

EXTRA INNINGS

Third Edition



Designed by Jack Kavanagh

with special appreciation to the late Dr. Preston Davis, Jr. who took time from his own valuable work to assist a friend with his project.

And to my father, John E. Kavanagh, who has been the kind of a Dad every son should have.

And particular recognition to the many 'EI' players who have contributed to the development of the Third Edition - most particularly John Swistah and Jeff Sagarin, without whom 'Normalization' would not have been possible.

MASTER CHART (Extra Base Hit Rating)

1:1:1 .0046	2:1:1 .1713	3:1:1 .3380	4:1:1 .5046	5:1:1 .6713	6:1:1 .8380
1:1:2 .0093	2:1:2 .1759	3:1:2 .3426	4:1:2 .5093	5:1:2 .6759	6:1:2 .8426
1:1:3 .0139	2:1:3 .1806	3:1:3 .3472	4:1:3 .5139	5:1:3 .6806	6:1:3 .8472
1:1:4 .0185	2:1:4 .1852	3:1:4 .3519	4:1:4 .5185	5:1:4 .6852	6:1:4 .8519
1:1:5 .0231	2:1:5 .1898	3:1:5 .3565	4:1:5 .5231	5:1:5 .6898	6:1:5 .8565
1:1:6 .0278	2:1:6 .1944	3:1:6 .3611	4:1:6 .5278	5:1:6 .6944	6:1:6 .8611
1:2:1 .0324	2:2:1 .1991	3:2:1 .3657	4:2:1 .5324	5:2:1 .6991	6:2:1 .8657
1:2:2 .0370	2:2:2 .2037	3:2:2 .3704	4:2:2 .5370	5:2:2 .7037	6:2:2 .8704
1:2:3 .0417	2:2:3 .2083	3:2:3 .3750	4:2:3 .5417	5:2:3 .7083	6:2:3 .8750
1:2:4 .0463	2:2:4 .2130	3:2:4 .3796	4:2:4 .5463	5:2:4 .7130	6:2:4 .8796
1:2:5 .0509	2:2:5 .2176	3:2:5 .3843	4:2:5 .5509	5:2:5 .7176	6:2:5 .8843
1:2:6 .0556	2:2:6 .2222	3:2:6 .3889	4:2:6 .5556	5:2:6 .7222	6:2:6 .8889
1:3:1 .0602	2:3:1 .2269	3:3:1 .3935	4:3:1 .5602	5:3:1 .7269	6:3:1 .8935
1:3:2 .0648	2:3:2 .2315	3:3:2 .3981	4:3:2 .5648	5:3:2 .7315	6:3:2 .8981
1:3:3 .0694	2:3:3 .2361	3:3:3 .4028	4:3:3 .5694	5:3:3 .7361	6:3:3 .9028
1:3:4 .0741	2:3:4 .2407	3:3:4 .4074	4:3:4 .5741	5:3:4 .7407	6:3:4 .9074
1:3:5 .0787	2:3:5 .2454	3:3:5 .4120	4:3:5 .5787	5:3:5 .7454	6:3:5 .9120
1:3:6 .0833	2:3:6 .2500	3:3:6 .4167	4:3:6 .5833	5:3:6 .7500	6:3:6 .9167
1:4:1 .0880	2:4:1 .2546	3:4:1 .4213	4:4:1 .5880	5:4:1 .7546	6:4:1 .9213
1:4:2 .0926	2:4:2 .2593	3:4:2 .4259	4:4:2 .5926	5:4:2 .7593	6:4:2 .9259
1:4:3 .0972	2:4:3 .2639	3:4:3 .4306	4:4:3 .5972	5:4:3 .7639	6:4:3 .9306
1:4:4 .1019	2:4:4 .2685	3:4:4 .4352	4:4:4 .6019	5:4:4 .7685	6:4:4 .9352
1:4:5 .1065	2:4:5 .2731	3:4:5 .4398	4:4:5 .6065	5:4:5 .7731	6:4:5 .9398
1:4:6 .1111	2:4:6 .2778	3:4:6 .4444	4:4:6 .6111	5:4:6 .7778	6:4:6 .9444
1:5:1 .1157	2:5:1 .2824	3:5:1 .4491	4:5:1 .6157	5:5:1 .7824	6:5:1 .9491
1:5:2 .1204	2:5:2 .2870	3:5:2 .4537	4:5:2 .6204	5:5:2 .7870	6:5:2 .9537
1:5:3 .1250	2:5:3 .2917	3:5:3 .4583	4:5:3 .6250	5:5:3 .7917	6:5:3 .9583
1:5:4 .1296	2:5:4 .2963	3:5:4 .4630	4:5:4 .6296	5:5:4 .7963	6:5:4 .9630
1:5:5 .1343	2:5:5 .3009	3:5:5 .4676	4:5:5 .6343	5:5:5 .8009	6:5:5 .9676
1:5:6 .1389	2:5:6 .3056	3:5:6 .4722	4:5:6 .6389	5:5:6 .8056	6:5:6 .9722
1:6:1 .1435	2:6:1 .3102	3:6:1 .4769	4:6:1 .6435	5:6:1 .8102	6:6:1 .9769
1:6:2 .1481	2:6:2 .3148	3:6:2 .4815	4:6:2 .6481	5:6:2 .8148	6:6:2 .9815
1:6:3 .1528	2:6:3 .3194	3:6:3 .4861	4:6:3 .6528	5:6:3 .8194	6:6:3 .9861
1:6:4 .1574	2:6:4 .3241	3:6:4 .4907	4:6:4 .6574	5:6:4 .8241	6:6:4 .9907
1:6:5 .1620	2:6:5 .3287	3:6:5 .4954	4:6:5 .6620	5:6:5 .8287	6:6:5 .9954
1:6:6 .1667	2:6:6 .3333	3:6:6 .5000	4:6:6 .6667	5:6:6 .8333	6:6:6 1.0000

EXTRA INNINGS

THE GROUND RULES

Let's all gather at home plate and make sure we all understand the game we are about to play.

"Extra Innings" suggested itself as a title for this form of table baseball because it is a means to extend the fun and excitement of actual baseball. It is a way to have today's players duplicate their diamond feats; it is a means by which the players of the past can recreate their skills forever.

"Extra Innings" gets its results by combining the precision of mathematics with the random rolling of dice to provide the excitement of a game. Baseball itself has been described as a "game of percentages". "Extra Innings" is also a game of percentages.

To achieve as close to total realism as is possible with a table game, "Extra Innings" combines exact computations with a reasoned approach to bring about the logical result in all situations.

"Extra Innings" was devised to give its players a complete game now and the knowledge with which they could extend the play of the game in the years to come or apply to any level of competition which appealed to them.

While the game comes with sixty team rosters, the owner of "Extra Innings" also has, in this book, the information from which to structure any team, or combination of players, from any statistics which include the needed data.

"THE BIG SECRET"

All table games, whether sports related or not, are a mixture of chance and probability. Some achieve this with dice, some with spinners, some with cards, some with a combination of "activators" and then refer you to charts or instructions.

The number of dice combinations, cards used, spaces on the spinner card, etc. offer the chances. These are then apportioned according to likelihood of some action taking place.

The more sophisticated the game the more exacting is the creating of the possibilities and their assignment.

Most games hide these factors in codes. "Extra Innings" does not.

It will help you understand the explanation of the method of "Extra Innings" if you look at the "Master Chart" (opposite page).

The "Master Chart" is simply a computer print-out of all the decimal equivalents possible from three dice, arranged in sequence, so that they read 1-1-1 through 6-6-6. (The dice with "Extra Innings" are always arranged red, white and green

for reading so that these combinations remain constant.) There are 216 combinations possible (6 x 6 x 6).

The quickest way to grasp how this chart is used to establish the percentage of something taking place, is to understand that if you assign all dice combinations from the start of the chart 1-1-1 down to 2-5-5, you have set up .3009 (30%) of the possible combinations.

If you want to create a ".300 hitter" you give him a base hit every time he rolls between 1-1-1 and 2-5-5 (anything higher being a form of put out).

"Extra Innings" takes this simple formula into rather complex expressions to obtain realistic results. But the basic premise is really very simple and is the basis for the authentic results obtained.

We'll discuss how this approach is applied to obtain realistic hitting, pitching, fielding and strategy moves as we go along.

THE MECHANICS OF THE GAME

The First and Second Roll

Those who have played other table sports game may wonder why two rolls of the dice are necessary. (They may also wonder why other games, using a single action or two dice are limited in their satisfactions.)

"Extra Innings" strives for realism. From a percentage point of view, the surest place to obtain this is in batting average. After all, the batting average is, itself, a percentage (the number of hits made per times at bat.)

In our earlier reference to the use of the Master Chart and how you would obtain a .300 hitter, we showed this was done by working with hits and put outs. Once you start mixing in errors, hit batsmen, walks, balks, catcher's interference, and other factors, you lose the balance between the basic ingredients of a batting average (hits and outs).

So, we have established "Extra Innings" as a two roll game. On the First Roll we handle everything except hits and outs (which result from the batter's action). On the Second Roll we deal only with hits and outs. The Second Roll Chart contains only puts outs. Depending upon the hitter's ability, a share of these will be converted into base hits.

The two rolls are considered necessary to provide a more perfect balance. Having two rolls is also an added action value when the game is played two-handed. The team "in the field" makes the first roll; the team "at bat" makes the second roll. This, obviously, gives both players action on every batter. In solitaire form the player makes both rolls.

FIRST ROLL CHART

This chart is used for every batter. It describes all actions which can take place, except for the actual making of a hit or an out (these actions are handled on the Second Roll Chart.)

Remember, the dice are always read in sequence (red, white, green!) The numbers used on the charts refer to the count on each dice in that order. 1-1-1 means 1 on each dice. 2-3-6 would mean a two on the red dice, a three on the white dice and a six on the green dice.

The First Roll Chart capsules the information for each possible roll. What follows here is a more detailed explanation, intended mostly to give you a better understanding of the principles of the game at the outset.

1-1-1 thru 1-6-6 (See pitcher's rating for walks issued.)

Later in this text we will describe how each pitcher is rated for walks. Whatever his rating, however, it will fall between 1-1-1 and 1-6-6. When you have a first roll in this range consult the pitcher's rating to see whether it produces a walk by that pitcher. If it does not, you move ahead to the second roll. Please remember, if any first roll cannot produce action, move on to the second roll.

2-1-1 Hit Batter. Batter takes first base. Also consult injuries.
2-1-2 Passed Ball - all catchers. When catcher is rated SD (Superior Defense) this does not apply if there is a runner on third base.

2-1-3 Pickoff. As in this instance and in many which follow, specific action is described to provide data for those who keep detailed boxscore accounts. To some who play the game it may be immaterial whether a pickoff throw is made by the pitcher or catcher so long as the play action and its effect on possible base runners is apparent. It doesn't matter to them who gets assists, putouts, etc. By providing such detail we satisfy the need of those whose boxscore keeping requires it. Unfortunately it also puts a burden on those who consider "an out is an out" and adds to the text and the complexity of explanations.

In this pickoff situation the pitcher makes the throw. The situation requires a runner on first base or on first and second. If the latter, it is the runner on second who is picked off. No pickoff play is possible when the team at bat is "playing safe." (This condition will be described later.) For those keeping detailed defensive statistics, a pickoff at first base is recorded 1-3 (pitcher to first baseman); at second, 1-6 (pitcher to shortstop.) Throughout this text and in the charts positions are identified according to standard boxscore numbering. 1 - pitcher; 2 - catcher; 3 - first baseman; 4 - second baseman; 5 - third baseman; 6 - short stop; 7 - left fielder; 8 - center fielder; 9 - right fielder.

2-1-4 Pickoff. Here the action is by the catcher. It applies only to a runner on first or first and third. If both first and third are occupied, the runner on third is picked off (and the put out recorded as 2-5.) There can be a runner on second base in this situation but he is not subject to this pickoff, unless the catcher is rated SD and the runner on second is the "lead runner." The "lead runner" is the one on the base nearest to home. With runners on first and second, the runner on second would be the "lead runner." (Ed. Note: If this and other basic and explicit information seems superfluous, remember that many young players who wish to take up this game are not yet familiar with the expressions and techniques of baseball.)

2-1-5 Wild Pitch when runner on first only. Runner advances one base.

2-1-6 Wild Pitch with a runner or runners on any bases. All base runners advance one base.

2-2-1 Balk. This occurs regardless of which base or bases are occupied but to limit realistically, a runner rated S or AAR must be on base. All base runners advance one base.

2-2-2 Interference by catcher. Batter takes first and any runners move ahead if necessary. This "interference call" is invoked only if there is at least one runner on base and if the batter strikes out on the Second Roll Action. When a 2-2-2 is rolled on the First Roll and there is a runner on base, proceed to the Second Roll. If the batter is struck out, cancel the strike out and convert the play to interference by the catcher (give the catcher an error.) The reasoning here is that this play occurs too infrequently to justify allocating one of the 216 possible combinations (.0046). By placing "conditions" on the circumstance we provide a more reasonable chance of it occurring.

2-2-3 thru 2-3-3 All of these First Roll numbers provide for injuries occurring. All have limiting conditions relating to Second Roll action. This is an optional area of play. Many players who are recreating a full season of play ignore this action. Instead they follow the guide lines of games played and at bats (and games started and innings pitched) and use all roster players according to their appearances in actual competition. To some table gamers injuries are an intriguing part of the action; to others a needless inclusion. We will provide separate injury information to establish the details and length of time lost because of the injury.

2-3-4 If batter singles with runner on first, ONLY WHEN HIT AND RUN PLAY IS ON, runner from first is out when hit by the ball. The batter takes first and is credited with a single. Any other runners remain at base they were on at start of play (the ball is dead).

