# APX

## ATARI® PROGRAM EXCHANGE

W.H. Northrup

# BLACKJACK TUTOR, Rev.1.1

A tutorial to improve playing and betting strategy

Cassette: 16K (APX-10057)          Diskette: 24K (APX-20057)

## User-Written Software for ATARI Home Computers

W.H. Northrup

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A tutorial to improve playing and betting strategy

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by

W.H. Northrup

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# BLACKJACK STRATEGY TABLES

# INTRODUCTION

## OVERVIEW

BLACKJACK TUTOR is both a teacher and an entertainer. By using this program, you can improve your betting and playing strategy for this popular card game played in casinos throughout the world. The training is divided into two stages. In the first stage, you learn basic blackjack strategy, by which you can maintain about even odds over the dealer (the dealer will retain about a .2 percent advantage). In the second stage, you practice the tens count strategy, by which you can gain as much as a ten percent advantage over the dealer during some portions of game play, depending on the ratio of tens to non-tens left in the deck.

Both the program and the user manual assume you're already familiar with blackjack. BLACKJACK TUTOR is based on the mathematical probabilities of blackjack. You can choose the number of decks to play with and the level at which the dealer reshuffles the cards. You can bet as high as $1000 a hand. You can also play with or without insurance. As the dealer, the computer follows a set of casino rules. You have the options of staying, hitting, doubling, splitting, surrendering, and asking for insurance. When you play against the computer, you can request betting and playing strategy prompts at any time and you can specify whether you want message displays when you take an incorrect action. You can also study the computer playing a tens count strategy game of blackjack against the dealer, with instructive data displays.

## REQUIRED ACCESSORIES

    For cassette version
        16K RAM
        ATARI 410 Program Recorder
    For diskette version
        24K RAM
        ATARI 810 Disk Drive
    ATARI BASIC Language Cartridge

## CONTACTING THE AUTHOR

    Users wishing to contact the author about BLACKJACK TUTOR may write to him at:

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GETTING STARTED

1. Insert the ATARI BASIC Language Cartridge in the (Left Cartridge) slot of your computer.

2. If you have the cassette version of BLACKJACK TUTOR:

    a. Turn on your TV set.

    b. Turn on your computer and connect your program recorder to the computer and to a wall outlet.

    c. Slide the BLACKJACK TUTOR cassette in the program recorder's cassette holder and press REWIND on the recorder until the tape rewinds completely. Then press PLAY.

    d. Type CLOAD on your computer and then press the RETURN key two times. The tape will load into computer memory.

    e. After the tape finishes loading, the word READY will display on your TV screen. Type RUN and press the RETURN key. After a short delay the first display screen of BLACKJACK TUTOR, as described later, will appear on your TV screen.

If you have the diskette version of the game:

    a. Turn on your disk drive.

    b. When the BUSY light goes out, open the disk drive door and insert the BLACKJACK TUTOR diskette with the label in the lower right-hand corner nearest to you.

    c. Turn on your computer and TV set.

    d. When the READY prompt displays on your TV screen, type RUN "D:BJ" and press the RETURN key. If you're using more than one disk drive, remember to follow the device initial (D) with the number of the drive containing the BLACKJACK TUTOR diskette (e.g., RUN "D2:BJ" for disk drive two). The program will load into computer memory and start.

## THE FIRST DISPLAY SCREEN

The first display screen looks as follows.

```
 _____
|                                                                   |
|  D                                                                |
|  L                                                                |
|  R                                                                |
|                                                                   |
|                                                                   |
|  Y                                                                |
|  O                                                                |
|  U                                                                |
|                                                                   |
|                                                                   |
|        HOW MANY DECKS: _                                          |
|                                                                   |
|   BET:        CASH $        GAMES:                               |
|                                                                   |
 -------------------------------------------------------------------
```

The first game option, NUMBER OF DECKS, displays below the card area. After you choose
your game options and place your bet (described in the next section), BLACKJACK TUTOR
will deal cards to you and to the dealer. The cards display next to the areas marked DLR
and YOU and the game is underway.

