



**HOW TO  
HANDICAP BASEBALL GAMES  
LIKE A PRO**

**OUR EASY-TO-USE METHOD FOR HANDICAPPING  
BASEBALL GAMES PUTS YOU IN A BETTER  
POSITION THAN THE BOOK'S HANDICAPPER  
WHOSE REAL JOB IS TO FACILITATE TRADE**

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## INTRODUCTION

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If you wager on professional baseball games you know what this cryptic code means: *Chris Capuano 9.5o -140*. But do you know what's behind the numbers? In this example, the Moneyline on Milwaukee with Capuano starting is -140. Did you know that Capuano's Moneyline is -140 because the book's handicapper calculated that Milwaukee has a 58% probability of winning this game? How did he come up with 58%? How did the handicapper come up with 9.5 as the Runline? Why isn't the Runline 8.5 or 10.5?

It's an hour before game time. You like the Mets over the Marlins in a particular match-up but you just learned that Carlos Beltran won't be available so the Mets are likely to be a half-run off their 4.84 Runs Per Game (RPG) scoring average. How does that change the probability of the outcome if the Marlin's starting pitcher has a 4.25 ERA? A 2.25 ERA? Mark Redman is pitching for the Pirates. His season ERA is 2.50 but you think he has been lucky, or his performance over the last few games tells you that his ERA should be at least a run higher. How do you account for that with your current handicapping method?

Our easy-to-use method for handicapping baseball games like a pro puts you in a better than the book's handicapper. The book's handicapper sets the initial Moneyline based on the mathematical probability of how individuals (starting pitchers) and teams with certain statistical records are likely to interact with each other within the grand chaos we call a baseball game.

In a very real sense, the public bettor who chooses to act like a professional has an advantage over the book. The book doesn't make his money by picking winners. He gets paid on the vig and the number of transactions that he processes. The book's lines are set to facilitate trade - to generate the maximum amount of activity on both sides of the bet. The ideal situation for the book is to be flat on every game so that he has no bettors' risk. As public wagers come in the book moves the line up or down, not because the underlying probabilities change, but to keep activity as high and as balanced as possible. On any given day Randy Johnson may get -300 against Kansas City but he may also be overvalued by 15% probability. That's the edge that the professional bettor needs to have and that our easy-to-use method can provide.

We don't have the formula for mathematical certainty. Nobody does, and they're lying if they say they do. Our easy-to-use method will provide this:

- The probability of a starting pitcher winning a game against a league average opponent.
- The probability of a starting pitcher winning a game according to the Moneyline.
- The probability of a starting pitcher winning a game against a specific opponent based on relative performance.
- The number of runs that each team is most likely to score against a specific opponent.
- Whether or not a starting pitcher is overvalued or undervalued against the Moneyline.



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## WINABILITY %

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What's the probability that a starting pitcher will win a game against a league average opponent? This information is useful for a couple reasons. One reason is that we can objectively evaluate the "winability" of the starting pitcher and his team against a mythical league average team before we are influenced by a specific game match up. If we learn that this starting pitcher and his team are likely to win less than 50% of the games they would play against a league average team that could affect some aspect of our decision-making if say this starting pitcher were matched up that day against a division leader.

Let's go through an example of how to calculate winability for the starting pitchers. One site we find useful is the USA Today game matchups which can be accessed from <http://usatoday.com/sports/front.htm>. For our example we're using the information from the Seattle at Baltimore match up on May 24.

We'll look at Seattle first and also take the least complicated approach so we can focus on the process. Joel Pinero is the scheduled starting pitcher. His ERA for the season (38.2 innings) is 6.52. Seattle's bullpen ERA for the season is 3.52. Seattle batters are averaging 3.95 runs per game (RPG) for the last twenty games. What's Pinero's winability percentage?<sup>1</sup>

$$\text{Winability \%} = .9889 - .079 * \text{StartERA} - .130 * \text{ReliefERA} + .021 * (\text{ReliefERA} * \text{RPG})$$

Winability % for Pinero using season average statistics is 31%. That means that Seattle, with Pinero starting, could be expected to win only about 1/3 of its games against a league average opponent.

