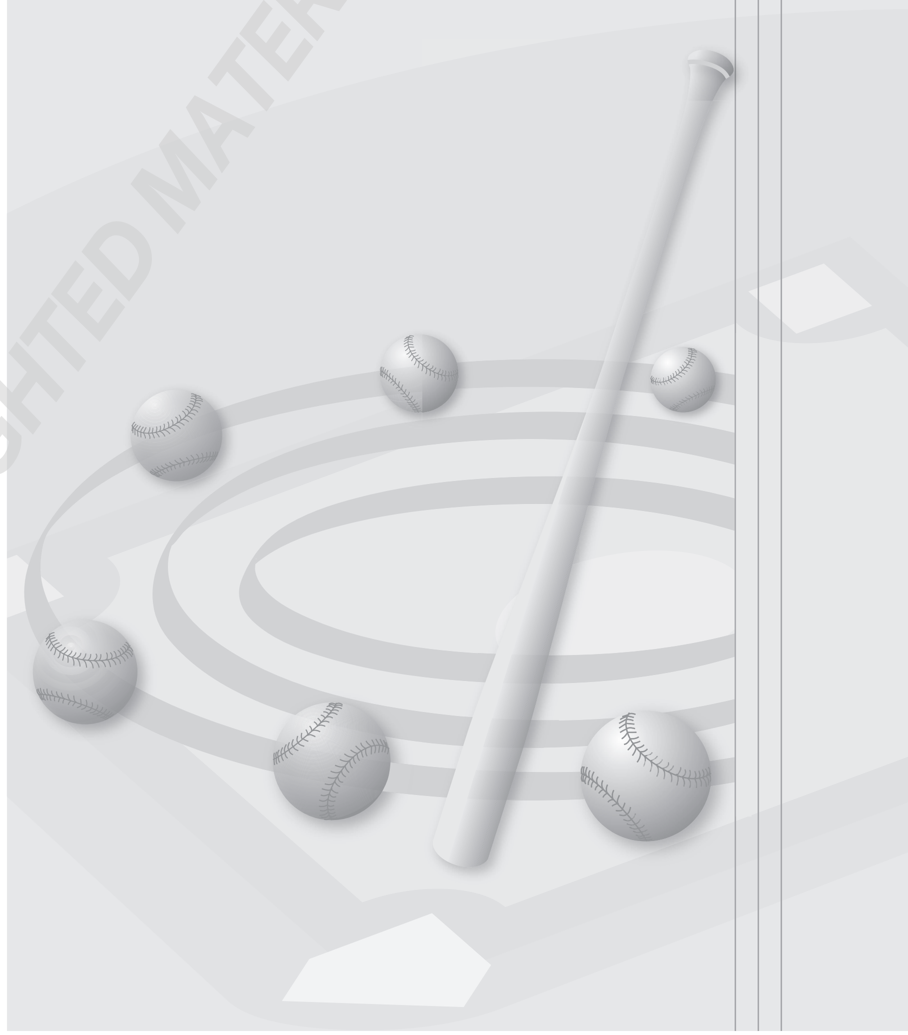
Part One

Computing Weekly Points



Chapter One

How to Play Fantasy Baseball and Mathematics

Fantasy Baseball and Mathematics is a game in which participants create and manage teams of professional baseball players. Players earn points for hits, walks, stolen bases, home runs, runs scored, and runs batted in. Players lose points for striking out or making errors. Each week, students find the sum of the points earned by their players, using one of the scoring systems in this book. The object of the game is to accumulate the highest number of points.

How to Play the Game
Step 1: Selecting players
Step 2: Reading box scores
Step 3: Collecting data
Step 4: Computing points

Step 1: Selecting Players

There are two options for selecting players. Option 1 includes a salary cap and player values. Player values and salary caps will be updated before each season and posted at www.fantasysportsmath.com. The process of creating new player values is time-consuming and requires research and extensive knowledge of players' performance over the last several years. Additional factors taken into account when assigning player values include current injuries, whether a player recently changed teams, and so on. The purchase of this book entitles you to one season of free player values. Lists of player values for subsequent seasons will be provided for a nominal fee. To access player values, visit www.fantasysportsmath.com. Click on "Player Values" and follow the instructions. Your password is w2m4c2c8. This password can be used one time only, at which time it will expire.

In option 2, you avoid the salary cap and player values, but students do not receive several benefits of these critical components of the game, which are explained later.

Option 1: Permanent Teams with Salary Cap

Students have a salary cap of $40 million. This is the amount they can spend on player values. Students select thirteen players at the positions listed in Table 1.1. Selecting pitchers is optional because they have different scoring criteria from everyday players. For younger students, it may be easier to not select pitchers. If students do not select pitchers, the salary cap is $35 million.

Table 1.1 lists the number of players to be selected at each position as well as the number of players in a starting lineup for each position.

Table 1.1. Baseball Positions: Number to Be Selected and Number in a Starting Lineup

Position	Number to Be Selected	Number in a Starting Lineup
First base (1B)	1	1
Second base (2B)	1	1
Third base (3B)	1	1
Shortstop (SS)	1	1
Catcher (C)	1	1
Outfield (OF)	4	3
Designated hitter (DH)	1	1
Pitcher (P)	2	1
Infield (IF)	1	

Notice that students will select three substitute players (one infielder, one outfielder, and one pitcher) to use when a starting player gets injured or is performing poorly. More than one student can select the same player.

You can choose whether students have to set their starting lineups at the end of each week for the following week or if they can use the statistics from the best performing players for each week. For example, a student could compute the points for all four of her outfielders, then select the three outfielders who earned the most points that week. I used the first method because it was less time-consuming.

The main advantage of using option 1 is that it promotes equality in the game. If students spend close to the cap on their players' values, the quality of their teams should be relatively equal. I had many students (both girls and boys) who knew very little about baseball yet managed to do very well and, in several instances, even win the game. Another advantage is that students have to compromise as they select players because the salary cap is structured so that they cannot simply select the top players at each position. This allows them to hone their decision-making skills, which facilitates their cognitive development. Students can also make trades.

Another benefit of using option 1 is that students get to work with large numbers as they attempt to spend as close as possible to the salary cap. Moreover, in addition to circle graphs, students will be able to construct stacked-bar and multi-line graphs to track player performance over time because they will use the same players for the duration of the game. Finally, if a player is determined to be out for the year, students can use the portion of the salary cap they spent on that player to purchase another player.

For all of the preceding reasons, option 1 is recommended.

Option 2: Different Teams Each Week

Each week, each student selects one team. For example, a student may decide to select her hometown team for the first week of the game. However, she will not be allowed to choose that team in later weeks because each team can be selected only once by each student during the game. Unlike in option 1, students compute points using team statistics rather than statistics of individual players. For example, if a team had a total of sixteen hits in a game, that is the number that would be used to compute points.

If you use option 1 to select players, students' rosters will remain the same for the length of the game, unless there are trades. If you use option 2, students' teams will change from week to week. *Note that the handouts, graphs, and worksheets in this text are all based on option 1.*

Choosing Your Own Team

In addition to having students choose players, you should also create your own fantasy team. You can use your team as an example and to help assess students' work. Students also enjoy competing with their teachers or parents.

Trades

Students may trade players if they selected players using option 1. For example, a student may want to trade a second baseman for an outfielder. Consequently, that student would insert her substitute infielder into the starting lineup. When a trade is consummated, it is important that the students involved in the trade make the necessary alterations to their fantasy team roster. Teachers may want to limit the number of trades to five or ten per student. Salary cap numbers do not apply to trades.

Injuries

If you cannot locate a player's name in the box scores, he is probably injured or taking a day off. *If this occurs, the players' score is counted as zero*. Likewise, if a student's pitcher does not pitch in a given week, the pitcher's score is counted as zero. If a player is declared out for the year and if students used option 1 to select players, a student can use the portion of the salary cap that was spent on that player to purchase another player. A list of injured players can be found in newspapers as well as online at www.fantasysportsmath.com or on other sports Web sites.

Step 2: Reading Box Scores

Let's look at the statistics for Sammy Cooke, the designated hitter for the Rats. In Table 1.2, in the line next to his name, you can see that he scored one run and had three hits, five runs batted in, one base on balls, and zero strikeouts. At the bottom of the box score, notice that he also hit a home run.