# PLAYING BLACKJACK TUTOR

## OBJECTIVE

The object of blackjack is to obtain a card total less than 22 but greater than the total of the dealer. In BLACKJACK TUTOR, the computer is the dealer, who deals two cards to himself and two cards to you. One of the dealer's cards is face up and one is face down. Your cards may be dealt in the same way, or both cards can be face up (you'll see why it doesn't matter in a minute). The dealer acts according to a predetermined set of casino rules in taking an action (these are listed later). Therefore, it's the player who practices all the strategy in blackjack; the dealer's main advantage is that you draw first and he wins when you exceed 21, regardless of his total. With two cards dealt, you then decide which action to take. Following your action, the dealer then takes his action according to his set of rules. Depending on the circumstances, the round can end at this point or it can continue with more cards being dealt to you and/or the dealer according to the actions taken.

## SCREEN DISPLAY

Information on the display screen is arranged as follows.

```
-------------------------------------------------------------
|                                                           |
| D    DEALER'S CARDS APPEAR                                 |
| L            ACROSS                                        |
| R          THIS AREA                                       |
|                                                           |
|     PLAYING DECISIONS              RESULTS APPEAR HERE     |
|     (SPLIT, DOUBLE SURRENDER)      (WIN, LOST, BLACKJACK, ETC.) |
|                                                           |
| Y   YOUR CARDS APPEAR              SECOND HAND OF SPLIT    |
| O        ACROSS                                           |
| U      THIS AREA                   APPEARS HERE            |
|                                                           |
|                                                           |
|     ALL PROMPTS APPEAR HERE (E.G., NUMBER OF DECKS,        |
|     TYPE OF GAME, DISPLAYS DESIRED, AMOUNT TO BET,         |
|     PLAYING DECISIONS)                                     |
|                                                           |
|     PERCENTAGE OF WINNINGS OR COUNTING INFORMATION         |
|     IS DISPLAYED ON THIS LINE                              |
|                                                           |
|     BET AMOUNT, AMOUNT OF WINNINGS OR LOSSES AND           |
|     NUMBER OF GAMES PLAYED APPEARS HERE                    |
|                                                           |
-------------------------------------------------------------
```

The program displays prompts for you to type in the number of decks, the kind of

strategy, and the kind of information display you prefer. These game options are explained below.


## CARD VALUES

The cards have these values:

### ACE
An ace can be worth either 1 or 11. An ace counted as an 11 makes the total a "soft total"; an ace counted as a 1 makes the total a "hard total".

### 10 through KING
The 10, jack, queen, and king each count as 10.

### All others
All other cards are worth their face value.


## CHOOSING GAME OPTIONS

Before playing your first hand (and at other times, as described under the different options), you must decide on a number of game options. Unless noted otherwise, you need enter only the information requested; pressing the RETURN key isn't necessary.

### HOW MANY DECKS

You first choose how many decks of cards you want the dealer to use. Enter a number between one and eight. You still play with an initial hand of two cards, but the dealer deals hands until he uses a percentage of all the decks before reshuffling.

### STRATEGY IS

You have four choices as to the kind of strategy you want to use. The letter you enter for each is:

#### T --> TENS COUNT STRATEGY
This choice displays prompts for strategy errors. In addition, you choose whether to display prompts for the current tens count strategy (explained later) or for percentage of winnings. (Percentage of winnings refers to the percentage you're either ahead or behind. It's computed as the amount of cash on hand divided by the sum of all your previous bets.) Select your preferred prompt by answering the TENS RATIO DISPLAY prompt. Enter a Y (for "yes") to display a set of tens count ratio prompts (they are RATIO, TENS, and NON-TENS). Enter an N (for "no") to display the PERCENTAGE OF WINNINGS prompt.

#### B --> BASIC STRATEGY
When you choose basic strategy, prompts for strategy errors display.

#### N --> NO STRATEGY
You choose to play under no strategy and with no prompts.

## C --> COMPUTER GAME

The computer plays using tens count strategy against the dealer. You may
choose whether to display prompts for the tens count strategy or for the
percentage of winnings. Select your preferred prompt by answering the TENS
RATIO DISPLAY prompt. Enter a Y (for "yes") to display a set of tens count
ratio prompts (they are RATIO, TENS, and NON-TENS). Enter an N (for "no")
to display the PERCENTAGE OF WINNINGS prompt. You can also choose a SLOW
DISPLAY SPEED for easier observation of the hands by answering Y to this
prompt; if you answer N, the hands will display in rapid succession. A
discussion of the COMPUTER GAME option appears at the end of this section.