2-3-5 Ground Rule Double - If followed by double, triple or home run. Any base runners limited to one base advance; triple or home run is reduced to double. This is a "gamesmanship" rule intended for a touch of realism.

2-3-6 thru 2-6-6 Reserved for "rare events." Some table

gamers like to contribute their own "gimmicks" toward realism. For example, "EI" does not provide an automatic means of having a game called while in progress. (In an earlier edition we had an automatic "rain out" and it came up, we were told by a player, in a game in the Houston Astrodome!) We leave it to your choice whether you want to run the risk, for the sake of realism, of having a power failure, torrential down pour or a player's strike stop a game. Also, you might have other rare events you'd like to include. If you want to stop the game for ten minutes to chase a stray dog off the field...or anything you find gives the game as you play it added zest, you can introduce it in this range of First Roll numbers.

3-1-3 thru 3-4-4 Double Play Range, This will be discussed in detail in the section of the game dealing with DPs.

3-4-5 and 3-4-6 Triple Plays. Both of these are "conditioned" to limit their occurrence. See First Roll Chart. For score keeping purposes, the infielder catching the ball makes the first two put outs and throws to the nearest base for the third out. For example: with runners on first and second, a line drive to the short stop would be scored TP 6-6-3. The short-stop would have caught the ball, tagged the runner off second (or stepped on the base) and thrown to first for the put out on the runner caught off that base.

3-5-1 thru 6-6-6 Error Range. This will be taken up in detail later in this text. It more than amply provides for errors to occur. Actually, the full range of 216 combinations on the First Roll Chart exceeds the possible play assignments.

Remember, there need not be a specific action occur when the First Roll is made. The importance of the First Roll is really to insure accuracy in hitting statistics from the Second Roll by delegating actions which do not result in a hit or put out to a preliminary action.

SECOND ROLL CHART:

(At this point we suggest you take this chart out of your book and have it handy to follow along with us as we explain it.)

First observe that there are six columns: 1-1-1 thru 1-6-6; 2-1-1 thru 2-6-6; 3-1-1 thru 3-6-6, etc. Next to each dice combination is a score keeper's shorthand explanation. We've already explained that positions are recorded by standard number: 1 is the pitcher, 2 the catcher, 3 the first baseman, etc.

Notice that every possible combination of the 216 describes a put out. In the play of the game, each batter will convert a portion of the put outs into base hits. If a batter is rated to hit .250, every combination from 1-1-1 to 2-3-6 would be a base hit for that batter. Everything above 2-3-6 (2-4-1 thru 6-6-6) would be an out for that batter. The batter's average tells you at what point on the Second Roll Chart you begin reading the results as put outs rather than base hits.

All outs in the first column (1-1-1 thru 1-6-6) are registered as strike outs (1-6-6 produces a batting average of .167.) As most batters hit for higher averages than that, this column is almost always converted into a base hit. When it is not it is because we are dealing with a very weak hitter who strikes out frequently. (We'll get to regular strike outs later.)

The second column (2-1-1 thru 2-6-6); when these combinations are not base hits by being within the batter's "hitting range" they are put outs according to the action indicated. 2-1-1 is a foul out to the catcher; 2-1-2 a fly out to the second baseman, etc. Fly outs to outfielders in this column are marked with a single or double asterisk. This indicates a runner on base may attempt to advance after the put out on a Sacrifice Fly attempt. We'll take that up subsequently.

The third and fourth columns have two possible actions shown in columns A and B. Use column A when first base is unoccupied and column B when there is a runner on first. Notice that column B always indicates the put out is a force out on a runner from first base. The batter reaches base on a fielder's choice, unless the force out is the third out of the inning, and any other runner advances one base.

(3 ua, incidentally, is a ground ball put out by the first baseman unassisted.)

In the fourth column combinations 4-5-4 thru 4-6-6, although ground balls, do not provide for a force out action on a runner on first. If there is a runner on first and less than two out, he advances to second while the batter is being retired at first. We "imagine" a slow hit ball or one not cleanly handled in time to get the force at second.

In the fifth column, combinations 5-1-1 through 5-1-6 continue this concept. Runners advance while the batter is retired at first.

Also in the fifth column we show fly outs without an asterisk. These are understood to be short fly balls with no advance after the catch being possible.

In the sixth column we again show infield ground balls requiring the batter be put out while a runner advances and more outfield flyouts without an opportunity to advance after the catch.

When we take up strike outs and pitcher's ratings you'll learn that combinations in the sixth column are converted to strike outs according to the pitcher's percentage of strike outs. As a result, the put out designations in the sixth column on the Second Roll Chart are subject to re-designation as Ks.

Let's re-cap: All combinations on the Second Roll Chart are shown as put outs. Depending upon each batter's "hitting range", he will convert from 1-1-1 up to the top of his "hitting range" into base hits. According to each pitcher's rating for strike outs he will convert put outs to a fielder into strike outs from 6-6-6 down to the bottom of the pitcher's K range.

You'll notice that some of the dice combinations are shaded. We'll explain the purpose of this when we take up defensive ratings.

NOTE: When a base runner is not forced to advance on a ground ball, he holds his base when the ball is "hit in front of him," or moves up a base when it is "hit behind him."

With a runner on second and no runner on first, the runner would move to third on a ground ball to the second baseman or first baseman. On a ground ball to the pitcher, short stop or third baseman the runner would hold his base. A runner on third would score on a ground ball to the short stop, second baseman or first baseman. He would hold his base on a ground ball hit to the third baseman or pitcher.

When the offensive team is "playing safe" (to be explained) runners who are not forced do not advance on any ground out.

Up to this point we have dealt with the basics. Each batter is rated with a hitting range according to his average. You go through the First Roll to learn is anything going to happen in this turn at bat which is not either a hit or a put out. Having disposed of the batter via a walk or hit batsman, or having set up conditional action awaiting the Second Roll, or, quite frequently, having rolled a dice combination whose action is not possible in the situation (such as a passed ball with no one on base) you move to the Second Roll Chart. Any number you roll for the Second Roll Chart has a meaning. If it is a low number, starting with a 1 or 2 (or for a high average hitter, even a 3) is might be a hit. You check the batter's hitting range. If the combination is between 1-1-1 and the top of his hitting range, it is a base hit (we'll tell you how to separate home runs, triples, doubles and singles shortly.) If it is beyond his hitting range you read the form of put out beside the dice combination.

Example: If you rolled a 2-4-6 it would be a fly out to center field, unless the batter had a hitting range which included 2-4-6. In that event it would be a base hit. Let's say a batter was a .250 hitter and you rolled 2-4-6. The top of a .250 hitter's range is 2-3-6, so, for that batter, 2-4-6 would be a fly out to center field. But, if the batter were a .300 hitter, (2-5-5) then 2-4-6 is within his "hitting range" and it would be a base hit.

HOME RUNS, TRIPLES, DOUBLES, SINGLES. Now that you recognize each batter's "hitting range" - from 1-1-1 up to the top figure shown with his name on the roster - let's divide his hits into extra base blows and singles. Look at any of the rosters you received with the game. At the right you'll see columns headed HR, T, D, L and R.

We always start with 1-1-1/ The combination under HR is the highest figure up from 1-1-1 which means a home run. A

slugger might have 1-3-1. Anything from 1-1-1 to 1-3-1, for that batter is a home run. A punch hitter might only get a home run on 1-1-1 or 1-1-2 (or none at all, in which case his first number might be under triples or doubles.)

As an illustration, a batter might be shown as H 1-2-1, T 1-2-4, D 1-3-6. This'd mean he'd get a home run on a roll from 1-1-1 thru 1-2-1, a triple on 1-2-2 thru 1-2-4 and a double on 1-2-5 thru 1-3-6. Anything higher than 1-3-6, up to the top of his "hitting range", would be a single. (We will show you the mechanics of figuring power lines when we take up ratings.)

Next you'll see columns headed L and R. Each batter is rated for his hitting against either left or right handed pitching. Depending on which side the pitcher throws from, you'd read the combination under L or R as the top of the batter's hitting range.

Let's have one last re-cap to this point. Once you've reached the Second Roll, anything you roll will be a hit or an out. If you've rolled a low number, starting with a one or two, it is most likely a hit. You'd consult the batter's record on the roster to see if it was within his "hitting range" and if it was an extra base hit or single.

This is not nearly so time consuming as the explanation might indicate. As each batter comes to the plate you'll know his average and, even without looking at the L and R columns know quite closely what is possibly a hit for him and what is not. If the first number in the combination is a 4 or 5 or 6, you'll know it isn't a hit and would glance at the put out data on the chart. The better you know your players the less often you'll have to consult the roster to determine whether a combination is a hit or not for each batter.

ERRORS

Earlier, when we dealt with the First Roll Chart, we pointed out that numbers from 3-5-1 to 6-6-6 were in the "error range" and assured an explanation.

If you look at one of your rosters you'll see that each team has been given an error range, starting at 3-5-1. The actual range is determined by the team's fielding average. A team that made no errors would have a 1.000 average. To determine a team's error range we first identify the percentage of chances on which they made errors. We subtract the team fielding average from 1.000. In 1970 the Washington Senators led the American League with a team fielding average of .982. Subtracted from 1.000 it shows they made errors on .018 of all their chances. The Master Chart (decimal equivalents of all three dice combinations) shows that four lines equal .018. Therefore, the Senators would have an error range from 3-5-1 thru 3-5-4. Any First Roll in that range would signal an error to be made.

With the error signaled, we would then make the Second Roll. If the batter hits safely, the error is added on to the hit. If the batter makes out, the error replaces the put out. The form of put out is immaterial. Go to Error Designation Chart and roll again.

In this way we have not tampered with the techniques which produce true batting averages. We do not deprive a batter of a chance of getting a hit by lumping in the possibilities of reaching on an error with his chances to get a hit. If he gets the hit, the error is added to it.

Our next consideration is to whom to charge the error. To know this we will have a separate roll of the dice and consult the Error Designation Chart. There are two columns. You'll see that one is for use when the batter has made a hit and that the probabilities are greatest for an outfielder to be charged with the error. Most errors which follow a hit are the result of the ball getting between the outfielder's legs, being juggled, etc.

On the other hand, the errors charged when the error replaces an out are charged mostly to infielders. While this is mostly of interest to those who keep detailed boxscores and who might even want to compute player fielding averages at the end of a season, it strives to keep all actions in true perspective.

You'll note one column, shaded, under SD. We'll explain this in fuller detail when we discuss defensive ratings.

On all errors following a base hit it is important to know who has made the error. Errors in this situation, when made by outfielders, are more costly than those made by infielders and catchers and pitchers.

The third dice (green) is consulted to learn whether the error is a one or two base miscue. If the error is charged to an infielder, catcher or pitcher and the green dice is a 5 or 6, it is a two base error. If the error is charged to an outfielder and the green dice is a 4, 5 or 6, it is a two base error. All other numbers on the green dice are once base errors.

On one base errors any runners already on base advance one base; on two base errors they advance two bases. An error which follows a base hit advances the batter one base further than the hit would on a one base error, two bases further on a two base error.

MOVEMENT OF BASE RUNNERS ON BASE HITS:

To this point we have handled the methods of having batters reach base or be retired. Now, let's take up the actions which have them move around to score or be removed from the bases.

Refer now to the chart Advancing on Singles and Doubles. Like so much of "EI", it is more formidable appearing than it is in actual use.

We'll have to spend some time first on runner's ratings as this is a circumstance in the movement of base runners.

You'll notice that all players on a roster are rated for running ability. We describe four kinds of runners. S is for Superior, the runner with outstanding speed and skills. Those with better than average speed or base running savvy are AAR for Above Average Runners. The majority of runners are AR for Average Runner which assumes general "big league" ability. Those who are known to be slow footed and most catchers and all pitchers are rated Slow. We discriminate against pitchers as a group because, even if they have speed, they usually run with caution. (As this edition is prepared the Designated Hitter role might render base running - and batting - by pitchers either academic or something of interest only to table gamers who specialize in recreations of past eras.)

In order to give definition to base hits we designate a direction according to the number on the third (green) dice. 1 and 2 are hits to left; 3 and 4 hits to center; 5 and 6 are hits to right. This obviously has a bearing on the movement of base runners, as does the runner's characteristics. With runners on first and second, the movement of the runner on second controls the movement of the runner on first. If the runner from second can't advance past third on the hit, the runner from first can only advance as far as second.

In order to fully understand this chart we must also explain that some outfielders on your rosters are rated T-1 (Throwing). These are the strong armed outfielders whose ability inhibits base runners from risking advances. They also have an effect on Sacrifice Fly Options as we'll explain later.

When second (white) dice and third (green) dice are the same numbers, a single is considered an "infield hit." Runners advance one base only, only if forced; otherwise they hold their base(s).

At any time a single is the combination which is the top of the batter's hitting lines, and second base is unoccupied, the batter is out, trying to stretch the single into a double. Assist to the outfielder, put out to the second baseman.

STOLEN BASES

Please refer to this chart. You'll see we have governed the chances of success according to several circumstances, including whether the pitcher is left or right handed. The runner's speed rating is a factor and the base being attempted also is reflected in the chances of success.

To avoid contradictions in action, steal attempts must be made before the First Roll on the batter at the plate.

In designing this game we considered the effect of the catcher on steals but decided not to use this as a factor. Bases are much more often stolen on the pitcher. Mostly, we are inhibited by the lack of stats which really reflect a catcher's throwing ability. Even a high number of assists might really identify a catcher whose throwing ability is doubtful and many runners try to steal on him. He'll get some of them and, if enough try, his assists will be out of proportion to reality. Until stats are provided which report each catcher's results against attempted steals, we don't feel we or anyone can do justice in this area.