Bruce Chen is starting this match up for Baltimore. Chen's season ERA is 3.63. Baltimore's bullpen ERA is 3.11 and the batters are producing at 4.70 RPG. Chen's Winability % is 60%. Baltimore could reasonably be expected to win 6 out of 10 games against league average teams with Chen starting.

USA Today breaks out the batting stats into Last 10, Last 5, Last 3, vs. Right, vs. Left so that you can fine tune Winability % to reflect any trends you may see in the data. Frankly, there is a very good argument to be made on every side of the issue of which period dataset is "best" for handicapping today's game. We tend to favor going with .80 \* short term + .20 \* long term for game period and also use the same ratio for handedness. A meaningful clarification would require testing hundreds if not thousands of combinations. Perhaps some enterprising reader with the skill and the time to complete such a project will do it and share the results.

Starting pitcher ERA, bullpen ERA, RPG, and the Winability % calculation are all necessary for the game score so keep track of your results for each team as you go along.

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<sup>1</sup> The Winability % formula is from a thesis written by an unidentified UCLA statistics student. The thesis contains a complete baseball wagering method and is freely available at the time of this writing at <http://theses.stat.ucla.edu/23/Thesis.pdf>.

There is one more stat you want to grab for each starting pitcher - the average number of innings he has gone over his last 5 or 10 games. If there is sufficient pitcher vs. opponent data we prefer to use that data, particularly if it breaks down opponent stats into home and away. When averaging, remember that 1.1 inning is really 1.33 and 1.2 innings is really 1.67. USA Today is a good source of data.

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## LEAGUE AVERAGE ERA

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The next order of business is to go about collecting the appropriate league average ERA for the American and National League. For league information we like using ESPN at <http://sports.espn.go.com/mlb/statistics> but there are a number of other Internet sites that also provide this information. With a little copying and pasting into Excel we can quickly determine that the American League average ERA for all pitchers in late May is 4.27.

You want to break down the league average ERA into its separate components for starters and relievers. If you navigate yourself to the MLB Team Stats:2005 page at ESPN you can use the filter options to get the results you want for each league. American League starters have an average ERA of 4.51. American league relievers have an average ERA of 3.78. These league average pitching stats don't change very much from day to day and you can stay accurate enough for the method if you update them a couple times a week. We recommend a separate handicapping sheet for each league. League averages may differ enough to affect the outcome. It helps to avoid a mix up.

Let's assemble the information we have collected so far for the Seattle @ Baltimore match up.

### AL Pitching

Starters      4.51  
Relievers    3.78

<u>Team</u>	<u>Starter</u>	<u>W%</u>	<u>IP</u>	<u>SP-ERA</u>	<u>BP-ERA</u>	<u>RPG</u>
Seattle	J. Pintero	.31	6.3	6.52	3.52	3.95
Baltimore	B. Chen	60	6.4	3.63	3.11	4.70

The only remaining piece of outside information we need to handicap the Seattle @ Baltimore game is the Moneyline. You will probably want to use the Moneyline provided by your online book.

Before we go through the handicapping procedure we want to alert you to a web site that provides season and 20 game statistics for every team, every pitcher and every hitter in MLB. The site is updated every day, usually before noon. If you are at all spreadsheet savvy you should know about Dougs Stats at <http://www.dougstats.com>. The data is set up so that it's easily pasted into a spreadsheet where you can manipulate and extract all the data you need for handicapping.