## AMOUNT TO BET and resetting game options

You can place your bet in response to this prompt or you can change some game
options. The number or key you press and the corresponding choices are as follows:

### number --> NEW BET

You can enter any whole number between $1 and $1000. If you bet less than
$1000, press the RETURN key to go on to the MOVE option.

### RETURN key --> SAME AS LAST BET

Press the RETURN key without first entering a number to bet the same
amount this time as you bet last time.

### S --> SHUFFLE LEVEL

Enter an S to change the number of cards left in the (last) deck at which
point the dealer reshuffles the entire deck or decks. After entering the S
in response to the prompt, enter your desired number in response to the
SHUFFLE LEVEL prompt and press the RETURN key. The minimum allowed is 15.
The maximum shuffle can't exceed your chosen number of decks multiplied by
52.

### D --> CHANGE NUMBER OF DECKS

First enter a D and then a number between one and eight in response to the
HOW MANY DECKS prompt to reset the number of decks you want the dealer to
use. The default is one.

### R --> RESTART PROGRAM

Enter an R to cause BLACKJACK TUTOR to restart, erasing all previous
totals (i.e., number of games played, number of decks, shuffle level,
total cash, percentage of winnings, high and low cash totals, and amount
of bet). The HOW MANY DECKS prompt redisplays and you start afresh.

### C --> CHANGE GAME

Enter a C to change the kind of strategy you want to play. This choice
lets you change strategies while maintaining your current totals (see the
list of totals under the RESTART PROGRAM option). When the STRATEGY IS
prompt redisplays, you enter your new choice and work your way through the
other options again.

### H --> BET HELP

Enter an H to display a suggested betting strategy. This display is useful
since the program doesn't display betting mistake messages. When you use H
in response to the AMOUNT TO BET prompt, the computer displays the factor
by which your basic bet should be adjusted. For example, let's assume your
current tens count ratio is 1.7 . Table 5, Suggested Betting Strategy,
lists the amount by which you should adjust your basic betting unit (you
decide a basic bet and adjust it by this factor during play). If we assume
you're playing with a basic bet of $6.00, which is your unit, then
requesting help in this case results in the following message:

BET TIMES 2

Therefore, you should bet $12.00 (your basic unit of $6.00 times 2).

## MOVE

This prompt displays after the computer deals the hands (unless you choose the
COMPUTER GAME option). You now decide which action (move) you wish to take. The key
you press and the corresponding choices are:

RETURN key --> STAY
You don't want any more cards; the dealer then completes his hand.

SPACE bar --> HIT
The dealer gives you another card, face up. Play then continues until the
round ends.

D --> DOUBLE
You double the bet, the dealer gives you another card, and then completes
his hand. You can't double if you've split your hand (explained below).

Q --> SURRENDER
You end the round without asking for more cards and you lose half the
original bet. You can't surrender if you've split your hand.

S --> SPLIT
You can split only when you have two cards of the same value. You separate
your original cards into two hands and the dealer deals you one more card
for each hand. You now play two hands, one after the other. Remember, you
can't double or surrender after you've split your hand.

H --> STRATEGY HELP
Use this choice to display the best action you should take, according to
the strategy tables. Then enter your choice of move.

## INSURANCE

If the dealer's hand shows a face-up ace, a prompt asking you whether you want
insurance displays automatically. With this action you're trying to cut your losses
should the dealer have a blackjack. Enter a Y if you want insurance, or an N if you
don't. If you answer Y, the option works as follows. The program bets separately
half your original bet. For example, if your original bet is $100, then you have a

bet $50 as insurance. You receive two-to-one odds on this amount if the dealer has a blackjack. For example, if the dealer has a blackjack, you would win $100 on your $50 insurance bet and lose your original $100 bet, thus breaking even. But if the dealer doesn't have a blackjack, you lose your $50 bet and you continue playing the hand for the original bet.