We must also recognize that errors can occur on steal attempts. On a successful steal, if the second and third dice are both ones or twos, give an error to the baseman covering and advance the runner and any other runners one extra base. The second baseman covers second when the batter is righthanded and the short stop when the batter is left handed. On an unsuccessful steal attempt, if the second and third dice are both sixes, the runner reaches the base and an error is charged on the catcher's throw.

On double or triple steals, all action is on the front runner. Other base runners advance whether the front runner is safe or out.

SACRIFICE BUNTS

When this optional play is used it replaces both the First and Second Rolls. It can not be used with a runner on third base. In that situation you'd use the squeeze play.

The chart governing this action evolved after considerable exchanges with table gamers. We elected to handle the sacrifice by giving the batter three opportunities to succeed or fail, rather than have the action handled with one roll. The sacrifice bunt achieves its purpose, or fails, by steps in actual play. The bunt achieves its purpose of advancing the runner about 70 per cent of the times it is tried. This seems to be contradicted by our recollections of batters fouling off bunts or missing them altogether. However, the sacrifice attempt doesn't become a measureable statistic until the batter actually completes his turn at bat. He may foul off or miss on his first two tries - but they never appear in the box score. It is his try which concludes the action which does. This may be on any of three attempts.

We have included the running ability of the runner to be advanced in our computations. It is often overlooked that the speed - or lack of it - of the base runner is an important factor in sacrificing.

The use of the Sacrifice Bunt also occasions a great deal of special data which is made part of the Chart, regarding the handling of the ball, having the sacrifice bunt attempt be mis-played into an error or even result in becoming a base hit.

We have made the third bunt attempt optional. With two strikes now on the batter the manager may decide to hit away. In this situation, because he is hitting with two strikes and less likely to get his pitch, we penalize the batter. The batter's "hitting range" is lowered by 6 lines on this turn at bat. When the Sacrifice Bunt is called off, after two foul ball attempts, go directly to the Second Roll Chart.

NOTE: If the involvements of the Sacrifice Bunt Chart seem too complicated for you at the learning stage of the game, a simpler process can be used. Roll the dice once. A roll from 1-1-1 thru 4-4-6 is successful. Score the play pitcher to the second baseman covering first (1-4). On any roll higher than 4-4-6 retire the batter on a strike out. That's a lot simpler, but also removes much of the variety and gamesmanship possible in the game.

SACRIFICE FLY OPTION

This chart needs little further explanation but requires some justification. We have placed an asterisk next to some outfield fly outs to show they can be used as sacrifice flies. We have identified other outfield fly outs with a double asterisk, as usable only by the fastest runner, those rated S and AAR. We have also lowered the chances of success

against outfielders who are strong throwers (rated T-1.)

This chart is used usually when there is a runner on third. If third base is unoccupied, a runner rated S or AAR may elect to attempt an advance from second after the fly out. The attempt is successful only when the dice range is from 1-1 through 4-3-6 regardless of outs and may not be attempted against an outfielder rated T-1.

We have made the likelihood of success less with two outs and in the later stages of the game. The reasoning is that greater risks will be taken to score in these situations. If the fly ball is the first out of the inning, a runner on third is more likely to hold his base as the next batter may bring him in. If it is the second out of the inning, the runner knows only a hit or error can advance him and will take a greater risk in being cut down. Also, toward the end of a game, when one run can be the difference in victory, greater risks are taken.

SQUEEZE PLAY CHART

The detail on this chart is explicit and needs little text amplification. It is used only with a runner on third and less than two out. Any other base runners advance when the play is a "suicide squeeze" (in which the runner on third commits himself on the pitch and can not return to third base.) On a "safety squeeze" (when the runner waits until the ball is bunted) any other base runners do not advance. You can't have a "safety squeeze" with bases loaded.

In two-handed play this option makes for good gamesmanship. You'll notice the infield can be played either "in" or "back" by the defensive team. However, when playing on a solitaire basis it is difficult to assume both manager's roles simultaneously. We suggest that, when playing solitaire, the squeeze always be on a suicide basis and the infield always be played in.

HIT AND RUN PLAY

This optional play can be used only after the First Roll has been completed. If an error or double (or triple) play has been signaled on the First Roll it cannot be used.

With the "hit and run" in effect a single moves any base runners one base further than shown on the Advancing on Singles and Doubles Chart. All runners score from first base on a double.

When the batter makes an out in a "hit and run" situation the following takes place:

Strike Out: If the batter strikes out, the runner or, if more than one, the lead runner, is handled exactly as though it were a steal attempt. Refer to that chart and roll the dice for the results.

Outfield Fly: If the batter flies out, base runners return safely to their bases. Any runner rated SLO is doubled off. Any runner, regardless of running rating, is doubled off by an outfielder rated T-1.

Infield Fly Out: On a foul out to an infielder or catcher the runners return safely to their bases. All fair fly balls handled by the infielders or pitcher are considered line drives and the runner or lead runner, if more than one, is doubled off his base.

Infield Ground Ball: Runners advance one base with the batter retired at first. There can be no force out at second. Read only Col. A in fourth and fifth columns on Second Roll Chart.

NOTE: With TWO OUT, if you use the "Hit and Run Play", lower the batter's hitting lines by six and reduce extra base hits by one line. There can be no home run on the "hit and run play" if it is used with two out. We penalize the batter to discourage the use of the "hit and run play" being called with two out when there is no risk of a double play resulting.

PLAYING THE INFIELD "IN"

With a runner on third the defense may elect to bring the infield in to cut the runner down at the plate on a ground ball. This defensive adjustment can be made before or after the First Roll.

When the infield plays in, in real play, they increase the chances of the batter hitting the ball safely through the drawn in infield. Accordingly, increase the batters hitting range by six lines. If the batter's hitting range was 2-3-5, with the infield drawn in it would be 2-4-5.

All put outs made by the batter on the Second Roll are unchanged except for play action on ground balls. Ground balls are interpreted by reading the number on the third (green) dice as follows: Ground Ball to third, 1-2-3-4 the runner is out at the plate. 5 and 6, the runner is safe. The batter reaches first on a fielder's choice. Ground ball to short, 1-2-3-4 the runner is out at the plate, 5 safe at the plate; 6 safe at the plate but the batter is out at first, short stop to the first baseman. On 1 through 5 the batter reaches first on a fielder's choice. Ground ball to second, 1-2-3 out at the plate, 4 safe at the plate. On 1 through 4 the batter reaches first on a fielder's choice. 5 and 6, runner safe at the plate, batter is out at first, second baseman to the first baseman. Ground ball to first, 1-2-3-4 out at the plate, 5 safe at the plate. On 1 through 5 the batter reaches first on a fielder's choice. 6 runner safe, batter out first baseman unassisted. Ground ball to pitcher, 1-2-3-4-5, out at the plate. 6 safe at the plate. On 1 through 6 the batter reaches first base on a fielder's choice.

NOTE: If runner on third is not forced, runner may be "played safe". He cannot score on an infield out. Play follows Second Roll action.

DOUBLE PLAY CHART

When we explained the First Roll Chart we deferred discussion of double plays. We'll take them up now. They appear on each team roster as the number of lines contained in the "double play range." For purposes of playing Extra Innings you need only use that information. Shortly we will describe for you the technique of rating teams yourself for DPs which will also serve to explain the methodology of handling DPs.

First, when playing "EI", you use your First Roll to establish whether a DP is signaled. A roll between 3-1-1 and the top of the range figure which appears on your roster tells you a double play can take place, if there are less than two out and at least one runner on base.

You proceed to the Second Roll only to learn if the batter has made a base hit. If he has, ignore the double play signal and situation. The base hit erases it!

However, if the batter does not hit safely, do not use the put out designation on the Second Roll Chart. Instead, turn to the Double Play Chart and read the play action in the appropriate column. Do not roll the dice again. The readings start, for any batter, from whatever dice combination is one more line higher than the top of the batter's hitting range up to 3-6-6. You'll find a base runner situation on the Double Play Chart to cover all possible circumstances. Note: When the batter is rated S (Superior Runner) reduce the defensive team DP range by four lines; when rated AAR (Above Average Runner), by two lines. When batter is rated SLO, increase DP range by four lines.

RATING TEAMS FOR DOUBLE PLAYS

Double plays result from the fielding skills of the players and the opportunities to accomplish double plays. As it takes a base runner to make up the twin killing, teams which have strong pitching staffs have fewer opportunities to make double plays. If the team's pitchers are yielding fewer base hits, walking less batters, and the team is making fewer errors, obviously not as many runners will get on base as will happen with teams with weak pitching staffs and which are more prone to errors.

Therefore, we must correlate a team's ERA with the double plays made by the team in actual competition. First we determine the number of DPs per game made by the team. Divide the number of DPs by the number of games played.

Now look up the staff ERA of the team. You are now ready to use the following chart:

Team ERA	Number of Lines
1.00 to 1.99	21.68 x DP/G
2.00 to 2.99	19.09 x DP/G
3.00 to 3.99	17.54 x DP/G
4.00 to 4.99	16.47 x DP/G
5.00 to 5.99	15.67 x DP/G
6.00 or higher	15.00 x DP/G

Illustration: If a team had an ERA of 3.50 and 1.1 DPs per game. Multiply 1.1 times 17.54 equals 19.29, which rounds off to 19 lines. You would assign 3-1-1 to 3-4-1 as the Double Play range for that team.

ERA ADJUSTMENT CHART

"Extra Innings" is a game which balances offense and defense. The batter's "hitting lines" provide him with his batting average and power factors. In an extended competition he will face both good and weak pitching. However, in each game he will bat against pitchers who may be either good or weak.

We provide a way to adjust the batter's "hitting lines" so that low ERA pitchers reduce his average and high ERA pitchers increase it. To get the full flavor of "EI" we strongly recommend you use this technique. If you prefer not to then all of your pitchers will perform to the same standard. To give the pitcher his role in the contest between hitter and pitcher, we urge you to use the ERA Adjustment Chart although it requires some effort on your part.

The chart can be used when playing a competition from any season. Use the league ERA as the norm so you have a starting point from which to count. In 1972 the National League pitchers had a combined ERA of 3.45. That is within the 3.42 - 3.56 group. That would be the norm for the season if you were replaying 1972 National League games. A pitcher who had an ERA from 3.42 to 3.56 would have no effect on a batter's "hitting lines." However, if his ERA was lower than 3.42 or higher than 3.56 you would adjust the batter's "hitting lines" according to the chart. For each ERA grouping above or below the norm you would add or deduct one line.

Let's use the 1972 American League for an illustration: the league ERA was 3.06. We find this in the 2.99 - 3.12 group. If a pitcher had an ERA of 2.50 he would be in the 2.46 - 2.58 group, four levels below the norm. You would deduct four lines from the hitting range of all batters when they faced this pitcher.

A batter rated to hit .282 against a right handed pitcher would appear on the roster as 2-5-1. The pitcher with the 2.50 ERA would lower this by four lines to 2-4-3.

On the other side, if a 1972 American League pitcher had an ERA of 3.75 (within the 3.73 - 3.88 group) we would add five lines to the hitting range. Instead of the .282 hitter having a hitting range up to 2-5-1 against this pitcher it would be 2-5-6.

TIRING PITCHER

Another use of the ERA Adjustment Chart is to apply it to provide a "tiring pitcher" effect. To provide for the fact that pitchers do tire in late innings, the ERA Adjustment Chart can be used this way: If the starting pitcher reaches the eighth inning, increase the hitting lines for all batters by one. In the ninth inning, continue the increase in hitting lines by one, and also increase the batter's extra base hit lines by one. If the game goes into extra innings, and the starting pitcher is still on the mound, add one hitting line for each two extra innings pitched, but do not further increase the extra base hit lines.

All relief pitchers are handled by adding one hitting line to all batters for each inning worked after three innings have been pitched. Also increase the batter's extra base hit lines by one after a relief pitcher has worked three innings, but do not increase them further after the pitcher has worked his fourth inning.

WALKS BY PITCHERS

When we discussed the First Roll Chart we said we'd take up walks later on. This is the time. We have set aside the range of combinations on the First Roll Chart from 1-1-1 to 1-6-6 for walks.

All pitchers on the rosters you have are rated to issue bases on balls at the frequency they did in actual play. The rating is arrived at in this way: three times the innings pitched, plus hits, plus walks to determine batters faced by pitcher (BFP). At this time the National League includes BFP with its official statistics, the American League does not. The formula we have provided is not a 100 per cent accounting of batters faced by pitchers in a season. It lacks hit batsmen and batters reaching base on errors. However, a true tabulation must also account for runners erased on double plays, steal attempts and picked off base. The formula we use compares very closely with the actual BFP figures of the National League.

Having obtained the BFP figure we now divide that figure into 90 per cent of the pitcher's walks. We leave 10 per cent for intentional walks to be given in replays and for the influence of "plus walks nitters" (to be described later in this section.)

Illustration of the formula: let's say a pitcher had 281 innings pitched, given up 214 hits and 122 walks. We'd have 3×281 equals 843 plus 214 plus 122 equals 1179 divided into 90 per cent of his walks (110) equals .093. Consult the Master Chart (decimal equivalent of the 216 possible combinations) and .093 comes on the 20th line. This is a reading of 1-4-2. This pitcher's walk rating would be 1-4-2. On the First Roll he would yield a base on balls on all combinations from 1-1-1 through 1-4-2.

