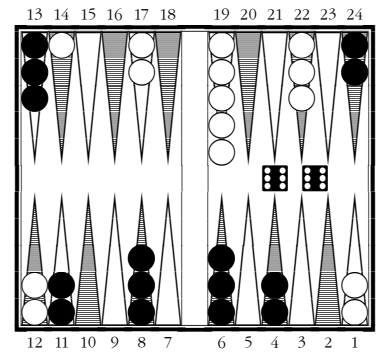
#79 64S-31X-62H-21H-
-F-43H-54-33

[A A.23 M59 O68 J68
d81 D84 P91] "<=15*5



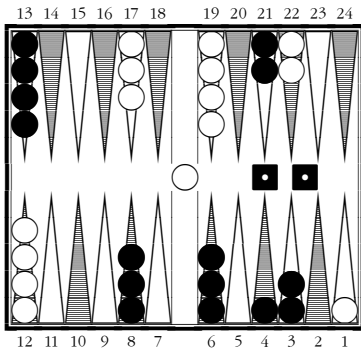
#80 52S-43H-F-21p-55

[C M8 B18 \$57] "<=62*31 5



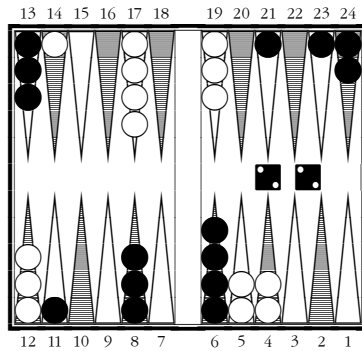
#81 52D-22N-55o.-66

[O C1 B30] "<=62*10



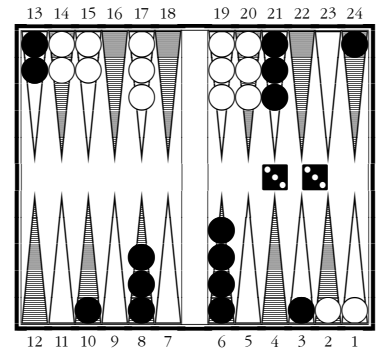
#82 53P-53P-53S-53S-
-32X-F-11

[N p4 E23] "<=62*15



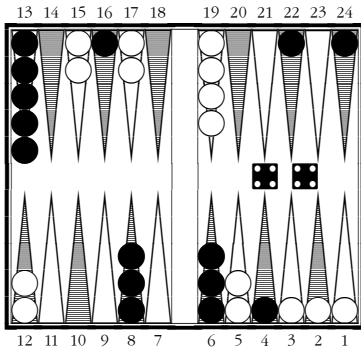
#83 52D-21\$-43U-64H-52K-4-
-42H-41-62R-21x-53@-22

[Z S4 s5 z12 @23 F60 S70 s79]
"<=62***15 5

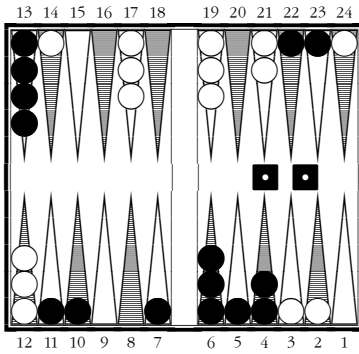


#84 32D-63H-32H-42H-
-11E-61U-62O-42@-
-42S-53H-42H-F-64S-
-43S-51U-64K-21-33

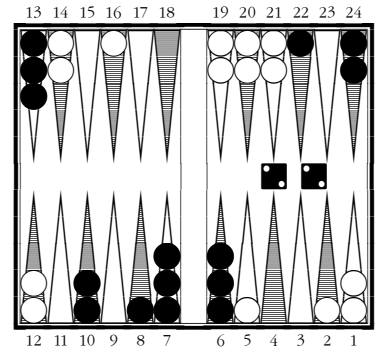
[A E2 N6] "<=62



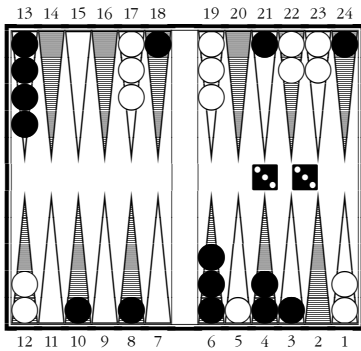
#85 21\$-31H-32P-32R-31P-
-63R-32X-32H-54K-43-
-52@-52K-32-44
[C Q1 g18 G20 B36 D75]
"≤62*20*5



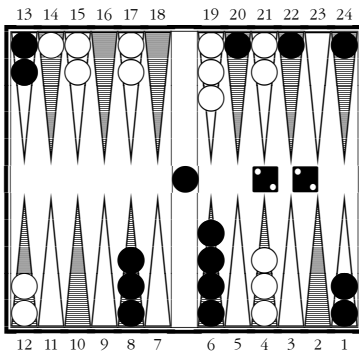
#86 51S-41K-31-F-65S-F-
-51S-43@-54R-55P-61U-
-31H-61H-52E-41K-32-
-42P-41O-65H-62K-32-11
[N. E.11 A.15 n.44] "≤31**5