Table 1.2. Sample Box Score

Bats	ab	r	h	rbi	bb	so	lob	avg
N Colt ss	5	0	0	0	0	1	2	.293
T Flyer cf	5	1	2	0	0	1	0	.260
F Vargas 1b	5	0	2	1	0	1	1	.385
J Macky rf	5	2	3	0	0	0	1	.287
A Cortez 3b	4	2	2	0	1	0	1	.298
T Joon dh	3	0	1	1	1	0	4	.318
C Flores lf	4	1	1	2	0	0	2	.257
G Hollis c	3	0	1	2	0	1	2	.161
a–M Vilipane ph-c	1	0	0	0	0	0	0	.293

(*Cont'd.*)

Table 1.2. Sample Box Score *(Cont'd.)*

Bats	ab	r	h	rbi	bb	so	lob	avg
M Roper 2b	3	0	0	0	1	0	1	.111
J Ezatz Jr pr-2b	0	0	0	0	0	0	0	.269
Totals	38	6	12	6	3	4	14	

BATTING: 2B—T Flyer (9, C Targe); J Macky (15, P Garcia). 3B—T Flyer (1, C Targe).
BASERUNNING: **SB**—C Flores (3, 2nd base off C Targe/J Blanco).
FIELDING: **E**—M Roper (1, ground ball).

Rats	ab	r	h	rbi	bb	so	lob	avg
L Carter ss	4	1	1	0	1	1	4	.299
R Renault 2b	5	1	1	0	0	0	3	.275
R Brady rf	3	3	2	0	2	1	2	.300
J Martinez 3b	4	2	3	2	1	1	1	.328
S Cooke dh	4	1	3	5	1	0	1	.286
R Davis pr-dh	0	0	0	0	0	0	0	.308
J Blanco c	4	1	2	1	1	0	2	.297
J Smith 1b	3	0	0	0	0	0	4	.242
T Allen 1b	1	0	0	0	1	0	1	.232
B Johnson cf	4	0	2	1	1	1	4	.238
T Blake lf	4	0	1	0	0	0	2	.244
Totals	36	9	15	9	8	4	24	

BATTING: 2B—J Martinez (13, J Carrillo); R Brady (17, J Carrillo); S Cooke (19, L Deringer). **HR**—S Cooke (7, 7th inning off W Brown 1 on, 1 out).

Note: ab = at bats; **r = runs; h = hits; rbi = runs batted in; bb = bases on balls (i.e., walk); so = strikeouts;** lob = left on base; avg = average. Batting: 2B = double; 3B = triple; **HR = home run;** S = sacrifice. Baserunning: SB = stolen base. Items in bold will be used in the Fantasy Baseball and Math game. Fielding: **E = error.**

Table 1.3. Sample Box Score: Pitchers' Statistics

Bats	ip	h	r	er	bb	so	hr	era
J Carrillo	$6\frac{1}{3}$	9	6	6	6	3	0	3.56
W Brown (L, 2–1;)	0	2	1	1	1	0	1	2.57
M Reddmon	$\frac{2}{3}$	3	2	2	1	1	0	3.73
L Deringer	1	1	0	0	0	0	0	4.82

Rats	ip	h	r	er	bb	so	hr	era
C Targe	$5\frac{1}{3}$	10	6	6	1	3	0	4.53
P Garcia	$1\frac{1}{3}$	1	0	0	1	0	0	6.75
T Estrada (W, 1–1)	$\frac{2}{3}$	0	0	0	0	0	0	6.57
T Lloyd (H, 13)	$\frac{2}{3}$	0	0	0	1	1	0	2.64
S Wolly (S, 15)	1	1	0	0	0	0	0	1.05

Note: **ip = innings pitched; h = hits; r = runs;** er = earned runs; **bb = bases on balls (i.e., walk); so = strikeouts;** hr = home runs; era = earned run average. L = loss; W = win; H = number of holds (i.e., the number of times a pitcher has entered a game in a save situation and left the game with his team leading); S = save.

Now let's look at statistics for pitchers. In Table 1.3, notice that Juan Carrillo pitched $6\frac{1}{3}$ innings. Carrillo gave up nine hits, six runs, six bases on balls, and he had three strikeouts.

Additional statistics you will follow include errors and stolen bases for everyday players, as well as wins by a pitcher. When a pitcher wins a game, you will see a "W" next to his name in the box score. Notice that the winning pitcher for this game was T. Estrada of the Rats.

Players who have stolen bases or committed errors will be listed in the "Baserunning" or "Fielding" sections. For example, notice that Carlos Flores stole a base for the Bats (his third of the year; if he had stolen two bases, it would have been listed like this: C Flores 2 (3,4 2nd base off C Targe/J Blanco; 3rd base off C Targe/J Blanco). Also notice that Matt Roper committed one error for the Bats.

Step 3: Collecting Data

Each week, students use newspapers or online resources to access data from one game in which each of the players in their starting lineup participated.

Students can choose the game that produced the best statistics for each player. Options for collecting data include the following:

1. Enroll your class in a newspapers-in-education program in order to receive free copies of newspapers.
2. If it is not possible to enroll in a newspapers-in-education program, choose a couple of students to cut box scores out of one newspaper and make copies for the other students. Students can reference the baseball standings in the newspaper to ensure that they have cut out at least one box score for each team. This duty can be rotated.
3. Have students visit www.fantasysportsmath.com, and do the following:
    a. Click the "Get Baseball Stats" link.
    b. On the following page, use the calendar to select any day from the previous week.
    c. Find a team one of your players participated in and click on the box score for that game. Students can find the game during the previous week in which each of their players produced the best statistics.

If students use online resources to collect data, they can choose from a number of games their players participated in for the previous week because

Table 1.4. Default Scoring System for Nonpitchers

For Each:	Players Earn:		
Home run (HR)	$\frac{1}{2}$	or	.500
Run scored (R)	$\frac{1}{3}$	or	.333
Run batted in (RBI)	$\frac{1}{3}$	or	.333
Hit (H)	$\frac{1}{6}$	or	.167
Stolen base (SB)	$\frac{1}{7}$	or	.143
Base on balls (BB)	$\frac{1}{7}$	or	.143
Strikeout (SO)	$-\frac{1}{21}$	or	−.048
Error (E)	$-\frac{1}{21}$	or	−.048

Table 1.5. Default Scoring System for Pitchers

For Each:	Players Earn:		
Win (W)	$\frac{1}{2}$	or	.500
Inning pitched (IP)*	$\frac{1}{3}$	or	.333
Strikeout (SO)	$\frac{1}{6}$	or	.167
Run allowed (R)	$-\frac{1}{7}$	or	−.143
Hit allowed (H)	$-\frac{1}{21}$	or	−.048
Base on balls allowed (BB)	$-\frac{1}{21}$	or	−.048

Note: All decimals are rounded to the nearest thousandth.

*Rounded down to the nearest whole number—for example, $6\frac{2}{3}$ would be rounded down to 6.

statistics are archived online. Students can also access data if they missed a week or two. Using online resources is the quickest and easiest method.

Step 4: Computing Points

Tables 1.4 and 1.5 show the default scoring systems for nonpitchers and pitchers.

To keep things simple for younger students, you have the option of not selecting pitchers. Since they pitch only once every five days or so, in many cases, their names will not be in box scores anyway.

Before we learn how to compute points, we need a team. A hypothetical starting team is listed in Table 1.6. All players on this team are from the previous Bats-Rats box score (Tables 1.2 and 1.3). Normally, all players will not be found in the same box score because students usually select players from several teams. Three players from this team (Felipe Vargas, Louie Carter, and Julio Martinez) are also on the fantasy team called the English Bulldogs and are used extensively as examples throughout this book. All graphs and several worksheets are linked to these three players.

The points earned by players can be computed by two different methods. One method uses algebra; the other method does not. If students use both methods to compute points, they can verify their results. However, if students do not have the skills to work with variables in linear equations, they can use the non-algebraic method to compute points.