We have now accounted for the pitcher's role in issuing walks. We could leave it there and have realism and accuracy, so far as the pitcher's re-play stats were concerned. But, if we did we'd have all batters averaging the same number of walks over a season's play. Walks average about 10 per cent for all pitchers combined. If all batters obtained 10 per cent walks for their plate appearances we'd find that many hitters would have distorted records. Those hitters who work a pitcher to get on, and whose talents are part of their contribution to team offense, would lose this value. Also, the feared power hitter who causes pitchers to work him carefully, risking a walk rather than a home run would walk less often. In a table game this would mean many more times at bat. In turn this would mean proportionately more home runs and other hits.

WALKS BY BATTERS

To give a balancing effect to the hitter on the issuing of walks, by being either a dangerous hitter, a patient worker of pitchers or a free swinger who accepts fewer walks than the average player, we have rated such batters PW (plus walks) or MW (minus walks).

Remember, pitchers yield walks at an average of 10 per cent, therefore batters obtain them at the same average. The great majority of batters are not in either group, PW or MW. We identify PW (Plus Walks) batters as those who obtain 100 or more walks in a season or who walk 20 per cent or more times compared to their at bats (ABs divided into walks, including intentional). For MW (Minus Walks) we use the same formula and apply this rating to those who only walk 5 per cent or less of the time.

The PW and MW ratings for batters now must effect the pitcher's walk ratings and adjust them. The PW rating increases the pitcher's walk rating against a batter so rated by three full numbers on the second (white) dice, up to a maximum of 1-6-6. A pitcher with a walk rating of 1-3-2 would be 1-6-2 against a PW rated batter.

For MW (Minus Walks) we made the adjustment downward by two full numbers on the second dice. The pitcher with a 1-4-2 rating would drop to a 1-2-2 for a PW rated batter. The minimum decrease allowed is to 1-1-6.

NOTE: You might find these manipulations unnecessary to

provide you with all the action you find satisfactory. You can adopt a standard for bases on balls and eliminate separate considerations for each pitcher's walk rating and whether or not a batter has an effect against it.

Just alter the First Roll Chart to show a base on balls for all rolls from 1-1-1 to 1-4-1. You will be sacrificing accuracy, realism and gamesmanship, but we recognize that not all table gamers seek the same gratifications.

STRIKE OUTS

Each pitcher on your rosters is rated for strike outs. When discussing the Second Roll Chart we said that put outs in the sixth and, sometimes, fifth columns would be converted to strike outs according to the pitcher's strike out rating.

First, we'll explain how a pitcher's strike out rating is determined and then show how it is applied.

There is a significant difference in determining walks from strike outs in "EI." As this game is conducted with two rolls, with walks being determined on the first roll and the second roll being used entirely for recording of hits or outs (combined making up "at bats"), we eliminate walks in figuring a BFP which will only include ABs. The formula is $3 \times \text{InP} \text{ plus hits}$. Divide that into strike outs. This gives you a decimal percentage. Find the closest line on the Master Chart to the decimal percentage to learn the number of lines to be assigned for strike outs by the pitcher. Count them down from 6-6-6.

A pitcher who struck out 10 per cent of all batters he faced, would use 22 lines for strike outs. You'd credit him with a strike out on all Second Rolls from 6-3-3 to 6-6-6, regardless of the form of put out on the Second Roll Chart.

NOTE: Again, if you want to sacrifice accuracy, realism and gamesmanship for speed and simplicity, you can just regard every roll from 6-2-6 through 6-6-6 as a strike out by every pitcher.

PLAYING SAFE

The team at bat can eliminate the risk of having a base runner picked off or a runner who is not forced being doubled off his base by declaring it is "playing safe." When this condition is in effect, the Double Play Chart is only effective on a ground ball with a runner on first base. No base runner can be doubled off his base. The pickoff plays on the First Roll Chart (2-1-3 and 2-1-4) are suspended.

To offset this, a base hit made when a team is "playing safe" can only advance a runner one base further than the hit itself. A base runner can only advance one base. For example: when "playing safe" with a runner on second, a single or double would advance him only to third base. A runner on first would advance only to third on a double, only to second on a single.

INJURIES:

We commented, when describing the First Roll Chart, that this is an optional touch of realism. We've made it possible for injuries to occur and feel it adds a realistic factor in the playing of a single game. When it happens, the injured player leaves the game and is replaced.

However, the duration of time lost because of an injury becomes a factor if you are conducting a series of games or playing a season. You have several options: one, of course, is to simply ignore all injuries. Another is to recognize the injury but only take the player out of the game, and not extend the time lost. Many who re-play actual seasons prefer to be guided by the number of games played and times at bat shown for each player on the roster. An injury which forces a player out of the game for a long period can upset that approach.

Others, either using all-star combinations or having created a fictitious world of ball players (as in Robert Coover's "The Universal Baseball Association, J. Henry Waugh, Prop.") want to have players sidelined. (Personally, we stop short of fatalities).

For the purpose of creating a length of time lost because of injury we provide the following.

Roll the dice to determine length of injury period.

1-1-1 thru 4-6-6 - Returns to action with next game.

5-1-1 thru 5-1-6 misses one game; 5-2-1 thru 5-2-6 misses two games; 5-3-1 thru 5-3-6 misses three games; 5-4-1 thru 5-4-6 misses four games; 5-5-1 thru 5-5-6 misses five games; 5-6-1 thru 5-6-6 misses six games.

6-1-1 thru 6-3-6 misses ten games; 6-4-1 thru 6-5-6 misses 15 games; 6-6-1 thru 6-6-4 misses 20 games; 6-6-5 and 6-6-6 out for rest of season.

If a pitcher is injured he cannot be used in the following six games on a roll from 5-1-1 to 5-6-6. He cannot be used in the next ten games on a roll from 6-1-1 to 6-4-6; the next fifteen games from 6-5-1 to 6-5-5; the next twenty games from 6-5-6 to 6-6-4 and is out for the season on rolls 6-6-5 and 6-6-6.

NOTE: On a Hit Batter (First Roll Chart 2-1-1) apply the same injury information. However, on rolls from 1-1-1 thru 4-6-6 he remains in the game.

INJURED PLAYER: On base hits, the runner is the injured player. On put outs the player making the put out is the injured player. On the force play at second, if the batter is right handed the play is made by the second baseman; if the batter is left handed by the short stop. On tag plays at the plate, if the third (green) dice is 1-2-3-4 the runner is injured; 5 and 6, the catcher is injured.

RATING THE PLAYERS

In earlier sections we have found it more practical to discuss the techniques of rating players so that you would understand the principles as well as the application. In batting we have not yet showed you how batters are rated for extra base hitting. The formula is this: At bats divided into the extra base hit - do HR first. If batter had 529 ABs and 25 HR, 529 into 25 is .047. Multiply by 216 (lines) to get ten lines. Rate 1-1-1 through 1-2-4 for homers. Do same steps for triples, then doubles.

The batting averages have been described as being in effect against both right and left handed pitching. We provide you with the dice combinations to bring about all batting averages with the text. These are the results of computer computations based on the expectation that a batter face a mixture of pitching which will be 80 per cent right handed and 20 per cent left handed.

You have learned how to rate pitchers for walks and strike outs. Team ratings for double plays and errors have also been described.

We now reach the area of "subjective" ratings. These are running speed, throwing ability and defensive capability. Unlike the ratings which are entirely the result of arithmetic (batting, power hitting, walks, strike outs, etc.) these require an "opinion."

In ratings we provide we try to be objective and to have a basis for our opinion. We rely on reputation, observation and are guided by statistics.

Running Ratings have been discussed in some detail already. We've explained why we discriminate against pitchers. Stolen bases is not an absolute indicator of running speed. Joe DiMaggio and Mickey Mantle were exceptional base stealers on those rare occasions when they found it important. Usually they waited for the next Yankee slugger to bat them home. Of course, Mantle had injury prone legs and limited his risks. Both were outstanding in taking the extra base.

Throwing ratings for outfielders depend mostly on the number of assists. Again, this is not an absolute statistic. As we commented in discussing steals against catchers; a suspected or known poor arm will encourage runners to make many more attempts. The percentage of runners thrown out may be low (but is not a published stat) but the number of assists (which is a published stat) may be high.

DEFENSIVE RATINGS

Over-all Defensive Ratings are very much a matter of opinion. Many of the greatest defensive players have led the league in errors and some of the most limited players have had league leading fielding averages.

The effect of running and throwing ratings are built into the charts where this is a factor. However, we have rated some players SD (Superior Defense) and LD (Limited Defense) and there is a specific application of these ratings to the play of the game.

Please observe that on the Second Roll Chart we have shaded some of the combinations.

SD players make put outs on all combinations from 2-2-1 thru 2-4-2, even when it is in the hitting range of the batter! Disregard of putouts as designated by 3rd dice. They literally "take away a hit" by their exceptional glove work.

LD players change a put out into a base hit on a combination in a shaded area. Regardless of the batter's hitting range, any combination from 2-2-1 through 2-4-2 is a single as is any combination from 5-2-1 thru 5-4-6 unless it has already been recorded as a strike out.

When an LD player causes a putout to become a single, any base runners are limited to one base advance with less than two outs; they advance two bases when there are two outs on hits to the outfield only.

The Superior Defense player also has an effect on errors. You'll see on the Error Designation Chart that a column under SD has been shaded. If the player at the position charged with the error is rated SD, he does not make an error in the range from the start of the numbers assigned to that position through the number in the shaded area.

For example, if the error were to be charged to the first baseman and he was rated SD (George Sisler, for example) he would not be charged with an error on 1-1-1 through 1-1-4, only on 1-1-5 through 1-3-6.

When an SD player converts an error into a put out, credit him with the put out, regardless of the original designation on the Second Roll Chart. Any runners hold their bases.

PLAYING THE GAME....

"Extra Innings" was designed to allow the re-playing of a complete season based upon official statistics. Obviously, if it meets that standard, any shorter version can be handled. Games play in 30 minutes, or less, solitaire, once you've become familiar with the rules.

When space permits, we suggest that a large back board be obtained and propped up to be both a back board against which to roll the dice and to which to tack the charts.

Score sheets (boxscores) is an item which is used in great quantity. We have enclosed with your game one which we have designed. You can produce these yourself if you have access to a mimeograph and stencils. Or, you can have them printed in quantity by a local print shop, inexpensively. The only real difference in our design and commercial ones (in addition to providing plenty of space) is that they also provide a box score space for noting ratings on the players.

We transfer the pitcher's rating and SD and LD ratings only, observing all other ratings directly from the roster as we go along.

In designing "Extra Innings" we have tried to include all fringe action on an optional basis. If you want to take the extra steps for a "tiring pitcher", utilize the sophistications of SD and LD players, the counter balancing effects of pitchers and hitters on walks, you can.

Here are some further "optional devices."

Home Team Advantage. Most teams win more often at home than on the road. They have the advantage of a familiar ball park, fan support (usually), and are living at home. Probably more important, teams are assembled so that players can use their talents best. A ball park with a short left field fence (Fenway Park, Boston) will try to obtain right handed pull hitters; the New York Yankees, with a short distance to right field and a long way to left field, will go for left handed pull hitters.

Teams which play in spacious ball parks (Los Angeles Dodgers, for example) go for line drive hitters who are fast runners. In other words, most teams are put together to take advantage of the home ball park where they'll play half their season's games.

If you want to shade the statistics you can increase the power lines for the home team by one number of the third (green) dice for home runs, triples and doubles! If batter has no power lines in an extra base category, give him one starting with doubles. At the same time decrease the visiting team's power lines the same way.

Forestalling Questions: We don't want, ever, to reach a point of corporate stuffiness which sees us replying to questions by form letter or ignoring them. Still, most of those which require specific answers stem from the following:

The use of stats which have been introduced in recent years (attempted steals, for example). "EI" is intended for play both by those table gamers who relate to today's teams and those who prefer to use teams and players from earlier eras.

Our guiding rule is that, unless a stat is included in that fantastic resource work, MacMillan's "The Baseball Encyclopedia," we don't use it.

Prepared rosters for earlier seasons. Other than making this a feature of our newsletter (one league from the past each year) we can not expend the time and absorb the printing costs for full leagues. However, we have shown you how to do it for yourself.

Other sports games. We have only limited time and resources. We have no other games to market and no expectation of broadening our areas of interest beyond baseball. However, you are welcome to base a game of your own developing on three dice and the Master Chart.

Boxscores, tab sheets, etc. We do not deal in the volume of business which enables us to get into ancillary services. We've suggested an inexpensive way to produce your own boxscore sheets.

Now, we hope you've absorbed most of what you've read and will learn "EI" by playing it. If you do, and if you have the imagination and intelligence, you have many years of a most rewarding hobby ahead. Play ball!

NORMALIZATION

"Normalization" is the process which measures the comparative abilities of all players regardless of when they played major league baseball. Until now arguments whether Christy Mathewson was better than Tom Seaver, how many would Walter Johnson fan if he were pitching today, how many homers would Babe Ruth hit or how many would Hank Aaron hit if he'd played in Ruth's era, have been impossible to resolve.

The conditions under which players performed in the different eras which make up baseball history have made comparisons purely speculative. However, we can assume that players have not differed in physical ability regardless of when they played. Players careers have overlapped without any difference in ability being evident. Cap Anson was still going strong when Honus Wagner came on the scene, then Cobb, then Ruth, then Gehrig, DiMaggio, Mantle to Murcer. Each star of each era continued to perform at his level while newcomers arrived.

It is true today's players are taller and weigh more on the average; but baseball is primarily a game of skill as well as power. Certainly some of the big men of the earlier eras had the physique of today's players and we believe that the little fellows, like Wee Willie Keeler, Hughie Jennings and Billy Hamilton would still make contact and rap out singles.