Here are a couple of examples of choosing sets of options. The first choice is a basic strategy with the dealer using four decks of cards:

| Prompt | Response |
| ------ | -------- |
| NUMBER OF DECKS | 4 |
| STRATEGY | B |

The second example uses tens count strategy; displays tens ratio and number of tens and non-tens left in the deck ; and has the dealer use four decks:

| Prompt | Response |
| ------ | -------- |
| NUMBER OF DECKS | 4 |
| STRATEGY | T |
| TENS RATIO DISPLAY | Y |

For your convenience, the next page summarizes all these prompts and game options.

## SUMMARY OF PROMPTS AND GAME OPTIONS

| PROMPT | ENTER | CHOICE |
|--------|-------|--------|
| NO. DECKS | | Number from 1 to 8 |
| STRATEGY | T | Tens count strategy; strategy error prompts; tens count or percentage of winnings display |
| | B | Basic strategy; strategy error prompts |
| | N | No strategy; no prompts |
| | C | Computer plays tens count strategy; varies bet |
| AMOUNT TO BET | -> | Whole number from 1 to 1000; press RETURN if less than 1000 |
| | <CR> | Bet last amount |
| | S | Set shuffle level; enter number from 15 to 52 x number of decks and press RETURN |
| | D | Change number of decks; enter number from 1 to 8 |
| | R | Restart program and reset totals |
| | C | Change game options and leave totals |
| | H | Display suggested bet |
| MOVE | <CR> | Stay |
| | space bar | Hit |
| | D | Double (not during split) |
| | Q | Surrender (not during split) |
| | S | Split |
| | H | Display best choice |
| INSURANCE | Y | Yes |
| | N | No |
| TENS RATIO DISPLAY | Y | Displays ratio and number of cards |
| | N | Displays percentage of winnings |

SLOW DISPLAY     Y     Slow display of hands for easier
SPEED                  observation when COMPUTER game is selected

                 N     Fast display of blackjack hands

## THE DEALER'S SET OF CASINO RULES

The dealer plays under these rules:

1. He stays on a hard or soft total of 17 or more; he hits when he has less than 17.

2. He allows you to ask for insurance; double on a soft or hard total or surrender at any time except after splitting; and split any pair.


## POSSIBLE OUTCOMES OF A HAND

A blackjack hand ends one of three ways: you can tie ("push"), lose ("bust"), or win.

### PUSH
You and the dealer have equal totals. The bet is canceled.

### LOSE
You lose because your total exceeds 21 ("bust"), or the dealer's total is closer to 21 than yours is, or the dealer has a BLACKJACK and you don't.

### WIN
You win because your total is higher than the dealer's but it doesn't exceed 21, or because the dealer's total exceeds 21. You receive the amount of the bet. If you get a BLACKJACK--an ace and a ten, jack, queen, or king--you receive one and a half times your bet.


## PLAYING A COMPUTER GAME

Under the COMPUTER GAME option, the computer-as-player uses the following rules and actions:

1. The basic bet is $6.00 and the computer follows the suggested betting table (see Table 5).

2. It splits, doubles, and hits using the tens count strategy chart (see Tables 6 through 9).

3. It takes insurance when the tens count ratio is less than 2.0.

4. It surrenders on a total of 16 if the dealer has a face-up card of 9 or 10 and if the tens count ratio is less than 2.0.

You can then sit back and watch while the hands are played.

Selecting display speed

During the start of a COMPUTER game, you're prompted for choosing a fast or slow display speed. Use the fast display speed to gather statistics. After a little practice, you'll be able to follow along at this speed. If you're having trouble watching the hands and totals at this speed, select the slow display speed for a while.

HIGH and LOW amount displays

One additional display appears during a COMPUTER game: the HIGH and LOW amounts of cash.
As you continue playing blackjack, even when playing tens count strategy, you'll need a
certain amount of cash on hand. The HIGH-LOW display helps you analyze the possibility of
running out of cash prior to winning (for example, if the LOW after 200 hands is $200,
you'll need at least $200 to continue playing).

Exiting a COMPUTER game

To exit the COMPUTER game and set up new game options, type C. The prompt STRATEGY IS
appears at the completion of the hand and you can now select new options.

# BLACKJACK STRATEGIES AND TABLES

This section describes the two stages of strategy you can practice to increase your skill at playing blackjack.