Table 1.7 (on page 13) shows the computation of points earned for the English Bulldogs using the non-algebraic method with the default scoring system. I recommend using this method for the first few weeks and then introducing

Table 1.6. The English Bulldogs

Felipe Vargas	First base (1B)
Matt Roper	Second base (2B)
Julio Martinez	Third base (3B)
Louie Carter	Shortstop (SS)
Jose Blanco	Catcher (C)
Carlos Flores	Outfield (OF)
Tim Flyer	Outfield (OF)
Ray Brady	Outfield (OF)
Sammy Cooke	Designated hitter (DH)
Juan Carrillo	Pitcher (P)

students to the algebraic method. The default scoring system can be used each week to determine the ranking of students' teams in the game. It was designed so that students can plot the weekly points earned for their players to precise numerical values on stacked-bar and multiple-line graphs. This is explained later. However, if you wish, you may choose a different scoring system to meet the skill level of your students.

Once students have mastered the non-algebraic method of computing points, they can move on to the algebraic method, which includes the use of linear equations that contain variables. These equations are known as *total points equations.* Younger students may be initially intimidated by the algebraic look of the equations. However, once they have used them a few times, they become comfortable with the equations and feel proud that they are doing algebra. The default total points equations (the algebraic method) and the default scoring system (the non-algebraic method) contain the same numerical values. Consequently, students can check their work if they use both methods because both methods will result in the same answer. The default total points equations (one for everyday players and one for pitchers) are listed in the next section.

Default Total Points Equation for Nonpitchers

Numerical values are the same as in the default scoring system.

$$\frac{1}{2}(H) + \frac{1}{3}(R + I) + \frac{1}{6}(B) + \frac{1}{7}(S + W) - \frac{1}{21}(K + E) = T$$

H = number of home runs
R = number of runs scored
I = number of runs batted in
B = number of hits
S = number of stolen bases
W = number of bases on balls (walks)
K = number of strikeouts
E = number of errors
T = total points earned for one week for one player

Default Total Points Equation for Pitchers

$$\frac{1}{2}(V) + \frac{1}{3}(P) + \frac{1}{6}(K) - \frac{1}{7}(R) - \frac{1}{21}(B + W) = T$$

V = number of wins
P = number of innings pitched, rounded down to the nearest whole number
K = number of strikeouts
R = number of runs allowed
B = number of hits allowed
W = number of bases on balls allowed
T = total points earned for one week for one pitcher

Note: If you think your students will be confused by using two linear equations, then don't select pitchers.

Table 1.7. Points Earned for the English Bulldogs

Nonpitchers

Player	Number of Home Runs $\times \frac{1}{2}$	Number of Runs Scored and RBIs $\times \frac{1}{3}$	Number of Hits $\times \frac{1}{6}$	Number of Stolen Bases and Bases on Balls $\times \frac{1}{7}$	Number of Strikeouts and Errors $\times \left(-\frac{1}{21}\right)$	Total Individual Points
Vargas	0	$\frac{1}{3}$	$\frac{2}{6}$	0	$-\frac{1}{21}$	$\frac{13}{21}$
Roper	0	0	0	$\frac{1}{7}$	$-\frac{1}{21}$	$\frac{2}{21}$
Martinez	0	$\frac{4}{3}$	$\frac{3}{6}$	$\frac{1}{7}$	$-\frac{1}{21}$	$1\frac{13}{14}$
Carter	0	$\frac{1}{3}$	$\frac{1}{6}$	$\frac{1}{7}$	$-\frac{1}{21}$	$\frac{25}{42}$
Blanco	0	$\frac{2}{3}$	$\frac{2}{6}$	$\frac{1}{7}$	0	$1\frac{1}{7}$
Flores	0	$\frac{3}{3}$	$\frac{1}{6}$	$\frac{1}{7}$	0	$1\frac{13}{42}$
Flyer	0	$\frac{1}{3}$	$\frac{2}{6}$	0	$-\frac{1}{21}$	$\frac{13}{21}$
Brady	0	$\frac{3}{3}$	$\frac{2}{6}$	$\frac{2}{7}$	$-\frac{1}{21}$	$1\frac{4}{7}$
Cooke	$\frac{1}{2}$	$\frac{6}{3}$	$\frac{3}{6}$	$\frac{1}{7}$	0	$3\frac{1}{7}$

Pitcher

Player	Number of Wins $\times \frac{1}{2}$	Number of Innings Pitched $\times \frac{1}{3}$	Number of Strikeouts $\times \frac{1}{6}$	Number of Runs Allowed $\times \left(-\frac{1}{7}\right)$	Number of Hits and Bases on Balls Allowed $\times \left(-\frac{1}{21}\right)$	Total Individual Points
Carrillo	0	$\frac{6}{3}$	$\frac{3}{6}$	$-\frac{6}{7}$	$-\frac{15}{21}$	$\frac{13}{14}$

Total team points: $\frac{13}{21} + \frac{2}{21} + 1\frac{13}{14} + \frac{25}{42} + 1\frac{1}{7} + 1\frac{13}{42} + \frac{13}{21} + 1\frac{4}{7} + 3\frac{1}{7} + \frac{13}{14} = 11\frac{40}{42} = 11\frac{20}{21}$

Example Using Default Total Points Equations: Points Earned for the English Bulldogs

$$\frac{1}{2}(H) + \frac{1}{3}(R + I) + \frac{1}{6}(B) + \frac{1}{7}(S + W) - \frac{1}{21}(K + E) = T$$

Felipe Vargas

$$\frac{1}{2}(0) + \frac{1}{3}(0 + 1) + \frac{1}{6}(2) + \frac{1}{7}(0 + 0) - \frac{1}{21}(1 + 0) = \frac{13}{21}$$

Matt Roper

$$\frac{1}{2}(0) + \frac{1}{3}(0 + 0) + \frac{1}{6}(0) + \frac{1}{7}(0 + 1) - \frac{1}{21}(0 + 1) = \frac{2}{21}$$

Julio Martinez

$$\frac{1}{2}(0) + \frac{1}{3}(2 + 2) + \frac{1}{6}(3) + \frac{1}{7}(0 + 1) - \frac{1}{21}(1 + 0) = 1\frac{13}{14}$$

Louie Carter

$$\frac{1}{2}(0) + \frac{1}{3}(1 + 0) + \frac{1}{6}(1) + \frac{1}{7}(0 + 1) - \frac{1}{21}(1 + 0) = \frac{25}{42}$$

Jose Blanco

$$\frac{1}{2}(0) + \frac{1}{3}(1 + 1) + \frac{1}{6}(2) + \frac{1}{7}(0 + 1) - \frac{1}{21}(0 + 0) = 1\frac{1}{7}$$

Carlos Flores

$$\frac{1}{2}(0) + \frac{1}{3}(1 + 2) + \frac{1}{6}(1) + \frac{1}{7}(1 + 0) - \frac{1}{21}(0 + 0) = 1\frac{13}{42}$$

Tim Flyer

$$\frac{1}{2}(0) + \frac{1}{3}(1 + 0) + \frac{1}{6}(2) + \frac{1}{7}(0 + 0) - \frac{1}{21}(1 + 0) = \frac{13}{21}$$

Ray Brady

$$\frac{1}{2}(0) + \frac{1}{3}(3 + 0) + \frac{1}{6}(2) + \frac{1}{7}(0 + 2) - \frac{1}{21}(1 + 0) = 1\frac{4}{7}$$

Sammy Cooke

$$\frac{1}{2}(1) + \frac{1}{3}(1 + 5) + \frac{1}{6}(3) + \frac{1}{7}(0 + 1) - \frac{1}{21}(0 + 0) = 3\frac{1}{7}$$

For Juan Carrillo, use the default total points equation for pitchers:

$$\frac{1}{2}(V) + \frac{1}{3}(P) + \frac{1}{6}(K) - \frac{1}{7}(R) - \frac{1}{21}(B + W) = T$$

Juan Carrillo

$$\frac{1}{2}(0) + \frac{1}{3}(6) + \frac{1}{6}(3) - \frac{1}{7}(6) - \frac{1}{21}(9 + 6) = \frac{13}{14}$$

Total points:

$$7\frac{208}{42} = 11\frac{40}{42} = 11\frac{20}{21}$$

Notice that both methods of computing points earned resulted in the same answer. Similarly, students will be able to check their work by using both methods.

Additional Scoring Systems

Over 160 scoring systems are listed in the following pages. You can choose a scoring system that is appropriate for the skill level of your students. The different scoring systems give students opportunities to work with roots, exponents, summations, factorials, integers, fractions, decimals, and absolute value. For my students, I used one scoring system throughout the game and supplemented that system with additional scoring systems when students were ready. Students should use one scoring system throughout the game to determine their cumulative points and to update their stacked-bar and multiple-line graphs.