There is one common denominator in every season played, that's the league average for each department. Team batting averages and pitcher's earned run averages have fluctuated throughout baseball's history. They rise and fall depending upon the liveliness of the ball mostly, and the style of play it produces.

The primary thing that is measurable at any point in baseball history is the superiority of a performance above, or below, the average for the entire league in a given season. When Babe Ruth produced the most astonishing feat of hitting 54 home runs in 1920 (breaking his own record of the previous year when he had hit 29) the whole league hit only 369 - of which .145 was Ruth's contribution.

When Roger Maris broke Ruth's eventual home run mark of 60, made in 1927, by hitting 61 in 1961, the entire league (ten teams, grant you) hit 1534 home runs. Maris' total was .04 of the league. We don't want to start the argument of Maris vs Ruth, only to show that a specific statistic can be measurably greater than the league average in one season than in another.

To make comparisons more valid, we decided to compare statistics from various eras in baseball's history against the same point in time.

Here we made a choice in favor of the decade following World War II, 1946-1955.

We chose that particular ten year period because it provides a basic similarity to today's game. There was night baseball. Gloves had been developed to today's size. While there were no artificial playing surfaces, diamonds were smooth and well cared for.

Expansion had not diluted playing talent; there were 16 major league teams. And, following World War II, the minors boomed and produced an abundance of talent for the majors. Television didn't begin to kill off the minors until the mid-50s.

World War II had an influence. Young ball players

were delayed in reaching the majors and came up several years more developed than had there been no interruption in their careers.

Other sports had not yet offered the salary rewards that now lure multi-sport athletes away from baseball and into professional football and basketball.

But, most significantly, the black players arrived. Starting with Jackie Robinson in 1947, that decade saw the arrival of Aaron, Mays, Clemente, Newcombe, a faded Paige, Campanella, Frank Robinson, Doby, Irvin, Banks and others to add their skills and raise the quality of major league play.

We believe major league baseball reached its peak in that period.

Of course, we might have chosen any other time period, the more recent 1960s, the lively ball era of the 1920s or 1930s, the dead ball era before World War One, or gone back to the 19th Century. The point is the players would remain in the same rank as they now appear in the Top 400. If we had chosen the lively ball era as our comparison point, all averages would "normalize" at high levels. The reverse would be true of the late sixties and early 1970s.

"Normalization" has varying effects, depending on the nature of the game at any particular period. Except for the early years of the twentieth century, averages tend to drop when transposed, while power factors rise. Fans of today's players enjoy seeing their heroes batting averages rise. ERAs of the dead ball era move upward and the higher ERAs of the 20s and 30s, when the ball was liveliest, descend.

We have provided with "Extra Innings" a special supplement, "The Top 400 Players of All Time - Normalized". This talent pool will provide you with all kinds of varieties of all-star combinations or you can make up an entire league.

We may, if demand warrants it, normalize the teams now among the 36 Historic Teams, a separate supplement. Also, we may add teams to that section and have them both normalized and rated for standard play.

We are not certain how many table gamers would become interested in the normalization process that they'd want to normalize players not included among our "top 400" or to normalize teams and leagues. We are sure this'd be outside the range of interest of most players.

In "Extra Innings" we have made it a point to show how to rate players yourself for play based upon actual statistics. We have debated a long time whether to show the process by which normalization is worked out. This is the result of two math whizzes, Jeff Sagarin and John Swistak, developing "EI's" concept of transferring a player's superiority over his league average in each department to the average of the decade 1946-55. It isn't so much we regard it as a "secret" as that we regard it as a "precious" secret.

Therefore, we have elected to withhold publishing the formulae for normalization with the game, "Extra Innings." If you feel you would really want to normalize players and teams yourself, please make inquiry of "Extra Innings." We will quote you a price for all formulae and for special charts which give the data details for all years from 1876 through 1972.

FIRST ROLL CHART

- 1-1-1 thru 1-6-6 (See pitcher's rating for walks issued)
- 2-1-1 Hit Batter (Also see Injury Chart)
- 2-1-2 Passed Ball - all catchers (when rated SD does not apply if runner on third)
- 2-1-3 Pickoff - By pitcher if runner (s) are at first or runners on first and second. If first and second, runner at second is picked off - (1106)
- 2-1-4 Pickoff - By catcher if runner (s) on first or third. If catcher rated SD, pickoff of lead runner at any base, regardless of number of base runners.
- 2-1-5 Wild Pitch when runner on first only.
- 2-1-6 Wild Pitch runner (s) on any base.
- 2-2-1 Balk-S or AAR runners on any base
- 2-2-2 Interference by catcher if batter strikes out with runner (s) on base.
- 2-2-3 Injury - If followed by single (consult injury chart)
- 2-2-4 Injury - If followed by double (consult injury chart)
- 2-2-5 Injury - If followed by triple (consult injury chart)
- 2-2-6 Injury - If followed by force play at second (consult injury chart)
- 2-3-1 Injury - If followed by tag play at plate (consult injury chart)
- 2-3-2 Injury - If followed by foul out (consult injury chart)
- 2-3-3 Injury - If followed by outfield fly (consult chart)
- 2-3-4 If batter singles with runner on first only with the hit and run play on, the ball hits runner who is automatically out.
- 2-3-5 Ground Rule Double - If followed by double, triple or home run. Any base runners limited to one base advance; triple or home run is reduced to double.
- 2-3-6 thru 2-6-6 (Reserved for "rare events")
- 3-1-1 thru 3-4-4 DOUBLE PLAY RANGE (See Defensive Team Rating and Double Play Chart)
- 3-4-5 Triple Play - 2 or 3 men on base. If followed by In. F. fair fly ball.
- 3-4-6 Triple Play - bases loaded only. If followed by In. F. fair fly ball.
- 3-5-1 thru 6-6-6 ERROR RANGE (See team rating and Error Designation Chart)

SECOND ROLL CHART

1-1-1	1-1-2	1-1-3	1-1-4	1-1-5	1-1-6	2-1-1	2-1-2	2-1-3	2-1-4	2-1-5	2-1-6	3-1-1	3-1-2	3-1-3	3-1-4	3-1-5	3-1-6	4-1-1	4-1-2	4-1-3	4-1-4	4-1-5	4-1-6	A	B	5-1-1	5-1-2	5-1-3	5-1-4	5-1-5	5-1-6	6-1-1	6-1-2	6-1-3	6-1-4	6-1-5	6-1-6	7*	8*	9*	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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* Sac. Fly Option, ** Sac. Fly Option - S and AAR runners only.

A - No runner on first.

B - Runner on first.

K - Strike Out.

SD player at position converts basehit to fly ball put out.

LD player at position does not catch ball - batter gets single.

ADVANCING ON SINGLES AND DOUBLES CHART

Type of Hit	Runner On	Runner Rated	Number of Outs	Left	Base Hit To: Center	Right
Single	First	AR	None or One	To Second	To Third	To Third
		S & AAR	" "	To Third *	" "	" "
		Slo	" "	To Second	To Second	To Second
	First	AR	Two Out	To Third *	To Third	To Third
		S & AAR	" "	" "	" "	" "
		Slo	" "	To Second	" "	" "
Second	AR	None or One	To Third *	To Third *	Scores *	
	S & AAR	" "	" "	Scores	Scores	
	Slo	" "	To Third	To Third	To Third	
Second	AR	Two Out	Scores *	Scores	Scores *	
	S & AAR	" "	" "	" "	" "	
	Slo	" "	To Third	To Third	To Third	
Third	AR, S, AAR, Slo	None or One	Scores *	Scores *	Scores *	
	AR	Two Out	Scores	Scores	Scores	
	S & AAR	" "	To Third	To Third	To Third	
Double	First	AR	None or One	To Third	Scores *	Scores *
		S & AAR	" "	Scores	" "	" "
		Slo	" "	To Third	To Third	To Third
Second	AR	Two Out	Scores *	Scores *	Scores *	
	S & AAR	" "	" "	" "	" "	
	Slo	" "	To Third	To Third	To Third	

* When outfielder is rated T-1, reduce bases advanced by one.

Third dice (green) on base hits establishes fielder handling the ball: 1 & 2 is left fielder, 3 & 4 is center fielder; 5 & 6 is right fielder.

When second (white) and third (green) dice are the same numbers, hit is an infield single and all runners advance one base.

Very rarely, application of this chart will result with two runners arriving at the same base. When this happens, lead runner is entitled to base and following runner is tagged out by basemen. baseman.

Illustration: assume bases are loaded with Slo runner at second and T-1 outfielder and batter hits a double.

When the hit is the top of the hitting lines for the batter, he is out trying to stretch his single into a double (outfielder handling ball to second baseman) if second base is unoccupied.

SQUEEZE PLAY CHART

(with runner on 3rd, less than two out)

DEFENSIVE TEAM MUST DECIDE TO PLAY IN OR BACK.

When infield is playing BACK.

("SUICIDE SQUEEZE") Offensive team must announce before first roll.
(This becomes only roll for the batter)

- 1-1-1 thru 2-2-2 Everyone SAFE. Credit batter with sacrifice.
- 2-2-3 thru 3-3-3 Runner SAFE. Batter OUT (1 to 3). Credit with sacrifice.
- 3-3-4 thru 6-1-4 Runner OUT (1 to 2). Batter reaches first on FC.
- 6-1-5 thru 6-6-6 DOUBLE PLAY. 1 to 2 to 3.

("SAFETY SQUEEZE") Offensive team must announce before first roll.

- 1-1-1 thru 1-6-1 Everyone SAFE. Credit batter with sacrifice.
- 1-6-2 thru 2-5-6 Runner SAFE. Batter OUT (5 to 3). Credit with sacrifice.
- 2-6-1 thru 3-6-6 Runner OUT (1 to 2). Batter reaches first, FC.
- 4-1-1 thru 4-4-4 DOUBLE PLAY. Runner out 1 to 2. Batter out 2 to 3.
- 4-4-5 thru 6-6-6 Runner HOLDS THIRD BASE. Batter out 5 to 3.
(If bases loaded, or runners on first and third, batter is struck out.)

WHEN INFIELD IS PLAYING SHALLOW

("SUICIDE SQUEEZE") Offensive team must announce before first roll.

- 1-1-1 thru 2-2-2 Everyone SAFE. Credit batter with sacrifice.
- 2-2-3 thru 3-1-4 Runner SAFE. Batter OUT, 3 unassisted.
- 3-1-5 thru 6-1-4 Runner OUT (1 to 2). Batter reaches first, FC.
- 6-1-5 thru 6-6-6 DOUBLE PLAY. Runner out 1 to 2. Batter out 2 to 3.

("SAFETY SQUEEZE") Offensive team must announce before first roll.

- 1-1-1 thru 1-6-1 Everyone SAFE. Credit batter with sacrifice.
- 1-6-2 thru 3-1-1 Runner SAFE. Batter OUT, 3 unassisted.
- 3-1-2 thru 3-6-6 Runner OUT, 1 to 2. Batter reaches first, FC.
- 4-1-1 thru 4-4-4 DOUBLE PLAY. 1 to 5 (runner doubled off third).
- 4-4-5 thru 6-6-6 Runner HOLDS THIRD BASE. Batter out 5 to 3.
(If bases loaded, or runners on first and third, batter is struck out.)

ERROR DESIGNATIONS

BY POSITION

If the first roll has established that an error will occur, ROLL THE DICE TO DETERMINE IF THE BATTER HAS MADE A HIT OR AN OUT. Then, ROLL THE DICE AGAIN (yes, a third time) AND APPLY THE INFORMATION ON THIS CHART. This charges the error to a defensive position and establishes whether it is a one base or two base error.

If the batter has made a HIT, the error follows the hit. Credit the hit to the batter and he moves an extra base (or bases) as a result of the error. Any other base runners advance as designated by the hit and as many extra bases as designated on the error.

When Batter Has Made A Hit Charge Error to:

SD*	When Error Replaces An Out Charge Error To:
1-1-1	1-1-2 First Base
1-1-3	1-1-5 Second Base
1-1-6	1-2-4 Third Base
1-2-5	1-3-5 Short Stop
1-3-6	3-2-3 Right Field
3-2-4	5-1-2 Center Field
5-1-3	6-5-6 Left Field
6-6-1	6-6-3 Catcher
6-6-4	6-6-6 Pitcher
1-1-1	1-1-1 (1-1-4) First Base
1-4-1	(1-5-2) Second Base
2-5-6	(3-1-2) Third Base
4-3-3	(4-4-4) Short Stop
5-6-3	(5-6-5) Right Field
6-1-1	(6-1-2) Center Field
6-1-4	(6-1-5) Left Field
6-2-1	(6-2-4) Catcher
6-3-3	(6-4-3) Pitcher

* When a Superior Defensive player converts an error to an out, he is credited with the put out; no advance by any base runners.

If the error is made by infielder, catcher or pitcher and green dice ends in 5 or 6, it is a two-base error. If made by an outfielder and green dice ends in 4, 5 or 6, it is a two-base error. All other numbers on the green dice are one base errors.