Team	won	lost	ip	hit	run	er	bb	so	sa	bs	ho	qs	hb	hr	st	sho
ariz	12	8	180.1	206	94	89	59	132	7	1	12	13	8	21	20	1
atla	11	9	173	181	82	74	56	98	4	4	9	10	4	12	20	1
balt	11	9	181	156	87	72	71	159	8	2	7	12	6	17	20	0
bost	13	7	175	173	101	97	59	125	8	1	16	9	10	16	20	0
cinc	5	15	178	245	134	124	60	102	2	2	11	6	13	29	20	0
clev	10	10	175	179	84	74	44	127	7	0	10	8	8	27	20	0
colo	7	13	175.2	193	103	96	89	117	3	2	6	7	10	20	20	0
cubs	8	12	175.1	161	80	74	70	166	4	4	4	12	8	20	20	0

This is a partial table from 20 game team pitchers data.

This same data is available from ESPN and USA Today, to name a couple sites, but with Doug's Stats you get almost all the data wrapped in a nice, tight package so that you can spend more time analyzing and less time collecting.

For example, we highlighted the runs and earned runs columns to show how quickly you can extract the information you need for one of your game score adjustments.

Baltimore's pitchers have an ERA of 3.58 for the most recent 20 games, but the team has allowed 4.35 runs per game over that same period. That's more than 3/4 run per game against Baltimore that should be accounted for somewhere in your handicapping game score.

Team	ab	hit	2b	3b	hr	run	rbi	bb	so	sb	cs	gidp	e	hbp
ariz	682	173	36	2	16	86	82	81	111	3	3	15	11	6
atla	679	178	55	3	25	109	104	58	146	7	2	12	15	2
balt	697	193	49	3	28	99	94	60	112	10	5	15	13	3
bost	702	197	44	3	19	107	100	93	136	1	1	17	13	8
cinc	682	167	50	2	22	89	86	66	148	9	3	18	14	9
clev	681	173	39	4	23	83	81	60	124	11	5	14	13	10

This is a partial table from the 20 game team batters data. From the runs column we can see that Baltimore has averaged 4.95 RPG for the most recent 20 games. From the RBI column we learn that 1/4 RPG has been gifted by the fielding and throwing errors of Baltimore's opponents over that period. We should account for that discrepancy in our game score. The best way to handle this, whether you're using Doug's Stats and a spreadsheet, or doing everything with a newspaper and a pencil, is to use only RBI and not runs when calculating RPG. You should pick up the unearned runs rate of today's actual opponent from the opponent's pitching data like we did in the previous example.

Spreadsheet savvy is not necessary to handicap like a pro. It can make things go a little faster but you'll eventually end up at the same place armed only with a pencil. Doug's Stats deserves a bookmark in either event.

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## MONEYLINE AND PERCENTAGES

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Handicapping baseball games is one thing. Wagering on them is quite another. If you want to move easily between the two then you must develop a sense for treating Moneylines and percentages like two peas in a pod. A -140 Moneyline is the same as a 58% probability of winning and *vice versa*. The mathematical bridge connecting money lines and percentages is actually pretty easy to build. The only gotcha is that because favorites' Moneylines are always expressed as a negative number (-) that you have to deal a little differently with the formulae for favorites and underdogs.

### FAVORITES

To go from Moneyline to Percentage for a favorite use this formula:

$$\text{FAV}\% = \text{ABS}(\text{favorite}) / \text{ABS}(\text{favorite}) + 100.$$

ABS() means use the absolute value, or in everyday terms, drop the minus sign from the favorites Moneyline.

Some examples:

$$-140 \text{ Moneyline} = 140 / (140 + 100) = .5833 = 58\%$$

$$-200 \text{ Moneyline} = 200 / (200 + 100) = .6667 = 67\%$$

### UNDERDOGS

To go from Moneyline to Percentage for an underdog use this formula.

$$\text{UDOG}\% = 1 - (\text{underdog} / (\text{underdog} + 100))$$

Some examples:

$$110 \text{ Moneyline} = 1 - (110 / (110 + 100)) = .476 = 48\%$$

$$125 \text{ Moneyline} = 1 - (125 / (125 + 100)) = .444 = 44\%$$

Here's a quick reference table.