Many scoring systems are more advanced than the default scoring system, especially those that are based on negative numerical values. In those systems, the goal is to acquire the least amount of points (or the greatest absolute value). Acquiring the least amount of points is an effective way to teach the concept of absolute value. In the following example, a pitcher might earn $\frac{3}{4}$ if a student used scoring system number four. However, if the student placed absolute value symbols around scoring system number five before using it to compute points, the player would also earn $\frac{3}{4}$.

4. $\frac{1}{8}(1) + \frac{1}{12}(7) + \frac{1}{16}(5) - \frac{1}{24}(2) - \frac{1}{48}(6 + 3) = \frac{3}{4}$

5. $\left| -\frac{1}{8}(1) - \frac{1}{12}(7) - \frac{1}{16}(5) + \frac{1}{24}(2) + \frac{1}{48}(6 + 3) \right| = \frac{3}{4}$

Consequently, students can check their work by using both positive and negative versions of the same scoring systems, since both will result in the same absolute value. In order to do this, you can simply insert absolute value symbols around any scoring systems that are based on negative numerical values. It is possible (though unlikely) that a baseball player may earn a negative amount of points even if students are using equations that are based on positive numerical values. In other words, a player may have a bad game statistically and not generate enough positive points to offset his negative points. You can prevent this scenario by using equation number one (which doesn't use any negative values) or by informing students that the lowest score for a player for one week will be zero, thus ensuring that younger students will not be confused by negative numerical values.

Scoring systems are categorized according to their content and whether or not they use relative proportionality (that is, whether points earned have equal ratios). For example, scoring systems numbers four and six (located below) use relative proportionality because the ratios between the fractions in each equation are the same. In other words, a home run (H) in the first equation is 1.5 times greater than a run scored or run batted in (R and I), two times greater than a hit (B), three times greater than a stolen base or walk (S and W), and so on. Likewise, these ratios are the same between the numerical values in the second equation.

4. $\frac{1}{8}(H) + \frac{1}{12}(R + I) + \frac{1}{16}(B) + \frac{1}{24}(S + W) - \frac{1}{48}(K + E) = T$

6. $\frac{1}{6}(H) + \frac{1}{9}(R + I) + \frac{1}{12}(B) + \frac{1}{18}(S + W) - \frac{1}{36}(K + E) = T$

The advantage of using scoring systems that use relative proportionality is that you can use these different scoring systems during the course of the game without unfairly changing the rankings. In other words, a student whose team earned the highest number of points in a given week will earn the highest number of points in that week no matter which scoring systems are used, so long as the scoring systems are proportionate. Conversely, let's say you used a scoring system that was based on fractions for the first ten weeks, and then used a different scoring system for week 11 that was based on factorials and not proportionate to the original scoring system you used. It is possible that the student who was in last place after ten weeks could leap into first place after week 11 if her team performed strongly, because the scoring systems based on factorials are not proportionate and can result in teams earning hundreds of points in one week. Consequently, it's not fair for a student who has built up a small lead over the course of ten weeks to suddenly be hundreds of points out of the lead based on one week. For this reason, I suggest using the same scoring system or scoring systems that are proportionate throughout the game in order to determine standings. If you wish to include other scoring systems, I would not include these to determine the rankings of the students' teams.

Scoring systems 4–35, 42–71, and 72–97 use relative proportionality.

In each scoring system, the first equation is for nonpitchers and the second equation is for pitchers. If you do not select pitchers, then you will use only the first equation in each set.

Additional Scoring Systems (Total Points Equations)

The first equation in each set is for nonpitchers; the second equation is for pitchers.

Integers

1. $5\,(H) + 4\,(R + I) + 3\,(B) + 2\,(S + W) = T$
   $5\,(V) + 4\,(P) + 3\,(K) = T$
2. $5\,(H) + 4\,(R + I) + 3\,(B) + 2\,(S + W) - 1\,(K + E) = T$
   $5\,(V) + 4\,(P) + 3\,(K) - 2\,(R) - 1\,(B + W) = T$
3. $-5\,(H) - 4\,(R + I) - 3\,(B) - 2\,(S + W) + 1\,(K + E) = T$
   $-5\,(V) - 4\,(P) - 3\,(K) + 2\,(R) + 1\,(B + W) = T$

Fractions

Equations 4–35 use relative proportionality.

4. $\frac{1}{8}(H) + \frac{1}{12}(R + I) + \frac{1}{16}(B) + \frac{1}{24}(S + W) - \frac{1}{48}(K + E) = T$
   $\frac{1}{8}(V) + \frac{1}{12}(P) + \frac{1}{16}(K) - \frac{1}{24}(R) - \frac{1}{48}(B + W) = T$
5. $-\frac{1}{8}(H) - \frac{1}{12}(R + I) - \frac{1}{16}(B) - \frac{1}{24}(S + W) + \frac{1}{48}(K + E) = T$
   $-\frac{1}{8}(V) - \frac{1}{12}(P) - \frac{1}{16}(K) + \frac{1}{24}(R) + \frac{1}{48}(B + W) = T$
6. $\frac{1}{6}(H) + \frac{1}{9}(R + I) + \frac{1}{12}(B) + \frac{1}{18}(S + W) - \frac{1}{36}(K + E) = T$
   $\frac{1}{6}(V) + \frac{1}{9}(P) + \frac{1}{12}(K) - \frac{1}{18}(R) - \frac{1}{36}(B + W) = T$
7. $-\frac{1}{6}(H) - \frac{1}{9}(R + I) - \frac{1}{12}(B) - \frac{1}{18}(S + W) + \frac{1}{36}(K + E) = T$
   $-\frac{1}{6}(V) - \frac{1}{9}(P) - \frac{1}{12}(K) + \frac{1}{18}(R) + \frac{1}{36}(B + W) = T$
8. $\frac{1}{9}(H) + \frac{1}{13.5}(R + I) + \frac{1}{18}(B) + \frac{1}{27}(S + W) - \frac{1}{54}(K + E) = T$
   $\frac{1}{9}(V) + \frac{1}{13.5}(P) + \frac{1}{18}(K) - \frac{1}{27}(R) - \frac{1}{54}(B + W) = T$
9. $-\frac{1}{9}(H) - \frac{1}{13.5}(R + I) - \frac{1}{18}(B) - \frac{1}{27}(S + W) + \frac{1}{54}(K + E) = T$
   $-\frac{1}{9}(V) - \frac{1}{13.5}(P) - \frac{1}{18}(K) + \frac{1}{27}(R) + \frac{1}{54}(B + W) = T$

10. $\frac{1}{10}(H) + \frac{1}{15}(R + I) + \frac{1}{20}(B) + \frac{1}{30}(S + W) - \frac{1}{60}(K + E) = T$

$\frac{1}{10}(V) + \frac{1}{15}(P) + \frac{1}{20}(K) - \frac{1}{30}(R) - \frac{1}{60}(B + W) = T$

11. $-\frac{1}{10}(H) - \frac{1}{15}(R + I) - \frac{1}{20}(B) - \frac{1}{30}(S + W) + \frac{1}{60}(K + E) = T$

$-\frac{1}{10}(V) - \frac{1}{15}(P) - \frac{1}{20}(K) + \frac{1}{30}(R) + \frac{1}{60}(B + W) = T$

12. $\frac{1}{12}(H) + \frac{1}{18}(R + I) + \frac{1}{24}(B) + \frac{1}{36}(S + W) - \frac{1}{72}(K + E) = T$

$\frac{1}{12}(V) + \frac{1}{18}(P) + \frac{1}{24}(K) - \frac{1}{36}(R) - \frac{1}{72}(B + W) = T$

13. $-\frac{1}{12}(H) - \frac{1}{18}(R + I) - \frac{1}{24}(B) - \frac{1}{36}(S + W) + \frac{1}{72}(K + E) = T$

$-\frac{1}{12}(V) - \frac{1}{18}(P) - \frac{1}{24}(K) + \frac{1}{36}(R) + \frac{1}{72}(B + W) = T$

14. $\frac{1}{4}(H) + \frac{1}{6}(R + I) + \frac{1}{8}(B) + \frac{1}{12}(S + W) - \frac{1}{24}(K + E) = T$