## USING THE BASIC STRATEGY TABLES

Use Tables 1 through 4 when you're playing basic strategy. There is one table for each required decision (drawing or standing on hard totals, drawing or standing on soft totals, doubling, and splitting). Each table lists your hand total along the left side and the dealer's displayed (that is, face-up) card value across the top. Although these tables contain a lot of information, you'll find you'll quickly memorize them during play. To use the basic strategy tables, find the column containing the total value of your cards and then the appropriate dealer's displayed card value. This box indicates the suggested action you should take.

For example, suppose you have an ace and a 2, and the dealer's displayed card is a 6. You have a soft 13. If you want to consider doubling, look in Table 3, find 13 under "Your Total", and go across to 6 under "Dealer shows". The "S" in that box indicates you should double on the soft total.

As another example, suppose you have a 3 and a 10, and the dealer's displayed card is a 3. In this case, you can ignore soft total information since the total is a hard total. Table 3, Doubling, indicates you shouldn't double (the box is blank). Locating the appropriate box in the Drawing (i.e., Hitting) or Standing Table for Hard Hands (Table 1) indicates you should stand (the box is blank). Use the other tables in the same way.

# Drawing or Standing with Hard Hands.

| Your Total | Dealer Shows | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | A |
| 21 | stand | stand | stand | stand | stand | stand | stand | stand | stand | stand |
| 20 | stand | stand | stand | stand | stand | stand | stand | stand | stand | stand |
| 19 | stand | stand | stand | stand | stand | stand | stand | stand | stand | stand |
| 18 | stand | stand | stand | stand | stand | stand | stand | stand | stand | stand |
| 17 | stand | stand | stand | stand | stand | stand | stand | stand | stand | stand |
| 16 | stand | stand | stand | stand | stand | draw | draw | draw | stand | draw |
| 15 | stand | stand | stand | stand | stand | draw | draw | draw | draw | draw |
| 14 | stand | stand | stand | stand | stand | draw | draw | draw | draw | draw |
| 13 | stand | stand | stand | stand | stand | draw | draw | draw | draw | draw |
| 12 | draw | draw | stand | stand | stand | draw | draw | draw | draw | draw |
| 11 or less | draw | draw | draw | draw | draw | draw | draw | draw | draw | draw |

☐ stand    ▓ draw

# Drawing or Standing with Soft Hands.

| Your Total | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | A |
|---|---|---|---|---|---|---|---|---|---|---|
| 21 | stand | stand | stand | stand | stand | stand | stand | stand | stand | stand |
| 20 | stand | stand | stand | stand | stand | stand | stand | stand | stand | stand |
| 19 | stand | stand | stand | stand | stand | stand | stand | stand | stand | stand |
| 18 | stand | stand | stand | stand | stand | stand | stand | draw | draw | stand |
| 17 or less | draw | draw | draw | draw | draw | draw | draw | draw | draw | draw |

## 3    Doubling.

| Your Total | Dealer shows | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | A |
| 18 |  | S | S | S | S |  |  |  |  |  |
| 17 |  | S | S | S | S |  |  |  |  |  |
| 16 |  |  | S | S | S |  |  |  |  |  |
| 15 |  |  | S | S | S |  |  |  |  |  |
| 14 |  |  | S | S | S |  |  |  |  |  |
| 13 |  |  |  | S | S |  |  |  |  |  |
| 11 | H | H | H | H | H | H | H | H | H | H |
| 10 | H | H | H | H | H | H | H | H |  |  |
| 9 | H | H | H | H | H |  |  |  |  |  |

| | |
|---|---|
| S | double on soft total only |
| H | double on hard total only |
|   | do not double |