Moneyline	Percentage
-300	75%
-275	73%
-250	71%
-225	69%
-200	67%
-175	64%
-150	60%
-125	56%
125	44%
150	40%
175	36%
200	33%

Bridges go in two directions so here are the formulae for going from Percentage to Moneyline.

#### FAVORITES

$$\text{Moneyline} = \text{Percentage} / ((1 - \text{Percentage}) / -100)$$

Some examples:

$$56\% = .56 / ((1-.56) / -100) = -125 \text{ Moneyline}$$

$$67\% = .67 / ((1-.67) / -100) = -200 \text{ Moneyline}$$

#### UNDERDOGS

$$\text{Moneyline} = (1 - \text{Percentage}) / (\text{Percentage} / 100)$$

Some examples:

$$44\% = (1 - .44) / (.44 / 100) = 125 \text{ Moneyline}$$

$$36\% = (1 - .36) / (.36 / 100) = 175 \text{ Moneyline}$$

Randy Johnson is starting against Kansas City. The Moneyline is -300 which is the same as saying that a bet on the Yankees with Randy Johnson starting assumes that the Yankees would win this match-up 75 out of a 100 times. If your handicapping determined that the Yankees would likely win 60 out of a 100 times (60%) then you know that the Moneyline is out of whack by 150 points. That doesn't mean that you would automatically take Kansas City as the underdog, but it should cause you to think twice before taking the Yankees at double the risk. The book's handicapper has to make a line on every game. You don't have to bet every game.

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## Log5

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The Log5 formula is the  $e=mc^2$  of baseball. Einstein showed us how to exchange energy and matter. Log5 shows us how to exchange almost any baseball performance stat into a probability. Bill James gets credit for Log5. He introduced the formula in The *1981 Bill James Baseball Abstract* to answer the question "How many times out of a hundred should Team A beat Team B?"

In the *Abstract* Bill used the season winning percentage for Team A and Team B. For handicapping like a pro we use each team's Winability%. We calculated Winability% for Baltimore and Seattle and came up with .60 and .31.

First, the original Log5 formula:

$$\% = \frac{A - A * B}{A + B - 2 * A * B}$$

Let A = Baltimore's Winability% of .60 and B = Seattle's Winability% of .31

$$\% = \frac{.60 - .60 * .31}{.60 + .31 - 2 * .60 * .31} = .77 = 77\%$$

Based on the data we used for the expected performance of Pinero and Chen and their respective teams we determined that Baltimore would beat Seattle 77 out of 100 times in this particular match-up. It so happened that Baltimore ending up winning this particular game 3-2 but the analysis would have been the same regardless of the outcome. Even though it worked out OK this time, 77% win probability in any particular match-up is *really* high. That would have raised enough red flags to go back and check the data and the accuracy of the calculations.

If the Winability% for both teams fall within the range of 40% to 60% there is a short cut formula for Log5.

$$\% = .500 + A - B$$

The original Bill James Log5 formula is still widely used today to forecast the winning percentage between teams because it has proven a highly accurate predictor of actual winning percentages when applied to a large number of games. Baseball scholars have taken notice and reworked the original Log5 formula so that it can apply to a variety of match-ups.

What outcome can we expect when a .310 hitter in a .260 hitting average league faces a pitcher with an opposing batting average (OBA) of .290? The first reaction is probably to just average the hitter and the pitcher and say .300. That's wrong. We haven't put the league average in play. If the hitter averages .310 against the rest of the league he should do better against a pitcher that's worse than league average (.290 vs .260).