$\frac{1}{4}(V) + \frac{1}{6}(P) + \frac{1}{8}(K) - \frac{1}{12}(R) - \frac{1}{24}(B + W) = T$

15. $-\frac{1}{4}(H) - \frac{1}{6}(R + I) - \frac{1}{8}(B) - \frac{1}{12}(S + W) + \frac{1}{24}(K + E) = T$

$-\frac{1}{4}(V) - \frac{1}{6}(P) - \frac{1}{8}(K) + \frac{1}{12}(R) + \frac{1}{24}(B + W) = T$

16. $\frac{1}{2}(H) + \frac{1}{3}(R + I) + \frac{1}{4}(B) + \frac{1}{6}(S + W) - \frac{1}{12}(K + E) = T$

$\frac{1}{2}(V) + \frac{1}{3}(P) + \frac{1}{4}(K) - \frac{1}{6}(R) - \frac{1}{12}(B + W) = T$

17. $-\frac{1}{2}(H) - \frac{1}{3}(R + I) - \frac{1}{4}(B) - \frac{1}{6}(S + W) + \frac{1}{12}(K + E) = T$

$-\frac{1}{2}(V) - \frac{1}{3}(P) - \frac{1}{4}(K) + \frac{1}{6}(R) + \frac{1}{12}(B + W) = T$

18. $\frac{1}{14}(H) + \frac{1}{21}(R + I) + \frac{1}{28}(B) + \frac{1}{42}(S + W) - \frac{1}{84}(K + E) = T$

$\frac{1}{14}(V) + \frac{1}{21}(P) + \frac{1}{28}(K) - \frac{1}{42}(R) - \frac{1}{84}(B + W) = T$

19. $-\frac{1}{14}(H) - \frac{1}{21}(R + I) - \frac{1}{28}(B) - \frac{1}{42}(S + W) + \frac{1}{84}(K + E) = T$

$-\frac{1}{14}(V) - \frac{1}{21}(P) - \frac{1}{28}(K) + \frac{1}{42}(R) + \frac{1}{84}(B + W) = T$

20. $$\frac{1}{16}(H) + \frac{1}{24}(R + I) + \frac{1}{32}(B) + \frac{1}{48}(S + W) - \frac{1}{96}(K + E) = T$$
$$\frac{1}{16}(V) + \frac{1}{24}(P) + \frac{1}{32}(K) - \frac{1}{48}(R) - \frac{1}{96}(B + W) = T$$

21. $$-\frac{1}{16}(H) - \frac{1}{24}(R + I) - \frac{1}{32}(B) - \frac{1}{48}(S + W) + \frac{1}{96}(K + E) = T$$
$$-\frac{1}{16}(V) - \frac{1}{24}(P) - \frac{1}{32}(K) + \frac{1}{48}(R) + \frac{1}{96}(B + W) = T$$

22. $$\frac{1}{18}(H) + \frac{1}{27}(R + I) + \frac{1}{36}(B) + \frac{1}{54}(S + W) - \frac{1}{108}(K + E) = T$$
$$\frac{1}{18}(V) + \frac{1}{27}(P) + \frac{1}{36}(K) - \frac{1}{54}(R) - \frac{1}{108}(B + W) = T$$

23. $$-\frac{1}{18}(H) - \frac{1}{27}(R + I) - \frac{1}{36}(B) - \frac{1}{54}(S + W) + \frac{1}{108}(K + E) = T$$
$$-\frac{1}{18}(V) - \frac{1}{27}(P) - \frac{1}{36}(K) + \frac{1}{54}(R) + \frac{1}{108}(B + W) = T$$

24. $$\frac{1}{1.\overline{6}}(H) + \frac{1}{2.5}(R + I) + \frac{1}{3.\overline{3}}(B) + \frac{1}{5}(S + W) - \frac{1}{10}(K + E) = T$$
$$\frac{1}{1.\overline{6}}(V) + \frac{1}{2.5}(P) + \frac{1}{3.\overline{3}}(K) - \frac{1}{5}(R) - \frac{1}{10}(B + W) = T$$

25. $$-\frac{1}{1.\overline{6}}(H) - \frac{1}{2.5}(R + I) - \frac{1}{3.\overline{3}}(B) - \frac{1}{5}(S + W) + \frac{1}{10}(K + E) = T$$
$$-\frac{1}{1.\overline{6}}(V) - \frac{1}{2.5}(P) - \frac{1}{3.\overline{3}}(K) + \frac{1}{5}(R) + \frac{1}{10}(B + W) = T$$

26. $$\frac{1}{83.\overline{3}}(H) + \frac{1}{125}(R + I) + \frac{1}{166.\overline{6}}(B) + \frac{1}{250}(S + W) - \frac{1}{500}(K + E) = T$$
$$\frac{1}{83.\overline{3}}(V) + \frac{1}{125}(P) + \frac{1}{166.\overline{6}}(K) - \frac{1}{250}(R) - \frac{1}{500}(B + W) = T$$

27. $$-\frac{1}{83.\overline{3}}(H) - \frac{1}{125}(R + I) - \frac{1}{166.\overline{6}}(B) - \frac{1}{250}(S + W) + \frac{1}{500}(K + E) = T$$
$$-\frac{1}{83.\overline{3}}(V) - \frac{1}{125}(P) - \frac{1}{166.\overline{6}}(K) + \frac{1}{250}(R) + \frac{1}{500}(B + W) = T$$

28. $$\frac{1}{50}(H) + \frac{1}{75}(R + I) + \frac{1}{100}(B) + \frac{1}{150}(S + W) - \frac{1}{300}(K + E) = T$$
$$\frac{1}{50}(V) + \frac{1}{75}(P) + \frac{1}{100}(K) - \frac{1}{150}(R) - \frac{1}{300}(B + W) = T$$

29. $$-\frac{1}{50}(H) - \frac{1}{75}(R + I) - \frac{1}{100}(B) - \frac{1}{150}(S + W) + \frac{1}{300}(K + E) = T$$
$$-\frac{1}{50}(V) - \frac{1}{75}(P) - \frac{1}{100}(K) + \frac{1}{150}(R) + \frac{1}{300}(B + W) = T$$

30. $\frac{1}{166.\overline{6}}(H) + \frac{1}{250}(R + I) + \frac{1}{333.\overline{3}}(B) + \frac{1}{500}(S + W) - \frac{1}{1000}(K + E) = T$

$\frac{1}{166.\overline{6}}(V) + \frac{1}{250}(P) + \frac{1}{333.\overline{3}}(K) - \frac{1}{500}(R) - \frac{1}{1000}(B + W) = T$

31. $-\frac{1}{166.\overline{6}}(H) - \frac{1}{250}(R + I) - \frac{1}{333.\overline{3}}(B) - \frac{1}{500}(S + W) + \frac{1}{1000}(K + E) = T$

$-\frac{1}{166.\overline{6}}(V) - \frac{1}{250}(P) - \frac{1}{333.\overline{3}}(K) + \frac{1}{500}(R) + \frac{1}{1000}(B + W) = T$

32. $\frac{1}{13.5}(H) + \frac{1}{20.25}(R + I) + \frac{1}{27}(B) + \frac{1}{40.5}(S + W) - \frac{1}{81}(K + E) = T$

$\frac{1}{13.5}(V) + \frac{1}{20.25}(P) + \frac{1}{27}(K) - \frac{1}{40.5}(R) - \frac{1}{81}(B + W) = T$

33. $-\frac{1}{13.5}(H) - \frac{1}{20.25}(R + I) - \frac{1}{27}(B) - \frac{1}{40.5}(S + W) + \frac{1}{81}(K + E) = T$

$-\frac{1}{13.5}(V) - \frac{1}{20.25}(P) - \frac{1}{27}(K) + \frac{1}{40.5}(R) + \frac{1}{81}(B + W) = T$

34. $\frac{1}{16.\overline{6}}(H) + \frac{1}{25}(R + I) + \frac{1}{33.\overline{3}}(B) + \frac{1}{50}(S + W) - \frac{1}{100}(K + E) = T$

$\frac{1}{16.\overline{6}}(V) + \frac{1}{25}(P) + \frac{1}{33.\overline{3}}(K) - \frac{1}{50}(R) - \frac{1}{100}(B + W) = T$