DOUBLE PLAY CHART

Top of Hit Range	Runner on 1st only or First & Third*		Runners on 1st & 2nd		Bases Loaded		Runners on 2nd & 3rd		Runners on 2nd only		Runners on 3rd only	
	No Out	One Out	No Out	One Out	No Out	One Out	No Out-One Out	2nd & 3rd No Out-One Out	No Out-One Out	6 ua	6-4	No Out-One Out
thru 3-6-6	6-4-3	6-4-3	6-4-3 ^B	6-4-3	6-4-3 ^E	6-4-3	6-5	6-5	6 ua	6-4	6-5	6-5
4-1-1 thru 4-6-6	4-6-3	4-6-3	4-6-3 ^B	4-6-3	4-6-3 ^E	4-6-3	4-5	4 ua	4 ua	4-6	4-5	4-5
5-1-1 thru 5-4-6	5-4-3	5-4-3	5-4-3 ^B	5-4-3	5-4-3 ^E	5-4-3	5 ua	5-4	5-4	5-4	5 ua	5 ua
5-5-1 thru 5-6-4	1-4-3	1-6-3	1-5-4 ^C	1-5-3	1-2-3 ^D	1-2-3	1-5	1-6	1-4	1-6	1-5	1-5
5-6-5 thru 5-6-6	2-4-3	2-6-3	2-5-4 ^C	2-5-3	5-2-3	5-2-3	2-5	2-5	2-4	2-6	2-5	2-5
6-1-1 thru 6-6-6	3 ua	3-6-3	3 ua ^A	3-6-3	3-2-3 ^D	3-6-3	3-5	3-4	3-6	3-4	3-5	3-5

A - Runner on second remains there

B - Runner from second advances to third

C - Batter reaches first on fielder's choice

D - Runners from first & second advance to next base

E - Runner scores from third

* Runner from third scores on all plays.

NOTE: When first base not occupied, batter is always retired on a line drive and runner nearest home is doubled off base. Any runner not involved remains on his base.

UA - Unassisted Put Out

STOLEN BASE CHART

Action takes place BEFORE First Roll. After it is completed, proceed with First Roll on the batter. Remember, all players on the roster have been rated for base running: Slow, Average, Above Average and Superior.

To Steal SECOND BASE:

	Right Handed Pitcher	Left Handed Pitcher
Slow Runner	1-1-1 thru 1-6-6	thru 1-5-6
Average Runner	1-1-1 thru 3-4-5	thru 3-3-3
Above Average Runner	1-1-1 thru 4-4-6	thru 4-3-6
Superior Runner	1-1-1 thru 5-3-6	thru 5-2-6

To Steal THIRD BASE:

Slow Runner	1-1-1 thru 1-5-6	thru 1-6-6
Average Runner	1-1-1 thru 2-3-6	thru 2-4-6
Above Average Runner	1-1-1 thru 4-3-6	thru 4-4-6
Superior Runner	1-1-1 thru 5-2-6	thru 5-3-6

To Steal HOME:

Slow Runner	Cannot steal home	thru 1-6-6
Average Runner		thru 2-4-6
Above Average Runner		thru 4-4-6
Superior Runner		

NOTE: Above average runner is limited to one stolen base attempt per nine inning game. Is unlimited in extra innings.

Superior base runner is limited to two stolen base attempts per nine inning game. Is unlimited in extra innings.

Slow and Average Runners are unlimited in their attempts.

DOUBLE AND TRIPLE STEALS, all action is governed by front runner. Others advance whether front runner is safe or not.

ERRORS ON STEAL ATTEMPTS, ETC., SEE TEXT.

SACRIFICE FLY OPTION CHART

(This action can take place only after the Second Roll.) Certain outfield flyouts — on the Second Roll Chart — are marked with an asterisk (*). These apply to all base runners. Those marked ** apply to base runners rated S and AAR only.

With a runner on third base, and less than two out, the team at bat may elect to attempt to score after the put out.

When using this option the following charts apply.

INNINGS ONE THROUGH SEVEN.

When fly ball is FIRST OUT of the inning, must roll from 1-1-1 through 5-6-6 to score from third. (1-1-1 thru 4-6-6 if outfielder rated T-1).
When fly ball is SECOND OUT of the inning, must roll from 1-1-1 through 4-6-6 to score from third. (1-1-1 thru 3-6-6 if outfielder rated T-1).

INNINGS EIGHT AND NINE — AND IN EXTRA INNINGS.

When fly ball is FIRST OUT of the inning, must roll from 1-1-1 through 5-3-6 to score from third. (1-1-1 thru 4-3-6 if outfielder rated T-1).
When fly ball is SECOND OUT of the inning, must roll from 1-1-1 through 4-3-6 to score from third. (1-1-1 thru 3-3-6 if outfielder rated T-1).

When runner FAILS TO SCORE, credit assist to outfielder making put out, put out on the runner to the catcher.

When runner FAILS TO SCORE, any other base runners advance one base.

When runner DOES SCORE, any other runners remain at their base.

HIT AND RUN CHART

Use only after First Roll. Cannot be used if error, double or triple play is signaled on First Roll.

IF BATTER HITS SAFELY:

Singles move any base runners one base more than movement on "Advancing On Singles and Doubles Chart".

Doubles score all base runners, regardless of running rating.

IF BATTER MAKES OUT:

Strike Out: The lead runner is handled as though it were a stolen base attempt.

Outfield Fly Out: All runners return safely to their bases. Any Slo runner is doubled off by outfielder rated T-1.

Infield Fly Out: On Foul Outs to an infielder or catcher, runners return safely to bases. On fair balls to infielders or pitchers, the lead runner is doubled off base.

Infield Ground Ball: All runners advance one base. Batter out at first.

NOTE: If a "hit and run" play is used with two out, lower the batter's hitting range by six lines; reduce extra base hits by one.

PLAYING THE INFIELD "IN"

(with runner on third) Play action on ground balls (third dice - green - is read as follows)

Ground Out to First: 1, 2, 3, 4, out at plate; 5 & 6 safe at plate. (1 thru 5 batter safe at first; 6, batter out 3 ua.)

Ground Out to Second: 1, 2, 3 out at plate; 4, 5, 6 safe at plate. (1 thru 4 batter safe at first; 5 & 6, batter out 4-3)

Ground Out to Short: 1-2-3-4 out at plate, 5 & 6 safe at plate. (1 thru 5 batter safe at first; 6 batter out 6-3)

Ground Out to Third: 1-2-3-4 out at plate, 5 & 6 safe at plate. (1 thru 6 batter safe at first)

Ground Out to Pitcher: 1-2-3-4-5 out at plate, 6 safe at plate. (1 thru 6 batter safe at first)

NOTE: With infield drawn in, increase the batter's hitting lines by six.

SACRIFICE BUNT CHART

Runner on First or runners on first and second only. (Not to be used for a squeeze play with runners on third)

		Lead runner is rated:		
		AR	S or AAR	Slo
FIRST TRY	Foul Ball	1-1-1 thru 3-6-6	1-1-1 thru 3-6-6	1-1-1 thru 3-6-6
	Successful	4-1-1 thru 5-6-6	4-1-1 thru 6-3-1	4-1-1 thru 5-1-1
	Failure	6-1-1 thru 6-6-6	6-3-2 thru 6-6-6	5-1-2 thru 6-6-6
SECOND TRY	Foul Ball	1-1-1 thru 3-6-6	1-1-1 thru 3-6-6	1-1-1 thru 3-6-6
	Successful	4-1-1 thru 5-6-6	4-1-1 thru 6-3-1	4-1-1 thru 5-1-1
	Failure	6-1-1 thru 6-6-6	6-3-2 thru 6-6-6	5-1-2 thru 6-6-6
THIRD TRY (optional)	Successful	1-1-1 thru 4-3-6	1-1-1 thru 4-6-6	1-1-1 thru 4-1-1
	Failure	4-4-1 thru 6-6-6	5-1-1 thru 6-6-6	4-1-2 thru 6-6-6
	(includes foul with two strikes)			

Special data on successful attempts. On First try batter is retired pitcher to first baseman. On Second try, batter is retired pitcher to second baseman covering first base. On Third try, batter is retired third baseman to second baseman covering first base. If last two dice are the same on a successful attempt, base runner(s) safe on a fielders choice and batter reaches first base and is credited with a sacrifice.

If a 6-6, credit batter with a bunt single.

Special data on unsuccessful attempts (not foul balls).
If the third dice ends in:

One: Runner out. If more than one runner, the lead runner is out, other advancing to second base. If put out at third base, runner out, pitcher to third. If put out at second base, runner out, pitcher to short stop. Batter reaches first.

Two: Runner out. If more than one runner, the lead runner is out, other advancing to second base. If put out at third base, runner out, first baseman to third baseman. If put out at second base, runner out, pitcher to shortstop. Batter reaches first.

Three: Runner out. If more than one runner, the lead runner is out, other advancing to second base. If put out at third base, runner out, catcher to third baseman. If put out at second base, runner out first baseman to shortstop. Batter reaches first.

Four: Batter strikes out. No advance.

Five: Batter fouls to catcher. No advance.

Six: Double Play. If more than one runner on base, lead

runner is doubled off. If runner doubled off second, put out catcher to shortstop. If runner doubled off first, put out pitcher to first baseman.

ERRORS: (As sacrifice attempt replaces First Roll action on batter, it is necessary to include error possibility in the Sacrifice Bunt Chart.)

Any failure (not including foul balls on first two tries) which ends in "double figures" on last two dice, 1-1, 2-2, 3-3, etc. replaces the described action with an error as follows:

1-1 Error on pitchers throw, all runners advance one base extra, batter reaches first.

2-2 Error on pitchers throw to first base. Runners advance on sacrifice credited to batter, and batter is safe at first on error.

3-3 Error on catchers throw, if more than one runner, lead runner advances two bases, other runner one base. If only one runner, advances one base. Batter reaches first safely on error.

4-4 Error on catchers throw. Runner(s) advance two bases, batter reaches second on catchers throwing error.

5-5 Error on first basemens throw, all runners advance one base extra, batter reaches first.

6-6 Error on third basemens throw, all runners advance one base extra, batter reaches first.

ERA ADJUSTMENT CHART

0.84-0.90	2.59-2.71	5.56-5.76
0.91-0.97	2.72-2.84	5.77-5.98
0.98-1.05	2.85-2.98	5.99-6.20
1.06-1.13	2.99-3.12	6.21-6.42
1.14-1.21	3.13-3.26	6.43-6.66
1.22-1.30	3.27-3.41	6.67-6.90
1.31-1.39	3.42-3.56	6.91-7.14
1.40-1.48	3.57-3.72	7.15-7.39
1.49-1.58	3.73-3.88	7.40-7.65
1.59-1.67	N-3.89-4.05	7.66-7.92
1.68-1.78	4.06-4.22	7.93-8.19
1.79-1.88	4.23-4.39	8.20-8.46
1.89-1.99	4.40-4.57	8.47-8.75
2.00-2.10	4.58-4.76	8.76-9.04
2.11-2.21	4.77-4.95	9.05-9.34
2.22-2.33	4.96-5.14	9.35-9.64
2.34-2.45	5.15-5.34	9.65-9.95
2.46-2.58	5.35-5.55	9.96-10.27

N - For normalized play, use this line as the "median point" to lower hit lines of batters.

Designed by
Jeff Sagarin, M.I.T. '70

BATTING AVERAGE RATING CHART

(Right Handed Batters)

Left column when facing left handed pitcher.
Right column when facing right handed pitcher.