This is the Log5 variation applied to the batter/pitcher match-up:

$$\frac{(\text{BatAvg} * \text{OBA}) / \text{LgAvg}}{\text{BatAvg} * \text{OBA} / \text{LgAvg} + (1 - \text{BatAvg}) * (1 - \text{OBA}) / (1 - \text{LgAvg})}$$

Using the batter/pitcher match-up data the formula is:

$$\frac{(.310 * .290) / .260}{(.310 * .290) / .260 + (1 - .310) * (1 - .290) / (1 - .260)} = .343$$

As expected, after bringing the league average into play, our .310 batter should do better against a pitcher that's worse than league average and hit against this pitcher like he's batting .343. The statistical types at the Society for American Baseball Research (SABR) have studied theoretical calculations like this against actual results for almost every era and from almost every angle and the results hold up. We will be using this variation of the Log5 formula to calculate game scores.

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## GAME SCORES

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In this section we'll go through the procedure for calculating a game score, and then in the next section we'll tie it all together and handicap an actual game.

In the previous section we introduced the original Log5 formula and the variation of the Log5 formula used in a batter/pitcher match-up. We saw how league averages came into play for determining a possible outcome of the batter/pitcher match-up.

With only a change in input data we can apply the batter/pitcher Log5 formula to determine a game score. The inputs we need for game score are:

- Starting pitcher ERA (StartERA)
- League average ERA for starters (LgStartERA)
- Starting pitcher innings per game
- Bullpen ERA (ReliefERA)
- League average ERA for relievers (LgReliefERA)
- Opponent's RPG

We work game score in two segments, one for the starter and one for the relievers. A key variable is the number of innings that the starting pitcher is expected to go in the upcoming match-up. USA Today lists how many innings this starter has gone in his recent starts, and, if available, how many innings he's gone against this particular opponent in the most recent match-ups between them. This is a judgment call of sorts because you never know what the manager will do during the game. For Pinero we settled on 6.3 innings and for Chen we settled on 6.4 innings.

In the first segment for Baltimore's game score we use Pinero's ERA (6.52), League AvgStartERA for starters (4.51) and Baltimore's RPG (4.70).

$$(StartERA * RPG) / LgStartERA$$

$$(StartERA * RPG) / LgStartERA + (1 - StartERA) * (1 - RPG) / (1 - LgStartERA)$$

$$((6.52 * 4.70) / 4.51)$$

$$((6.52 * 4.70) / 4.51 + (1-6.52)*(1-4.70) / (1 - 4.51)) = 6.96 \text{ Runs}$$

$$\text{Adjust for Pinero's innings } (6.3/9) = .70 * 6.96 = \underline{4.87 \text{ Runs}}$$

For the second segment for Baltimore's game score we use Seattle's bullpenReliefERA (3.52), League Avg ReliefERA for relievers (3.78) and Baltimore's RPG (4.70).

$$\frac{(\text{ReliefERA} * \text{RPG}) / \text{LgReliefERA}}{(\text{ReliefERA} * \text{RPG}) / \text{LgReliefERA} + (1 - \text{ReliefERA}) * (1 - \text{RPG}) / (1 - \text{LgReliefERA})}$$

$$\frac{((3.52 * 4.70) / 3.78)}{((3.52 * 4.70) / 3.78 + (1-3.52)*(1-4.70) / (1 - 3.78))} = 4.28 \text{ Runs}$$

Adjust for bullpen innings (2.7/9) = .30 \* 4.28 = 1.28 Runs

Add together the starter and reliever runs allowed and we get a doable game score for Baltimore of 6.15 Runs. Repeat the process for Seattle's game score using B. Chens' and the Baltimore bullpen ERA and Seattle's RPG.