## 4    Pair Splitting.

| Your Pair | Dealer shows | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
|  | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | A |
| A,A | ▓ | ▓ | ▓ | ▓ | ▓ | ▓ | ▓ | ▓ | ▓ | ▓ |
| 10,10 |  |  |  |  |  |  |  |  |  |  |
| 9,9 | ▓ | ▓ | ▓ | ▓ | ▓ |  | ▓ | ▓ |  |  |
| 8,8 | ▓ | ▓ | ▓ | ▓ | ▓ | ▓ | ▓ | ▓ | ▓ | ▓ |
| 7,7 | ▓ | ▓ | ▓ | ▓ | ▓ | ▓ |  |  |  |  |
| 6,6 | ▓ | ▓ | ▓ | ▓ | ▓ |  |  |  |  |  |
| 5,5 |  |  |  |  |  |  |  |  |  |  |
| 4,4 |  |  |  | ▓ | ▓ |  |  |  |  |  |
| 3,3 | ▓ | ▓ | ▓ | ▓ | ▓ | ▓ |  |  |  |  |
| 2,2 | ▓ | ▓ | ▓ | ▓ | ▓ | ▓ |  |  |  |  |

| | |
|---|---|
|   | do not split pair |
| ▓ | split pair |

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# PLAYING TENS COUNT STRATEGY

When a deck of cards is dealt, at times the ratio of tens to non-tens left in the deck varies. As the ratio of non-tens left divided by the number of tens left decreases, the dealer will bust (lose) more marginal hands (that is, totals from 12 to 16) and you will get more blackjacks and fewer marginal hands. If you take the non-tens count into consideration when deciding whether to hit or stay (remember that the dealer must hit on specific numbers), your advantage over the dealer becomes greater.

This method works with any number of decks. For example, the count for four decks is:

$$non\text{-}tens = 36 \times 4 = 144$$
$$tens = 16 \times 4 = 64$$

$$Starting\ tens\ count\ ratio = 144/64 = 2.25$$

If 20 cards are dealt and 4 are tens, 16 are non-tens, then the tens count ratio becomes:

$$(144-16)/(64-4) = 2.13$$

Use Tables 6 through 9 when you play tens count strategy. These tables are similar to Tables 1 through 4 except that Tables 6 through 9 contain tens count ratio values. In these tables, if the current ratio is below the value occupying the relevant box, you should take the action for that table. That is, if you're using Table 6, you should split the pair. If your using Table 7 or 8, you should double. If you're using Table 9, you should stand. You can verify proper usage of tables during play by using the Help (H) option and comparing its advice against the table values.

Table 5 lists the suggested betting strategies based on the tens count ratio:

### Table 5
### SUGGESTED BETTING STRATEGY

| Ratio is | Bet |
|----------|-----|
| > 2.0 | one basic betting unit |
| > 1.8 | two basic betting units |
| > 1.6 | three basic betting units |
| > 1.4 | four basic betting units |
| < 1.4 | five basic betting units |

This is just an example of a betting strategy. The more you bet when the cards are in your favor, the more you'll win.

Caution. When playing this method of blackjack, be aware that most casinos won't allow card counting. If you're detected using tens count strategy, they'll likely ask you to stop playing. The moral is, don't overbet if you want to continue playing!

Strategy, Based on the Value of the Ratio

**Pair Splitting**

You have / Dealer Shows →

| You have | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | A |
|---|---|---|---|---|---|---|---|---|---|---|
| A,A | | | | | | 3.7 | 3.0 | 2.9 | 3.2 | 2.5 |
| 10,10 | 1.5 | 1.6 | | | | | | | | |
| 9,9 | 2.3 | 2.7 | 2.9 | 3.5 | 2.9 | 1.6 | 3.5 | 4.1 | | 1.5 |
| 8,8 | | | | | | | | | | 2.7 |
| 7,7 | | | | | | | 3.3 | | | 1.4 |
| 6,6 | 2.3 | 2.6 | 2.9 | | | 3.7 | | | | |
| 5,5 | | | | | | | | | | |
| 4,4 | 1.3 | 1.5 | 1.8 | 2.3 | 1.9 | | | | | |
| 3,3 | 5.5 | | | | | | | | | |
| 2,2 | 3.0 | | | | | | | | | |

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**Hard Doubling**

You have / Dealer Shows →

| You have | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | A |
|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 4.2 | 4.7 | | | | 4.0 | 2.7 | 2.5 | 2.6 | 2.0 |
| 10 | 4.2 | 4.7 | | | | 4.0 | 2.7 | 2.2 | 2.0 | 1.8 |
| 9 | 2.1 | 2.2 | 2.6 | 2.9 | | 1.9 | 1.5 | | | 1.1 |
| 8 | 1.3 | 1.4 | 1.6 | 1.8 | 1.9 | 1.0 | | | | |
| 7 | | | 1.2 | 1.2 | 1.2 | | | | | |
| 6 | | | | 1.1 | 1.0 | | | | | |