.166	2-1-3	1-6-5	.239	2-3-6	2-3-3	.312	2-6-3	2-6-1	.385	3-2-6	3-2-5
.167	1-6-6	1-6-6	.240	2-4-1	2-3-3	.313	2-6-4	2-6-1	.386	3-3-1	3-2-5
.168	2-1-1	1-6-6	.241	2-3-4	2-3-4	.314	2-6-5	2-6-1	.387	3-3-2	3-2-5
.169	2-1-2	1-6-6	.242	2-3-5	2-3-4	.315	2-6-2	2-6-2	.388	3-3-3	3-2-5
.170	2-1-3	1-6-6	.243	2-3-6	2-3-4	.316	2-6-3	2-6-2	.389	3-2-6	3-2-6
.171	2-1-1	2-1-1	.244	2-4-1	2-3-4	.317	2-6-4	2-6-2	.390	3-3-1	3-2-6
.172	2-1-2	2-1-1	.245	2-3-5	2-3-5	.318	2-6-5	2-6-2	.391	3-3-2	3-2-6
.173	2-1-3	2-1-1	.246	2-3-6	2-3-5	.319	2-6-3	2-6-3	.392	3-3-3	3-2-6
.174	2-1-4	2-1-1	.247	2-4-1	2-3-5	.320	2-6-4	2-6-3	.393	3-3-4	3-2-6
.175	2-1-5	2-1-1	.248	2-4-2	2-3-5	.321	2-6-5	2-6-3	.394	3-3-1	3-3-1
.176	2-1-2	2-1-2	.249	2-4-3	2-3-5	.322	2-6-6	2-6-3	.395	3-3-2	3-3-1
.177	2-1-3	2-1-2	.250	2-3-6	2-3-6	.323	3-1-1	2-6-3	.396	3-3-3	3-3-1
.178	2-1-4	2-1-2	.251	2-4-1	2-3-6	.324	2-6-4	2-6-4	.397	3-3-4	3-3-1
.179	2-1-5	2-1-2	.252	2-4-2	2-3-6	.325	2-6-5	2-6-4	.398	3-3-2	3-3-2
.180	2-1-6	2-1-2	.253	2-4-3	2-3-6	.326	2-6-6	2-6-4	.399	3-3-3	3-3-2
.181	2-1-3	2-1-3	.254	2-4-4	2-3-6	.327	3-1-1	2-6-4	.400	3-3-4	3-3-2
.182	2-1-4	2-1-3	.255	2-4-1	2-4-1	.328	3-1-2	2-6-4	.403	3-3-3	3-3-3
.183	2-1-5	2-1-3	.256	2-4-2	2-4-1	.329	2-6-5	2-6-5	.407	3-3-4	3-3-4
.184	2-1-6	2-1-3	.257	2-4-3	2-4-1	.330	2-6-6	2-6-5	.412	3-3-5	3-3-5
.185	2-1-4	2-1-4	.258	2-4-4	2-4-1	.331	3-1-1	2-6-5	.417	3-3-6	3-3-6
.186	2-1-5	2-1-4	.259	2-4-2	2-4-2	.332	3-1-2	2-6-5	.421	3-4-1	3-4-1
.187	2-1-6	2-1-4	.260	2-4-3	2-4-2	.333	2-6-6	2-6-6	.426	3-4-2	3-4-2
.188	2-2-1	2-1-4	.261	2-4-4	2-4-2	.334	3-1-1	2-6-6	.431	3-4-3	3-4-3
.189	2-2-2	2-1-4	.262	2-4-5	2-4-2	.335	3-1-2	2-6-6	.435	3-4-4	3-4-4
.190	2-1-5	2-1-5	.263	2-4-6	2-4-2	.336	3-1-3	2-6-6	.440	3-4-5	3-4-5
.191	2-1-6	2-1-5	.264	2-4-3	2-4-3	.337	3-1-4	2-6-6	.444	3-4-6	3-4-6
.192	2-2-1	2-1-5	.265	2-4-4	2-4-3	.338	3-1-1	3-1-1			
.193	2-2-2	2-1-5	.266	2-4-5	2-4-3	.339	3-1-2	3-1-1			
.194	2-2-3	2-1-5	.267	2-4-6	2-4-3	.340	3-1-3	3-1-1			
.195	2-1-6	2-1-6	.268	2-5-1	2-4-3	.341	3-1-4	3-1-1			
.196	2-2-1	2-1-6	.269	2-4-4	2-4-4	.342	3-1-5	3-1-1			
.197	2-2-2	2-1-6	.270	2-4-5	2-4-4	.343	3-1-2	3-1-2			
.198	2-2-3	2-1-6	.271	2-4-6	2-4-4	.344	3-1-3	3-1-2			
.199	2-2-1	2-2-1	.272	2-5-1	2-4-4	.345	3-1-4	3-1-2			
.200	2-2-2	2-2-1	.273	2-4-5	2-4-5	.346	3-1-5	3-1-2			
.201	2-2-3	2-2-1	.274	2-4-6	2-4-5	.347	3-1-3	3-1-3			
.202	2-2-4	2-2-1	.275	2-5-1	2-4-5	.348	3-1-4	3-1-3			
.203	2-2-5	2-2-1	.276	2-5-2	2-4-5	.349	3-1-5	3-1-3			
.204	2-2-2	2-2-2	.277	2-5-3	2-4-5	.350	3-1-6	3-1-3			
.205	2-2-3	2-2-2	.278	2-4-6	2-4-6	.351	3-2-1	3-1-3			
.206	2-2-4	2-2-2	.279	2-5-1	2-4-6	.352	3-1-4	3-1-4			
.207	2-2-5	2-2-2	.280	2-5-2	2-4-6	.353	3-1-5	3-1-4			
.208	2-2-3	2-2-3	.281	2-5-3	2-4-6	.354	3-1-6	3-1-4			
.209	2-2-4	2-2-3	.282	2-5-1	2-5-1	.355	3-2-1	3-1-4			
.210	2-2-5	2-2-3	.283	2-5-2	2-5-1	.356	3-2-2	3-1-4			
.211	2-2-6	2-2-3	.284	2-5-3	2-5-1	.357	3-1-5	3-1-5			
.212	2-3-1	2-2-3	.285	2-5-4	2-5-1	.358	3-1-6	3-1-5			
.213	2-2-4	2-2-4	.286	2-5-5	2-5-1	.359	3-2-1	3-1-5			
.214	2-2-5	2-2-4	.287	2-5-2	2-5-2	.360	3-2-2	3-1-5			
.215	2-2-6	2-2-4	.288	2-5-3	2-5-2	.361	3-1-6	3-1-6			
.216	2-3-1	2-2-4	.289	2-5-4	2-5-2	.362	3-2-1	3-1-6			
.217	2-3-2	2-2-4	.290	2-5-5	2-5-2	.363	3-2-2	3-1-6			
.218	2-2-5	2-2-5	.291	2-5-6	2-5-2	.364	3-2-3	3-1-6			
.219	2-2-6	2-2-5	.292	2-5-3	2-5-3	.365	3-2-4	3-1-6			
.220	2-3-1	2-2-5	.293	2-5-4	2-5-3	.366	3-2-1	3-2-1			
.221	2-3-2	2-2-5	.294	2-5-5	2-5-3	.367	3-2-2	3-2-1			
.222	2-2-6	2-2-6	.295	2-5-6	2-5-3	.368	3-2-3	3-2-1			
.223	2-3-1	2-2-6	.296	2-5-4	2-5-4	.369	3-2-4	3-2-1			
.224	2-3-2	2-2-6	.297	2-5-5	2-5-4	.370	3-2-2	3-2-2			
.225	2-3-3	2-2-6	.298	2-5-6	2-5-4	.371	3-2-3	3-2-2			
.226	2-3-4	2-2-6	.299	2-6-1	2-5-4	.372	3-2-4	3-2-2			
.227	2-3-1	2-3-1	.300	2-6-2	2-5-4	.373	3-2-5	3-2-2			
.228	2-3-2	2-3-1	.301	2-5-5	2-5-5	.374	3-2-6	3-2-2			
.229	2-3-3	2-3-1	.302	2-5-6	2-5-5	.375	3-2-3	3-2-3			
.230	2-3-4	2-3-1	.303	2-6-1	2-5-5	.376	3-2-4	3-2-3			
.231	2-3-5	2-3-1	.304	2-6-2	2-5-5	.377	3-2-5	3-2-3			
.232	2-3-2	2-3-2	.305	2-6-3	2-5-5	.378	3-2-6	3-2-3			
.233	2-3-3	2-3-2	.306	2-5-6	2-5-6	.379	3-3-1	3-2-3			
.234	2-3-4	2-3-2	.307	2-6-1	2-5-6	.380	3-2-4	3-2-4			
.235	2-3-5	2-3-2	.308	2-6-2	2-5-6	.381	3-2-5	3-2-4			
.236	2-3-3	2-3-3	.309	2-6-3	2-5-6	.382	3-2-6	3-2-4			
.237	2-3-4	2-3-3	.310	2-6-1	2-6-1	.383	3-3-1	3-2-4			
.238	2-3-5	2-3-3	.311	2-6-2	2-6-1	.384	3-2-5	3-2-5			

BATTING AVERAGE RATING CHART

(Left Handed Batters)

Left column when facing Left Handed Pitcher.
Right column when facing Right Handed Pitcher.

.304	2-5-4	2-5-6	.331	2-6-4	2-6-6	.358	3-1-3	3-1-6	.385	3-2-2	3-2-6
.305	2-5-5	2-5-6	.332	2-6-5	2-6-6	.359	3-1-4	3-1-6	.386	3-2-3	3-2-6
.306	2-5-6	2-5-6	.333	2-6-6	2-6-6	.360	3-1-5	3-1-6	.387	3-2-4	3-2-6
.307	2-5-4	2-6-1	.334	2-6-3	3-1-1	.361	3-1-6	3-1-6	.388	3-2-5	3-2-6
.308	2-5-5	2-6-1	.335	2-6-4	3-1-1	.362	3-1-4	3-2-1	.389	3-2-6	3-2-6
.309	2-5-6	2-6-1	.336	2-6-5	3-1-1	.363	3-1-5	3-2-1	.390	3-2-3	3-3-1
.310	2-6-1	2-6-1	.337	2-6-6	3-1-1	.364	3-1-6	3-2-1	.391	3-2-4	3-3-1
.311	2-5-4	2-6-2	.338	3-1-1	3-1-1	.365	3-2-1	3-2-1	.392	3-2-5	3-3-1
.312	2-5-5	2-6-2	.339	2-6-5	3-1-2	.366	3-1-4	3-2-2	.393	3-2-6	3-3-1
.313	2-5-6	2-6-2	.340	2-6-5	3-1-2	.367	3-1-5	3-2-2	.394	3-3-1	3-3-1
.314	2-6-1	2-6-2	.341	2-6-6	3-1-2	.368	3-1-6	3-2-2	.395	3-2-5	3-3-2
.315	2-6-2	2-6-2	.342	3-1-1	3-1-2	.369	3-2-1	3-2-2	.396	3-2-6	3-3-2
.316	2-5-6	2-6-3	.343	3-1-2	3-1-2	.370	3-2-2	3-2-2	.397	3-3-1	3-3-2
.317	2-6-1	2-6-3	.344	2-6-6	3-1-3	.371	3-1-5	3-2-3	.398	3-3-2	3-3-2
.318	2-6-2	2-6-3	.345	3-1-1	3-1-3	.372	3-1-6	3-2-3	.399	3-3-1	3-3-3
.319	2-6-3	2-6-3	.346	3-1-2	3-1-3	.373	3-2-1	3-2-3	.400	3-3-2	3-3-3
.320	2-5-6	2-6-4	.347	3-1-3	3-1-3	.374	3-2-2	3-2-3	.403	3-3-3	3-3-3
.321	2-6-1	2-6-4	.348	2-6-6	3-1-4	.375	3-2-3	3-2-3	.407	3-3-4	3-3-4
.322	2-6-2	2-6-4	.349	3-1-1	3-1-4	.376	3-1-6	3-2-4	.412	3-3-5	3-3-5
.323	2-6-3	2-6-4	.350	3-1-2	3-1-4	.377	3-2-1	3-2-4	.417	3-3-6	3-3-6
.324	2-6-4	2-6-4	.351	3-1-3	3-1-4	.378	3-2-2	3-2-4	.421	3-4-1	3-4-1
.325	2-6-1	2-6-5	.352	3-1-4	3-1-4	.379	3-2-3	3-2-4	.426	3-4-2	3-4-2
.326	2-6-2	2-6-2	.353	3-1-1	3-1-5	.380	3-2-4	3-2-4	.431	3-4-3	3-4-3
.327	2-6-3	2-6-5	.354	3-1-2	3-1-5	.381	3-2-2	3-2-5	.435	3-4-4	3-4-4
.328	2-6-4	2-6-5	.355	3-1-3	3-1-5	.382	3-2-3	3-2-5	.440	3-4-5	3-4-5
.329	2-6-5	2-6-5	.356	3-1-4	3-1-5	.383	3-2-4	3-2-5	.444	3-4-6	3-4-6
.330	2-6-3	2-6-6	.357	3-1-5	3-1-5	.384	3-2-5	3-2-5			

BATTING AVERAGE RATING CHART

(Right Handed Batters)

Left column when facing left handed pitcher.
Right column when facing right handed pitcher.

.006	1-1-3	1-1-1	.046	1-2-4	1-2-4	.086	1-4-3	1-3-6	.126	1-5-4	1-5-3
.007	1-1-4	1-1-1	.047	1-2-5	1-2-4	.087	1-4-4	1-3-6	.127	1-5-5	1-5-3
.008	1-1-5	1-1-1	.048	1-2-6	1-2-4	.088	1-4-1	1-4-1	.128	1-5-6	1-5-3
.009	1-1-6	1-1-1	.049	1-3-1	1-2-4	.089	1-4-2	1-4-1	.129	1-6-1	1-5-3
.010	1-1-3	1-1-2	.050	1-3-2	1-2-4	.090	1-4-3	1-4-1	.130	1-5-4	1-5-4
.011	1-1-4	1-1-2	.051	1-2-6	1-2-5	.091	1-4-4	1-4-1	.131	1-5-5	1-5-4
.012	1-1-5	1-1-2	.052	1-3-1	1-2-5	.092	1-4-5	1-4-1	.132	1-5-6	1-5-4
.013	1-1-6	1-1-2	.053	1-3-2	1-2-5	.093	1-4-2	1-4-2	.133	1-6-1	1-5-4
.014	1-1-3	1-1-3	.054	1-3-3	1-2-5	.094	1-4-3	1-4-2	.134	1-5-5	1-5-5
.015	1-1-4	1-1-3	.055	1-2-6	1-2-6	.095	1-4-4	1-4-2	.135	1-5-6	1-5-5
.016	1-1-5	1-1-3	.056	1-3-1	1-2-6	.096	1-4-5	1-4-2	.136	1-6-1	1-5-5
.017	1-1-6	1-1-3	.057	1-3-2	1-2-6	.097	1-4-3	1-4-3	.137	1-6-2	1-5-5
.018	1-1-4	1-1-4	.058	1-3-3	1-2-6	.098	1-4-4	1-4-3	.138	1-6-3	1-5-5
.019	1-1-5	1-1-4	.059	1-3-4	1-2-6	.099	1-4-5	1-4-3	.139	1-5-6	1-5-6
.020	1-1-6	1-1-4	.060	1-3-1	1-3-1	.100	1-4-6	1-4-3	.140	1-6-1	1-5-6
.021	1-2-1	1-1-4	.061	1-3-2	1-3-1	.101	1-5-1	1-4-3	.141	1-6-2	1-5-6
.022	1-2-2	1-1-4	.062	1-3-3	1-3-1	.102	1-4-4	1-4-4	.142	1-6-3	1-5-6
.023	1-1-5	1-1-5	.063	1-3-4	1-3-1	.103	1-4-5	1-4-4	.143	1-6-4	1-5-6
.024	1-1-6	1-1-5	.064	1-3-5	1-3-1	.104	1-4-6	1-4-4	.144	1-6-1	1-6-1
.025	1-2-1	1-1-5	.065	1-3-2	1-3-2	.105	1-5-1	1-4-4	.145	1-6-2	1-6-1
.026	1-2-2	1-1-5	.066	1-3-3	1-3-2	.106	1-5-2	1-4-4	.146	1-6-3	1-6-1
.027	1-2-3	1-1-5	.067	1-3-4	1-3-2	.107	1-4-5	1-4-5	.147	1-6-4	1-6-1
.028	1-1-6	1-1-6	.068	1-3-5	1-3-2	.108	1-5-1	1-4-5	.148	1-6-2	1-6-2
.029	1-2-1	1-1-6	.069	1-3-3	1-3-3	.109	1-5-2	1-4-5	.149	1-6-3	1-6-2
.030	1-2-2	1-1-6	.070	1-3-4	1-3-3	.110	1-5-3	1-4-5	.150	1-6-4	1-6-2
.031	1-2-3	1-1-6	.071	1-3-5	1-3-3	.111	1-4-6	1-4-6	.151	1-6-5	1-6-2
.032	1-2-1	1-2-1	.072	1-3-6	1-3-3	.112	1-5-1	1-4-6	.152	1-6-6	1-6-2
.033	1-2-2	1-2-1	.073	1-4-1	1-3-3	.113	1-5-2	1-4-6	.153	1-6-3	1-6-3
.034	1-2-3	1-2-1	.074	1-3-4	1-3-4	.114	1-5-3	1-4-6	.154	1-6-4	1-6-3
.035	1-2-4	1-2-1	.075	1-3-5	1-3-4	.115	1-5-4	1-4-6	.155	1-6-5	1-6-3
.036	1-2-5	1-2-1	.076	1-3-6	1-3-4	.116	1-5-1	1-5-1	.156	1-6-6	1-6-3
.037	1-2-2	1-2-2	.077	1-4-1	1-3-4	.117	1-5-2	1-5-1	.157	1-6-4	1-6-4
.038	1-2-3	1-2-2	.078	1-4-2	1-3-4	.118	1-5-3	1-5-1	.158	1-6-5	1-6-4
.039	1-2-4	1-2-2	.079	1-3-5	1-3-5	.119	1-5-4	1-5-1	.159	1-6-6	1-6-4
.040	1-2-5	1-2-2	.080	1-3-6	1-3-5	.120	1-5-2	1-5-2	.160	2-1-1	1-6-4
.041	1-2-6	1-2-2	.081	1-4-1	1-3-5	.121	1-5-3	1-5-2	.161	2-1-2	1-6-4
.042	1-2-3	1-2-3	.082	1-4-2	1-3-5	.122	1-5-4	1-5-2	.162	1-6-5	1-6-5
.043	1-2-4	1-2-3	.083	1-3-6	1-3-6	.123	1-5-5	1-5-2	.163	1-6-6	1-6-5
.044	1-2-5	1-2-3	.084	1-4-1	1-3-6	.124	1-5-6	1-5-2	.164	2-1-1	1-6-5
.045	1-2-6	1-2-3	.085	1-4-2	1-3-6	.125	1-5-3	1-5-3	.165	2-1-2	1-6-5