35. $-\frac{1}{16.\overline{6}}(H) - \frac{1}{25}(R + I) - \frac{1}{33.\overline{3}}(B) - \frac{1}{50}(S + W) + \frac{1}{100}(K + E) = T$

$-\frac{1}{16.\overline{6}}(V) - \frac{1}{25}(P) - \frac{1}{33.\overline{3}}(K) + \frac{1}{50}(R) + \frac{1}{100}(B + W) = T$

36. $\frac{5}{6}(H) + \frac{4}{5}(R + I) + \frac{3}{4}(B) + \frac{2}{7}(S + W) - \frac{2}{8}(K + E) = T$

$\frac{5}{6}(V) + \frac{4}{5}(P) + \frac{3}{4}(K) - \frac{2}{7}(R) - \frac{2}{8}(B + W) = T$

37. $-\frac{5}{6}(H) - \frac{4}{5}(R + I) - \frac{3}{4}(B) - \frac{2}{7}(S + W) + \frac{2}{8}(K + E) = T$

$-\frac{5}{6}(V) - \frac{4}{5}(P) - \frac{3}{4}(K) + \frac{2}{7}(R) + \frac{2}{8}(B + W) = T$

38. $\frac{1}{2}(H) + \frac{1}{3}(R + I) + \frac{1}{4}(B) + \frac{1}{5}(S + W) - \frac{1}{6}(K + E) = T$

$\frac{1}{2}(V) + \frac{1}{3}(P) + \frac{1}{4}(K) - \frac{1}{5}(R) - \frac{1}{6}(B + W) = T$

39. $-\frac{1}{2}(H) - \frac{1}{3}(R + I) - \frac{1}{4}(B) - \frac{1}{5}(S + W) + \frac{1}{6}(K + E) = T$

$-\frac{1}{2}(V) - \frac{1}{3}(P) - \frac{1}{4}(K) + \frac{1}{5}(R) + \frac{1}{6}(B + W) = T$

40. $\frac{1}{2}(H) + \frac{1}{4}(R + I) + \frac{1}{8}(B) + \frac{1}{16}(S + W) - \frac{1}{32}(K + E) = T$

$\frac{1}{2}(V) + \frac{1}{4}(P) + \frac{1}{8}(K) - \frac{1}{16}(R) - \frac{1}{32}(B + W) = T$

41. $-\frac{1}{2}(H) - \frac{1}{4}(R + I) - \frac{1}{8}(B) - \frac{1}{16}(S + W) + \frac{1}{32}(K + E) = T$

$-\frac{1}{2}(V) - \frac{1}{4}(P) - \frac{1}{8}(K) + \frac{1}{16}(R) + \frac{1}{32}(B + W) = T$

Decimals

Equations 42–71 use relative proportionality.

42. $.6(H) + .4(R + I) + .3(B) + .2(S + W) - .1(K + E) = T$
$.6(V) + .4(P) + .3(K) - .2(R) - .1(B + W) = T$

43. $-.6(H) - .4(R + I) - .3(B) - .2(S + W) + .1(K + E) = T$
$-.6(V) - .4(P) - .3(K) + .2(R) + .1(B + W) = T$

44. $1.2(H) + .8(R + I) + .6(B) + .4(S + W) - .2(K + E) = T$
$1.2(V) + .8(P) + .6(K) - .4(R) - .2(B + W) = T$

45. $-1.2(H) - .8(R + I) - .6(B) - .4(S + W) + .2(K + E) = T$
$-1.2(V) - .8(P) - .6(K) + .4(R) + .2(B + W) = T$

46. $1.8(H) + 1.2(R + \mathrm{I}) + .9(B) + .6(S + W) - .3(K + E) = T$
$1.8(V) + 1.2(P) + .9(K) - .6(R) - .3(B + W) = \mathrm{T}$

47. $-1.8(H) - 1.2(R + I) - .9(B) - .6(S + W) + .3(K + E) = T$
$-1.8(V) - 1.2(P) - .9(K) + .6(R) + .3(B + W) = T$

48. $2.4(H) + 1.6(R + I) + 1.2(B) + .8(S + W) - .4(K + E) = T$
$2.4(V) + 1.6(P) + 1.2(K) - .8(R) - .4(B + W) = T$

49. $-2.4(H) - 1.6(R + I) - 1.2(B) - .8(S + W) + .4(K + E) = T$
$-2.4(V) - 1.6(P) - 1.2(K) + .8(R) + .4(B + W) = T$

50. $3.0(H) + 2.0(R + I) + 1.5(B) + 1.0(S + W) - .5(K + E) = T$
$3.0(V) + 2.0(P) + 1.5(K) - 1.0(R) - .5(B + W) = T$

51. $-3.0(H) - 2.0(R + I) - 1.5(B) - 1.0(S + W) + .5(K + E) = T$
$-3.0(V) - 2.0(P) - 1.5(K) + 1.0(R) + .5(B + W) = T$

52. $3.6(H) + 2.4(R + I) + 1.8(B) + 1.2(S + W) - .6(K + \mathrm{E}) = T$
$3.6(V) + 2.4(P) + 1.8(K) - 1.2(R) -.6(B + W) = T$

53. $-3.6(H) - 2.4(R + I) - 1.8(B) - 1.2(S + W) + .6(K + E) = T$
$-3.6(V) - 2.4(P) - 1.8(K) + 1.2(R) + .6(B + W) = T$

54. $4.2(H) + 2.8(R + I) + 2.1(B) + 1.4(S + W) - .7(K + E) = T$
$4.2(V) + 2.8(P) + 2.1(K) - 1.4(R) - .7(B + W) = T$

55. $-4.2(H) - 2.8(R + I) - 2.1(B) - 1.4(S + W) + .7(K + E) = T$
$-4.2(V) - 2.8(P) - 2.1(K) + 1.4(R) + .7(B + W) = T$

56. $4.8\,(H) + 3.2\,(R + I) + 2.4\,(B) + 1.6\,(S + W) - .8\,(K + E) = T$
$4.8\,(V) + 3.2\,(P) + 2.4\,(K) - 1.6\,(R) - .8\,(B + W) = T$

57. $-4.8\,(H) - 3.2\,(R + I) - 2.4\,(B) - 1.6\,(S + W) + .8\,(K + E) = T$
$-4.8\,(V) - 3.2\,(P) - 2.4\,(K) + 1.6\,(R) + .8\,(B + W) = T$

58. $5.4\,(H) + 3.6\,(R + I) + 2.7\,(B) + 1.8\,(S + W) - .9\,(K + E) = T$
$5.4\,(V) + 3.6\,(P) + 2.7\,(K) - 1.8\,(R) - .9\,(B + W) = T$

59. $-5.4\,(H) - 3.6\,(R + I) - 2.7\,(B) - 1.8\,(S + W) + .9\,(K + E) = T$
$-5.4\,(V) - 3.6\,(P) - 2.7\,(K) + 1.8\,(R) + .9\,(B + W) = T$

60. $.06\,(H) + .04\,(R + I) + .03\,(B) + .02\,(S + W) - .01\,(K + E) = T$
$.06\,(V) + .04\,(P) + .03\,(K) - .02\,(R) - .01\,(B + W) = T$

61. $-.06\,(H) - .04\,(R + I) - .03\,(B) - .02\,(S + W) + .01\,(K + E) = T$
$-.06\,(V) - .04\,(P) - .03\,(K) + .02\,(R) + .01\,(B + W) = T$

62. $.006\,(H) + .004\,(R + I) + .003\,(B) + .002\,(S + W) - .001\,(K + E) = T$
$.006\,(V) + .004\,(P) + .003\,(K) - .002\,(R) - .001\,(B + W) = T$

63. $-.006\,(H) - .004\,(R + I) - .003\,(B) - .002\,(S + W) + .001\,(K + E) = T$
$-.006\,(V) - .004\,(P) - .003\,(K) + .002\,(R) + .001\,(B + W) = T$

64. $.30\,(H) + .20\,(R + I) + .15\,(B) + .10\,(S + W) - .05\,(K + E) = T$
$.30\,(V) + .20\,(P) + .15\,(K) - .10\,(R) - .05\,(B + W) = T$

65. $-.30\,(H) - .20\,(R + I) - .15\,(B) - .10\,(S + W) + .05\,(K + E) = T$
$-.30\,(V) - .20\,(P) - .15\,(K) + .10\,(R) + .05\,(B + W) = T$