In the first segment for Seattle's game score we use Chen's ERA (3.63), League StartERA for starters (4.51) and Seattle's RPG (3.95).

$$\frac{((3.63 * 3.95) / 4.51)}{((3.63 * 3.95) / 4.51 + (1-3.63)*(1-3.95) / (1 - 4.51))} = 3.28 \text{ Runs}$$

Adjust for Chen's innings (6.4/9) = .71 \* 3.28 = 2.33 Runs

For the bullpen segment for Seattle's game score we use Baltimore's Relief ERA (3.11), League Avg ReliefERA for relievers (3.78) and Seattle's RPG (3.95).

$$\frac{((3.11 * 3.95) / 3.78)}{((3.11 * 3.95) / 3.78 + (1-3.11)*(1-3.95) / (1 - 3.78))} = 3.22 \text{ Runs}$$

Adjust for bullpen innings (2.6/9) = .29 \* 3.22 = .93 Runs

If Seattle and Baltimore played this match-up 100 times Baltimore could reasonably be expected to win 77 of those games with an average game score of 6 - 4 or 6 - 3, or an average margin of victory of 2 or 3 runs.

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## PULLING IT TOGETHER

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In the introduction we promised to deliver the all the information you need to handicap like a pro:

- The probability of a starting pitcher winning a game against a league average opponent.
- The probability of a starting pitcher winning a game according to the Moneyline.
- The probability of a starting pitcher winning a game against a specific opponent based on relative performance.
- The number of runs that each team is most likely to score against a specific opponent.
- Whether or not a starting pitcher is overvalued or undervalued against the Moneyline.

The first step is to gather all the data we need for every game we intend to handicap.

American League Averages

Start        4.51  
Relief       3.78

<u>Team</u>	<u>SP</u>	<u>StartERA</u>	<u>Innings</u>	<u>ReliefERA</u>	<u>RPG</u>
SEA	J. Pinero	6.52	6.3	3.52	3.95
BAL	B. Chen	3.63	6.4	3.11	4.70

As we go through the handicapping process we will fill in our handicapping worksheet with each new additional piece of information. This is what we know at the start of the process.

Team	SP	W%	Book	Book%	Pro	Pro%	Score
SEA	J. Pinero		160	36%			
BAL	B. Chen		-180	64%			

The Book% for the underdog is 1-Book% for the favorite.

*The first step in the handicapping process is to calculate the Winability% or W% for each starting pitcher. The formula is:*

*Winability % = .9889 - .079\*StartERA - .130\*ReliefERA + .021 \* (ReliefERA\*RPG)*

W% for Pinero is .31 and W% for Chen is .60.

Historically, home teams have won consistently at a .540 pace (*The Hidden Game of Baseball* by John Thorn and Peter Palmer via Diamond Mind Baseball). If you want to

make an adjustment for home field advantage W% is the place to do it. You can do that by adding the historical .040 advantage (or any portion) to the home team's W%.

<u>Team</u>	<u>SP</u>	<u>W%</u>	<u>Book Line</u>	<u>Book%</u>	<u>Pro%</u>	<u>Pro Line</u>	<u>Score</u>
SEA	J. Pinero	.31	160	36%	23%		
BAL	B. Chen	.60	-180	64%	77%	-334	

*The next step is to calculate our Pro% for the favorite. We use the W% for inputs and the original Log5 formula. A = the W% for the favorite. B = the W% for the underdog.*

$$\% = \frac{A - A * B}{A + B - 2 * A * B}$$

Baltimore's Pro% = .77. Seattle's Pro% = 1 - .77 = .23.

*The next step is to convert Pro% into the Pro Moneyline. It's necessary to do this only for the favorite because the underdog will be exactly the same without the minus sign. There's no vigorish in the Pro Moneyline.*

The Percentage to Moneyline conversion for Baltimore, the favorite:

$$\text{Moneyline} = \text{Percentage} / ((1 - \text{Percentage}) / -100)$$

$$\text{Moneyline} = .77 / ((1 - .77) / -100) = -334$$

*The last step is to calculate the game score using the two segment approach, one segment for startERA and one segment for ReliefERA, and combine the segment results into a final game score. We won't repeat the formulae from the previous section here. The game score from those previous calculations was Baltimore 6-4 or 6-3 depending on how you wanted to round the result.*

<u>Team</u>	<u>SP</u>	<u>W%</u>	<u>Book Line</u>	<u>Book%</u>	<u>Pro%</u>	<u>Pro Line</u>	<u>Score</u>
SEA	J. Pinero	.31	160	36%	23%		4
BAL	B. Chen	.60	-180	64%	77%	-334	6

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## CLASSIFICATION

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The purpose of doing your own handicapping is to identify substantially overvalued and undervalued Moneylines. When you consider that the main purpose of the book is to attract public interest and to facilitate trade it's easy enough to understand that Moneylines can and do move away from the underlying probabilities of the contest.