BATTING AVERAGE RATING CHART

(Left Handed Batters)

Left column when facing left handed pitcher.
Right column when facing right handed pitcher.

.012	1-1-1	1-1-3	.085	1-3-4	1-4-1	.158	1-6-1	1-6-5	.231	2-3-1	2-3-2
.013	1-1-2	1-1-3	.086	1-3-5	1-4-1	.159	1-6-2	1-6-5	.232	2-3-2	2-3-2
.014	1-1-3	1-1-3	.087	1-3-6	1-4-1	.160	1-6-3	1-6-5	.233	2-2-6	2-3-3
.015	1-1-1	1-1-4	.088	1-4-1	1-4-1	.161	1-6-4	1-6-5	.234	2-3-1	2-3-3
.016	1-1-1	1-1-4	.089	1-3-4	1-4-2	.162	1-6-5	1-6-5	.235	2-3-2	2-3-3
.017	1-1-2	1-1-4	.090	1-3-5	1-4-2	.163	1-6-2	1-6-6	.236	2-3-3	2-3-3
.018	1-1-3	1-1-4	.091	1-3-6	1-4-2	.164	1-6-3	1-6-6	.237	2-2-6	2-3-4
.019	1-1-1	1-1-5	.092	1-4-1	1-4-2	.165	1-6-4	1-6-6	.238	2-3-1	2-3-4
.020	1-1-2	1-1-5	.093	1-4-2	1-4-2	.166	1-6-5	1-6-6	.239	2-3-2	2-3-4
.021	1-1-3	1-1-5	.094	1-3-6	1-4-3	.167	1-6-6	1-6-6	.240	2-3-3	2-3-4
.022	1-1-4	1-1-5	.095	1-4-1	1-4-3	.168	1-6-4	2-1-1	.241	2-3-4	2-3-4
.023	1-1-5	1-1-5	.096	1-4-2	1-4-3	.169	1-6-5	2-1-1	.242	2-3-2	2-3-5
.024	1-1-2	1-1-6	.097	1-4-3	1-4-3	.170	1-6-6	2-1-1	.243	2-3-3	2-3-5
.025	1-1-3	1-1-6	.098	1-3-6	1-4-4	.171	2-1-1	2-1-1	.244	2-3-4	2-3-5
.026	1-1-4	1-1-6	.099	1-4-1	1-4-4	.172	1-6-4	2-1-2	.245	2-3-5	2-3-5
.027	1-1-5	1-1-6	.100	1-4-2	1-4-4	.173	1-6-5	2-1-2	.246	2-3-2	2-3-6
.028	1-1-6	1-1-6	.101	1-4-3	1-4-4	.174	1-6-6	2-1-2	.247	2-3-3	2-3-6
.029	1-1-4	1-2-1	.102	1-4-4	1-4-4	.175	2-1-1	2-1-2	.248	2-3-4	2-3-6
.030	1-1-5	1-2-1	.103	1-4-1	1-4-5	.176	2-1-2	2-1-2	.249	2-3-5	2-3-6
.031	1-1-6	1-2-1	.104	1-4-2	1-4-5	.177	1-6-5	2-1-3	.250	2-3-6	2-3-6
.032	1-2-1	1-2-1	.105	1-4-3	1-4-5	.178	1-6-6	2-1-3	.251	2-3-3	2-4-1
.033	1-1-4	1-2-2	.106	1-4-4	1-4-5	.179	2-1-1	2-1-3	.252	2-3-4	2-4-1
.034	1-1-5	1-2-2	.107	1-4-5	1-4-5	.180	2-1-2	2-1-3	.253	2-3-5	2-4-1
.035	1-1-6	1-2-2	.108	1-4-3	1-4-6	.181	2-1-3	2-1-3	.254	2-3-6	2-4-1
.036	1-2-1	1-2-2	.109	1-4-4	1-4-6	.182	2-1-1	2-1-4	.255	2-4-1	2-4-1
.037	1-2-2	1-2-2	.110	1-4-5	1-4-6	.183	2-1-2	2-1-4	.256	2-3-5	2-4-2
.038	1-1-5	1-2-3	.111	1-4-6	1-4-6	.184	2-1-3	2-1-4	.257	2-3-6	2-4-2
.039	1-1-6	1-2-3	.112	1-4-3	1-5-1	.185	2-1-4	2-1-4	.258	2-4-1	2-4-2
.040	1-2-1	1-2-3	.113	1-4-4	1-5-1	.186	2-1-1	2-1-5	.259	2-4-2	2-4-2
.041	1-2-2	1-2-3	.114	1-4-5	1-5-1	.187	2-1-2	2-1-5	.260	2-3-5	2-4-3
.042	1-2-3	1-2-3	.115	1-4-6	1-5-1	.188	2-1-3	2-1-5	.261	2-3-6	2-4-3
.043	1-2-1	1-2-4	.116	1-5-1	1-5-1	.189	2-1-4	2-1-5	.262	2-4-1	2-4-3
.044	1-2-2	1-2-4	.117	1-4-5	1-5-2	.190	2-1-5	2-1-5	.263	2-4-2	2-4-3
.045	1-2-3	1-2-4	.118	1-4-6	1-5-2	.191	2-1-3	2-1-6	.264	2-4-3	2-4-3
.046	1-2-4	1-2-4	.119	1-5-1	1-5-2	.192	2-1-4	2-1-6	.265	2-3-6	2-4-3
.047	1-2-1	1-2-5	.120	1-5-2	1-5-2	.193	2-1-5	2-1-6	.266	2-4-1	2-4-4
.048	1-2-2	1-2-5	.121	1-4-5	1-5-3	.194	2-1-6	2-1-6	.267	2-4-2	2-4-4
.049	1-2-3	1-2-5	.122	1-4-6	1-5-3	.195	2-1-3	2-2-1	.268	2-4-3	2-4-4
.050	1-2-4	1-2-5	.123	1-5-1	1-5-3	.196	2-1-4	2-2-1	.269	2-4-4	2-4-4
.051	1-2-5	1-2-5	.124	1-5-2	1-5-3	.197	2-1-5	2-2-1	.270	2-4-2	2-4-5
.052	1-2-2	1-2-6	.125	1-5-3	1-5-3	.198	2-1-6	2-2-1	.271	2-4-3	2-4-5
.053	1-2-3	1-2-6	.126	1-4-6	1-5-4	.199	2-2-1	2-2-1	.272	2-4-4	2-4-5
.054	1-2-4	1-2-6	.127	1-5-1	1-5-4	.200	2-1-4	2-2-2	.273	2-4-5	2-4-5
.055	1-2-5	1-2-6	.128	1-5-2	1-5-4	.201	2-1-5	2-2-2	.274	2-4-2	2-4-6
.056	1-2-6	1-2-6	.129	1-5-3	1-5-4	.202	2-1-6	2-2-2	.275	2-4-3	2-4-6
.057	1-2-4	1-3-1	.130	1-5-4	1-5-4	.203	2-2-1	2-2-2	.276	2-4-4	2-4-6
.058	1-2-5	1-3-1	.131	1-5-2	1-5-5	.204	2-2-2	2-2-2	.277	2-4-5	2-4-6
.059	1-2-6	1-3-1	.132	1-5-3	1-5-5	.205	2-1-6	2-2-3	.278	2-4-6	2-4-6
.060	1-3-1	1-3-1	.133	1-5-4	1-5-5	.206	2-2-1	2-2-3	.279	2-4-4	2-5-1
.061	1-2-4	1-3-2	.134	1-5-5	1-5-5	.207	2-2-2	2-2-3	.280	2-4-5	2-5-1
.062	1-2-5	1-3-2	.135	1-5-2	1-5-6	.208	2-2-3	2-2-3	.281	2-4-6	2-5-1
.063	1-2-6	1-3-2	.136	1-5-3	1-5-6	.209	2-1-6	2-2-4	.282	2-5-1	2-5-1
.064	1-3-1	1-3-2	.137	1-5-4	1-5-6	.210	2-2-1	2-2-4	.283	2-4-4	2-5-2
.065	1-3-2	1-3-2	.138	1-5-5	1-5-6	.211	2-2-2	2-2-4	.284	2-4-5	2-5-2
.066	1-2-6	1-3-3	.139	1-5-6	1-5-6	.212	2-2-3	2-2-4	.285	2-4-6	2-5-2
.067	1-3-1	1-3-3	.140	1-5-3	1-6-1	.213	2-2-4	2-2-4	.286	2-5-1	2-5-2
.068	1-3-2	1-3-3	.141	1-5-4	1-6-1	.214	2-2-1	2-2-5	.287	2-5-2	2-5-2
.069	1-3-3	1-3-3	.142	1-5-5	1-6-1	.215	2-2-2	2-2-5	.288	2-4-5	2-5-3
.070	1-2-6	1-3-4	.143	1-5-6	1-6-1	.216	2-2-3	2-2-5	.289	2-4-6	2-5-3
.071	1-3-1	1-3-4	.144	1-6-1	1-6-1	.217	2-2-4	2-2-5	.290	2-5-1	2-5-3
.072	1-3-2	1-3-4	.145	1-5-5	1-6-2	.218	2-2-5	2-2-5	.291	2-5-2	2-5-3
.073	1-3-3	1-3-4	.146	1-5-6	1-6-2	.219	2-2-3	2-2-6	.292	2-5-3	2-5-3
.074	1-3-4	1-3-4	.147	1-6-1	1-6-2	.220	2-2-4	2-2-6	.293	2-5-1	2-5-4
.075	1-3-1	1-3-5	.148	1-6-2	1-6-2	.221	2-2-5	2-2-6	.294	2-5-2	2-5-4
.076	1-3-2	1-3-5	.149	1-5-5	1-6-3	.222	2-2-6	2-2-6	.295	2-5-3	2-5-4
.077	1-3-3	1-3-5	.150	1-5-6	1-6-3	.223	2-2-3	2-3-1	.296	2-5-4	2-5-4
.078	1-3-4	1-3-5	.151	1-6-1	1-6-3	.224	2-2-4	2-3-1	.297	2-5-1	2-5-5
.079	1-3-5	1-3-5	.152	1-6-2	1-6-3	.225	2-2-5	2-3-1	.298	2-5-2	2-5-5
.080	1-3-3	1-3-6	.153	1-6-3	1-6-3	.226	2-2-6	2-3-1	.299	2-5-3	2-5-5
.081	1-3-4	1-3-6	.154	1-6-1	1-6-4	.227	2-3-1	2-3-1	.300	2-5-4	2-5-5
.082	1-3-5	1-3-6	.155	1-6-2	1-6-4	.228	2-2-4	2-3-2	.301	2-5-5	2-5-5
.083	1-3-6	1-3-6	.156	1-6-3	1-6-4	.229	2-2-5	2-3-2	.302	2-5-2	2-5-6
.084	1-3-3	1-4-1	.157	1-6-4	1-6-4	.230	2-2-6	2-3-2	.303	2-5-3	2-5-6