## 8

You have

Soft Doubling

Dealer Shows →

| You have | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| 20 | 1.5 | 1.6 | 1.7 | 1.8 | 1.8 |
| 19 | 1.4 | 1.6 | 1.8 | 2.0 | 2.0 |
| 18 | 1.8 | 2.1 | 2.9 | 3.7 | 3.3 |
| 17 | 1.9 | 2.2 | 2.7 | | |
| 16 | 1.4 | 1.7 | 2.1 | 1.6 | 2.9 |
| 15 | 1.5 | 1.7 | 2.1 | 2.6 | 2.6 |
| 14 | 1.5 | 1.7 | 2.1 | 2.5 | 2.4 |
| 13 | 1.4 | 1.6 | 2.0 | 2.3 | 2.3 |

## 9

You have

Dealer Shows →

Standing Numbers

| You have | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | A |
|---|---|---|---|---|---|---|---|---|---|---|
| 19 | | | | | | | | | | |
| 18 | | | | | | | | | | |
| 17 | | | | | | | | | | 3.1 |
| 16 | 3.9 | 5.0 | 5.2 | 6.7 | 4.6 | | 1.2 | 1.7 | 2.3 | 1.4 |
| 15 | 3.2 | 3.7 | 4.1 | 4.8 | 4.4 | | | 1.4 | 1.9 | 1.3 |
| 14 | 2.7 | 2.9 | 3.3 | 3.7 | 3.4 | | | 1.1 | 1.6 | 1.2 |
| 13 | 2.3 | 2.5 | 2.6 | 3.0 | 2.7 | | | | 1.3 | 1.1 |
| 12 | 2.0 | 2.1 | 2.2 | 2.4 | 2.3 | | | | 1.1 | 1.0 |

▓ Soft standing

▨ Hard standing

## REFERENCES FOR MORE INFORMATION

Many references are available on card counting. One frequently cited on card counting, and which also most closely depicts the logic in BLACKJACK TUTOR, is:

Thorp, Edward, <u>Beat the Dealer</u>, Blaisdell Publishing Company, New York, 1962.

Another reference appropriate for users with advanced mathematical knowledge is:

<u>The Theory of Gambling and Statistical Logic</u>, Academic Press, Inc., 1962.

**For the complete list of current
APX programs, ask your ATARI retailer
for the APX Product Catalog**

**CPX** ATARI*
PROGRAM
EXCHANGE

P.O. Box 3705
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# Review Form

We're interested in your experiences with APX programs and documentation, both favorable and unfavorable. Many of our authors are eager to improve their programs if they know what you want. And, of course, we want to know about any bugs that slipped by us, so that the author can fix them. We also want to know whether our instructions are meeting your needs. You are our best source for suggesting improvements! Please help us by taking a moment to fill in this review sheet. Fold the sheet in thirds and seal it so that the address on the bottom of the back becomes the envelope front. Thank you for helping us!

1. Name and APX number of program.

_____

_____

2. If you have problems using the program, please describe them here.

_____

_____

_____

3. What do you especially like about this program?

_____

_____

_____

4. What do you think the program's weaknesses are?

_____

_____

_____

5. How can the catalog description be more accurate or comprehensive?

_____

_____

6. On a scale of 1 to 10, 1 being "poor" and 10 being "excellent", please rate the following aspects of this program:

_____ Easy to use
_____ User-oriented (e.g., menus, prompts, clear language)
_____ Enjoyable
_____ Self-instructive
_____ Useful (non-game programs)
_____ Imaginative graphics and sound

7. Describe any technical errors you found in the user instructions (please give page numbers).

_____

_____

_____

8. What did you especially like about the user instructions?

_____

_____

_____

9. What revisions or additions would improve these instructions?

_____

_____

_____

10. On a scale of 1 to 10, 1 representing "poor" and 10 representing "excellent", how would you rate the user instructions and why?

_____

_____

11. Other comments about the program or user instructions:

_____

_____

_____

om

_____

_____

_____

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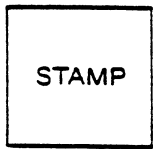
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