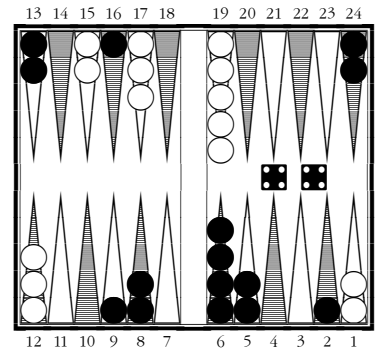
#87 32S-21X-41U-51H-53K-
-54-51H-54@-F-55B-
-21P-43R-64X-11Z-44C-
-51H-31H-53H-11E-22
[O. C.3 M36 Y100] "≤62*5



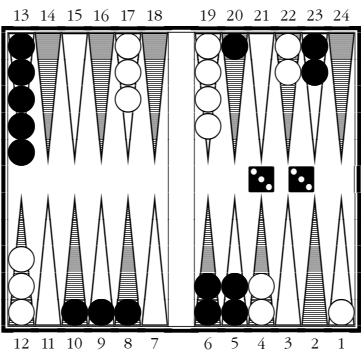
#88 41\$-54S-32H-44E-53-55m-
-51-53R-55P-64D-42H-61H-
-64H-F-64P-53-21K-51-33
[Q q2 R89] "≤62*5



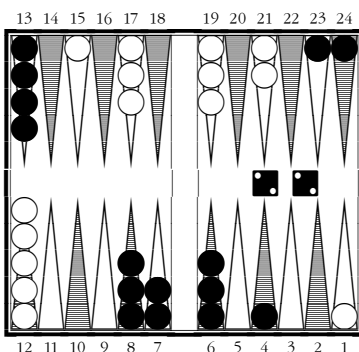
#89 41S-63S-66P-43-62K-43-
-53-32K-43-22E-65R-64H-
-53@-31Z-42H-42H-22
[R U5 V11 B68] "≤62*31 5



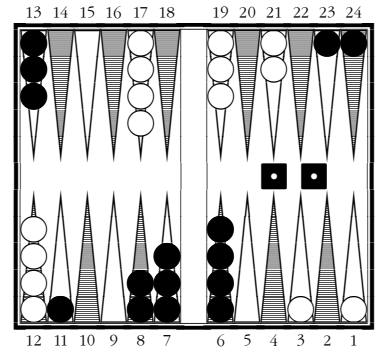
#90 54D-62H-41H-63H-52V-
-32K-43-63@-65@-63P-52H-
-62U-51K-1-31P-51D-44
[R=U F1 f54 E79 c80 C95]
"≤67**5



#91 52S-32X-55M-51-53Z-
-51H-65r-32H-41H-51V-659-
-64Z-F-65H-5-31P-22@-33
[G M7 F7 f24 g26 Z58 B65]
"≤62**15*5



#92 41\$-64R-53U-51T-
-62P-32K-51-42E-
-21X-63R-61R-42Z-22
[G=J M2 D10 A52 Q61]
"≤62***5



#93 61P-62R-43Z-52H-
-21H-52E-52B-65s-
-63H-21U-11
[Y I1 Y5 A.31 E37 y61 y78]
"≤62**5

Section 18: Indexes

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In the table below, the left-hand column lists the section titles (numerically). The middle column displays the beginning and ending (feature) diagram numbers for each section.

The right-hand column provides a character family when it is defined in *that* section for the first time. (Asterisks: * means non-doublets only; ** means doublets only.)

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\$	Slot	#4, 29.1, 32x, 36.3, 72.1, 73.1
%	alternate slot	29.2, 72.2, 73.2
&	double slot	31.1, #32
@	anchor	33.1, 34.1, 63.3, 64.3, 66.2
#	alternate anchor	34.2, 63.4, 64.4
^	fan	35x
<	enter one checker	35y
>	enter both/all checkers	35z
0	0pt, 10pt or 20pt	44.2
1	1pt, 11pt or 21pt	40.2
2	2pt, 12pt or 22pt	40.3
3	3pt, 13pt or 23pt	42.3, 43.1
4	4pt, 14pt or 24pt	40.1, 41.1, 43.2, 44.4
5	5pt or 15pt	42.2, 43.3
6	6pt or 16pt	44.1
7	7pt or 17pt	42.1
8	8pt or 18pt	
9	9pt or 19pt	44.3

In the darkly shaded column to the left of the text area of this document, click on the top icon. “Page thumbnails” provides you with an easy way to instantly jump to any page (though this tutorial is not actually cross-referenced by page number).

Now click on the second icon (“Bookmarks”), which displays three sub-icons. Click on + to expand, – to diminish. “Part 1” and “Part 2” let you navigate by section number, and “Nactations” by character segment. (To adjust the width of the column, drag the border or click on the right arrow at the top; and to restore, use the left arrow.)