We classify our handicapping results alphabetically, A - D. The investment grade classifications are A, B, C. Parlays are considered only from A and B. The D classification represents unattractive wagers.

The handicapping method outputs are: W%, ProLine and Pro%, and Score.

<u>Team</u>	<u>SP</u>	<u>W%</u>	<u>Book Line</u>	<u>Book%</u>	<u>Pro%</u>	<u>Pro Line</u>	<u>Score</u>
SEA	J. Pinero	.31	160	36%	23%		4
BAL	B. Chen	.60	-180	64%	77%	-334	6

- A -

The ProLine favorite is the BookLine underdog. W% is .45 or better. Score is favorable.

-B-

ProLine and BookLine favorites are the same. ProLine shows that BookLine is undervalued by 30 or more points. W% is .45 or better. Score is favorable.

-C-

ProLine and BookLine are similar across the board. Score is favorable.

-D-

ProLine shows that BookLine is overvalued by 30 points or more, or

W% for favorite is less than W% for underdog, or.

ProLine favorite is BookLine underdog but W% is less than .45 or Score is against.

Betting and handicapping are closely related but they are not the same thing. Even if you could dead-on determine that a team had a 65% probability of winning a particular game that team would lose 35 out of a 100 contests. The unsophisticated bettor tends to equate favorable probability with certainty. The 65% probability team will, in fact, win most games, but it will not win every game, and there is no way to predict with absolute certainty today's outcome.

Money management is more important than handicapping. Sportsbetting is a business. It should be entertaining and fun, but it's still a business first. Adherence to two general rules about money management seem to stick to successful bettors:

- Every bet the same size and never more than 2% of bankroll
- Consistency of method without rigidity. If the pump ain't working let go the handle. Take a break. Reassess. Resume

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## CONCLUSION

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We used the Seattle @ Baltimore match-up as an example only because it was the first game on the USA Today Game Matchup page. We did not know the result of the game at the time. Although Baltimore won the game as forecast the handicapping result was somewhat of an outlier. Chen is a better pitcher than Pinero so far this season, and Baltimore has been knocking the cover off the ball, but Chen at -334 is probably too overvalued. We recommend that you test drive the method by cutting J. Pinero's ERA to league average 4.51 and running through the process again. As a practical matter it's very unlikely that any starting pitcher who's actually pitching to a sky-high ERA will get a start if the manager has any other choices.

If we wanted to we could have used an "Oh, wow" example with a big payout result but we would have lost the opportunity to raise some issues that go beyond the scope of creating the handicapping machinery. You can now treat the machinery like a hunk of metal that will continue to pump out handicapping results that exactly reflect the inputs for as long as you feed it.

The key variables are the ERA inputs and RPG. We have mentioned three valuable sources of raw data that are available on the Internet. Some daily newspapers have enough data so you aren't necessarily tied to the Internet. The formulae go faster in a spreadsheet but they're doable with a cheap calculator or even by hand without.

We have not been rigid in defining data sources or in how much or in exactly what manner the raw data should be transformed before being input. You will probably find that is more a function of the time available than anything else. The handicapper who has only 30 minutes at 7:00 AM will probably use a single source like USA Today and use the data without transformation. The handicapper who's spreadsheet savvy and has a few hours to work on things before the night games will probably spend more time accounting for things like the handedness of the starting pitcher, the status of injured players, the weather, and the likely effects of any recent line-up changes.