66. $.03\,(H) + .02\,(R + I) + .015\,(B) + .01\,(S + W) - .005\,(K + E) = T$
$.03\,(V) + .02\,(P) + .015\,(K) - .01\,(R) - .005\,(B + W) = T$

67. $-.03\,(H) - .02\,(R + I) - .015\,(B) - .01\,(S + W) + .005\,(K + E) = T$
$-.03\,(V) - .02\,(P) - .015\,(K) + .01\,(R) + .005\,(B + W) = T$

68. $1.5\,(H) + 1\,(R + I) + .75\,(B) + .5\,(S + W) - .25\,(K + E) = T$
$1.5\,(V) + 1\,(P) + .75\,(K) - .5\,(R) - .25\,(B + W) = T$

69. $-1.5\,(H) - 1\,(R + I) - .75\,(B) - .5\,(S + W) + .25\,(K + E) = T$
$-1.5\,(V) - 1\,(P) - .75\,(K) + .5\,(R) + .25\,(B + W) = T$

70. $.15\,(H) + .1\,(R + I) + .075\,(B) + .05\,(S + W) - .025\,(K + E) = T$
$.15\,(V) + .1\,(P) + .075\,(K) - .05\,(R) - .025\,(B + W) = T$

71. $-.15\,(H) - .1\,(R + I) - .075\,(B) - .05\,(S + W) + .025\,(K + E) = T$
$-.15\,(V) - .1\,(P) - .075\,(K) + .05\,(R) + .025\,(B + W) = T$

Fractions and Decimals

Equations 72–97 use relative proportionality.

72. $.25\,(H) + \frac{1}{6}\,(R + I) + .125\,(B) + \frac{1}{12}\,(S + W) - \frac{1}{24}\,(K + E) = T$
$.25\,(V) + \frac{1}{6}\,(P) + .125\,(K) - \frac{1}{12}\,(R) - \frac{1}{24}\,(B + W) = T$

73. $-.25\ (H) - \frac{1}{6}\ (R + I) - .125\ (B) - \frac{1}{12}\ (S + W) + \frac{1}{24}\ (K + E) = T$

$-.25\ (V) - \frac{1}{6}\ (P) - .125\ (K) + \frac{1}{12}\ (R) + \frac{1}{24}\ (B + W) = T$

74. $.2\ (H) + \frac{1}{7.5}\ (R + I) + .1\ (B) + \frac{1}{15}\ (S + W) - \frac{1}{30}\ (K + E) = T$

$.2\ (V) + \frac{1}{7.5}\ (P) + .1\ (K) - \frac{1}{15}\ (R) - \frac{1}{30}\ (B + W) = T$

75. $-.2\ (H) - \frac{1}{7.5}\ (R + I) - .1\ (B) - \frac{1}{15}\ (S + W) + \frac{1}{30}\ (K + E) = T$

$-.2\ (V) - \frac{1}{7.5}\ (P) - .1\ (K) + \frac{1}{15}\ (R) + \frac{1}{30}\ (B + W) = T$

76. $.5\ (H) + .1\ (R + I) + \frac{1}{15}\ (B) + \frac{1}{30}\ (S + W) - \frac{1}{60}\ (K + E) = T$

$.5\ (V) + .1\ (P) + \frac{1}{15}\ (K) - \frac{1}{30}\ (R) - \frac{1}{60}\ (B + W) = T$

77. $-.5\ (H) - .1\ (R + I) - \frac{1}{15}\ (B) - \frac{1}{30}\ (S + W) + \frac{1}{60}\ (K + E) = T$

$-.5\ (V) - .1\ (P) - \frac{1}{15}\ (K) + \frac{1}{30}\ (R) + \frac{1}{60}\ (B + W) = T$

78. $.04\ (H) + \frac{1}{37.5}\ (R + I) + .02\ (B) + \frac{1}{75}\ (S + W) - \frac{1}{150}\ (K + E) = T$

$.04\ (V) + \frac{1}{37.5}\ (P) + .02\ (K) - \frac{1}{75}\ (R) - \frac{1}{150}\ (B + W) = T$

79. $-.04\ (H) - \frac{1}{37.5}\ (R + I) - .02\ (B) - \frac{1}{75}\ (S + W) + \frac{1}{150}\ (K + E) = T$

$-.04\ (V) - \frac{1}{37.5}\ (P) - .02\ (K) + \frac{1}{75}\ (R) + \frac{1}{150}\ (B + W) = T$

80. $.01\ (H) + \frac{1}{150}\ (R + I) + .005\ (B) + \frac{1}{300}\ (S + W) - \frac{1}{600}\ (K + E) = T$

$.01\ (V) + \frac{1}{150}\ (P) + .005\ (K) - \frac{1}{300}\ (R) - \frac{1}{600}\ (B + W) = T$

81. $-.01\ (H) - \frac{1}{150}\ (R + I) - .005\ (B) - \frac{1}{300}\ (S + W) + \frac{1}{600}\ (K + E) = T$

$-.01\ (V) - \frac{1}{150}\ (P) - .005\ (K) + \frac{1}{300}\ (R) + \frac{1}{600}\ (B + W) = T$

82. $\frac{3}{500}\ (H) + .004\ (R + I) + \frac{3}{1000}\ (B) + .002\ (S + W) - \frac{1}{1000}\ (K + E) = T$

$\frac{3}{500}\ (V) + .004\ (P) + \frac{3}{1000}\ (K) - .002\ (R) - \frac{1}{1000}\ (B + W) = T$

83. $-\frac{3}{500}(H) - .004\,(R + I) - \frac{3}{1000}(B) - .002\,(S + W) + \frac{1}{1000}(K + E) = T$

$-\frac{3}{500}(V) - .004\,(P) - \frac{3}{1000}(K) + .002\,(R) + \frac{1}{1000}(B + W) = T$

84. $\frac{3}{40}(H) + \frac{1}{20}(R + I) + .0375\,(B) + .025\,(S + W) - .0125\,(K + E) = T$

$\frac{3}{40}(V) + \frac{1}{20}(P) + .0375\,(K) - .025\,(R) - .0125\,(B + W) = T$

85. $-\frac{3}{40}(H) - \frac{1}{20}(R + I) - .0375\,(B) - .025\,(S + W) + .0125\,(K + E) = T$

$-\frac{3}{40}(V) - \frac{1}{20}(P) - .0375\,(K) + .025\,(R) + .0125\,(B + W) = T$

86. $.06\,(H) + \frac{1}{25}(R + I) + .03\,(B) + \frac{1}{50}(S + W) - .01\,(K + E) = T$

$.06\,(V) + \frac{1}{25}(P) + .03\,(K) - \frac{1}{50}(R) - .01\,(B + W) = T$

87. $-.06\,(H) - \frac{1}{25}(R + I) - .03\,(B) - \frac{1}{50}(S + W) + .01\,(K + E) = T$

$-.06\,(V) - \frac{1}{25}(P) - .03\,(K) + \frac{1}{50}(R) + .01\,(B + W) = T$

88. $\frac{1}{10}(H) + .0\overline{6}\,(R + I) + \frac{1}{20}(B) + .0\overline{3}\,(S + W) - .01\overline{6}\,(K + E) = T$

$\frac{1}{10}(V) + .0\overline{6}\,(P) + \frac{1}{20}(K) - .0\overline{3}\,(R) - .01\overline{6}\,(B + W) = T$

89. $-\frac{1}{10}(H) - .0\overline{6}\,(R + I) - \frac{1}{20}(B) - .0\overline{3}\,(S + W) + .01\overline{6}\,(K + E) = T$

$-\frac{1}{10}(V) - .0\overline{6}\,(P) - \frac{1}{20}(K) + .0\overline{3}\,(R) + .01\overline{6}\,(B + W) = T$

90. $.15\,(H) + \frac{1}{10}(R + I) + .075\,(B) + \frac{1}{20}(S + W) - .025\,(K + E) = T$

$.15\,(V) + \frac{1}{10}(P) + .075\,(K) - \frac{1}{20}(R) - .025\,(B + W) = T$

91. $-.15\,(H) - \frac{1}{10}(R + I) - .075\,(B) - \frac{1}{20}(S + W) + .025\,(K + E) = T$

$-.15\,(V) - \frac{1}{10}(P) - .075\,(K) + \frac{1}{20}(R) + .025\,(B + W) = T$

92. $\frac{3}{10}(H) + .2\,(R + I) + \frac{3}{20}(B) + .1\,(S + W) - \frac{1}{20}(K + E) = T$

$\frac{3}{10}(V) + .2\,(P) + \frac{3}{20}(K) - .1\,(R) - \frac{1}{20}(B + W) = T$

93. $-\frac{3}{10}(H) - .2(R + I) - \frac{3}{20}(B) - .1(S + W) + \frac{1}{20}(K + E) = T$

$-\frac{3}{10}(V) - .2(P) - \frac{3}{20}(K) + .1(R) + \frac{1}{20}(B + W) = T$

94. $.6(H) + \frac{2}{5}(R + I) + .3(B) + \frac{1}{5}(S + W) - .1(K + E) = T$

$.6(V) + \frac{2}{5}(P) + .3(K) - \frac{1}{5}(R) - .1(B + W) = T$

95. $-.6(H) - \frac{2}{5}(R + I) - .3(B) - \frac{1}{5}(S + W) + .1(K + E) = T$

$-.6(V) - \frac{2}{5}(P) - .3(K) + \frac{1}{5}(R) + .1(B + W) = T$

96. $.9(H) + \frac{3}{5}(R + I) + \frac{9}{20}(B) + .3(S + W) - \frac{3}{20}(K + E) = T$

$.9(V) + \frac{3}{5}(P) + \frac{9}{20}(K) - .3(R) - \frac{3}{20}(B + W) = T$

97. $-.9(H) - \frac{3}{5}(R + I) - \frac{9}{20}(B) - .3(S + W) + \frac{3}{20}(K + E) = T$

$-.9(V) - \frac{3}{5}(P) - \frac{9}{20}(K) + .3(R) + \frac{3}{20}(B + W) = T$

Fractions with Positive Exponents

98. $\left(\frac{1}{2}\right)^0(H) + \left(\frac{1}{2}\right)^1(R + I) + \left(\frac{1}{2}\right)^2(B) + \left(\frac{1}{2}\right)^3(S + W) - \left(\frac{1}{2}\right)^4(K + E) = T$

$\left(\frac{1}{2}\right)^0(V) + \left(\frac{1}{2}\right)^1(P) + \left(\frac{1}{2}\right)^2(K) - \left(\frac{1}{2}\right)^3(R) - \left(\frac{1}{2}\right)^4(B + W) = T$

99. $-\left(\frac{1}{2}\right)^0(H) - \left(\frac{1}{2}\right)^1(R + I) - \left(\frac{1}{2}\right)^2(B) - \left(\frac{1}{2}\right)^3(S + W) + \left(\frac{1}{2}\right)^4(K + E) = T$

$-\left(\frac{1}{2}\right)^0(V) - \left(\frac{1}{2}\right)^1(P) - \left(\frac{1}{2}\right)^2(K) + \left(\frac{1}{2}\right)^3(R) + \left(\frac{1}{2}\right)^4(B + W) = T$

100. $\left(\frac{1}{3}\right)^0(H) + \left(\frac{1}{3}\right)^1(R + I) + \left(\frac{1}{3}\right)^2(B) + \left(\frac{1}{3}\right)^3(S + W) - \left(\frac{1}{3}\right)^4(K + E) = T$

$\left(\frac{1}{3}\right)^0(V) + \left(\frac{1}{3}\right)^1(P) + \left(\frac{1}{3}\right)^2(K) - \left(\frac{1}{3}\right)^3(R) - \left(\frac{1}{3}\right)^4(B + W) = T$

101. $-\left(\frac{1}{3}\right)^0(H) - \left(\frac{1}{3}\right)^1(R + I) - \left(\frac{1}{3}\right)^2(B) - \left(\frac{1}{3}\right)^3(S + W) + \left(\frac{1}{3}\right)^4(K + E) = T$

$-\left(\frac{1}{3}\right)^0(V) - \left(\frac{1}{3}\right)^1(P) - \left(\frac{1}{3}\right)^2(K) + \left(\frac{1}{3}\right)^3(R) + \left(\frac{1}{3}\right)^4(B + W) = T$

102. $\left(\frac{1}{4}\right)^0(H) + \left(\frac{1}{4}\right)^1(R + I) + \left(\frac{1}{4}\right)^2(B) + \left(\frac{1}{4}\right)^3(S + W) - \left(\frac{1}{4}\right)^4(K + E) = T$

$\left(\frac{1}{4}\right)^0(V) + \left(\frac{1}{4}\right)^1(P) + \left(\frac{1}{4}\right)^2(K) - \left(\frac{1}{4}\right)^3(R) - \left(\frac{1}{4}\right)^4(B + W) = T$

103. $-\left(\frac{1}{4}\right)^0(H) - \left(\frac{1}{4}\right)^1(R + I) - \left(\frac{1}{4}\right)^2(B) - \left(\frac{1}{4}\right)^3(S + W) + \left(\frac{1}{4}\right)^4(K + E) = T$

$-\left(\frac{1}{4}\right)^0(V) - \left(\frac{1}{4}\right)^1(P) - \left(\frac{1}{4}\right)^2(K) + \left(\frac{1}{4}\right)^3(R) + \left(\frac{1}{4}\right)^4(B + W) = T$

104. $\left(\frac{5}{6}\right)^0(H) + \left(\frac{4}{5}\right)^1(R + I) + \left(\frac{3}{4}\right)^2(B) + \left(\frac{2}{7}\right)^3(S + W) - \left(\frac{2}{8}\right)^4(K + E) = T$

$\left(\frac{5}{6}\right)^0(V) + \left(\frac{4}{5}\right)^1(P) + \left(\frac{3}{4}\right)^2(K) - \left(\frac{2}{7}\right)^3(R) - \left(\frac{2}{8}\right)^4(B + W) = T$

105. $-\left(\frac{5}{6}\right)^0(H) - \left(\frac{4}{5}\right)^1(R + I) - \left(\frac{3}{4}\right)^2(B) - \left(\frac{2}{7}\right)^3(S + W) + \left(\frac{2}{8}\right)^4(K + E) = T$

$-\left(\frac{5}{6}\right)^0(V) - \left(\frac{4}{5}\right)^1(P) - \left(\frac{3}{4}\right)^2(K) + \left(\frac{2}{7}\right)^3(R) + \left(\frac{2}{8}\right)^4(B + W) = T$

Fractions with Negative Exponents

106. $\left(\frac{1}{2}\right)^{-4}(H) + \left(\frac{1}{2}\right)^{-3}(R + I) + \left(\frac{1}{2}\right)^{-2}(B) + \left(\frac{1}{2}\right)^{-1}(S + W) - \left(\frac{1}{2}\right)^{-1}(K + E) = T$

$\left(\frac{1}{2}\right)^{-4}(V) + \left(\frac{1}{2}\right)^{-3}(P) + \left(\frac{1}{2}\right)^{-2}(K) - \left(\frac{1}{2}\right)^{-1}(R) - \left(\frac{1}{2}\right)^{-1}(B + W) = T$

107. $-\left(\frac{1}{2}\right)^{-4}(H) - \left(\frac{1}{2}\right)^{-3}(R + I) - \left(\frac{1}{2}\right)^{-2}(B) - \left(\frac{1}{2}\right)^{-1}(S + W) + \left(\frac{1}{2}\right)^{-1}(K + E) = T$

$-\left(\frac{1}{2}\right)^{-4}(V) - \left(\frac{1}{2}\right)^{-3}(P) - \left(\frac{1}{2}\right)^{-2}(K) + \left(\frac{1}{2}\right)^{-1}(R) + \left(\frac{1}{2}\right)^{-1}(B + W) = T$

108. $\left(\frac{1}{3}\right)^{-4}(H) + \left(\frac{1}{3}\right)^{-3}(R + I) + \left(\frac{1}{3}\right)^{-2}(B) + \left(\frac{1}{3}\right)^{-1}(S + W) - \left(\frac{1}{3}\right)^{-1}(K + E) = T$

$\left(\frac{1}{3}\right)^{-4}(V) + \left(\frac{1}{3}\right)^{-3}(P) + \left(\frac{1}{3}\right)^{-2}(K) - \left(\frac{1}{3}\right)^{-1}(R) - \left(\frac{1}{3}\right)^{-1}(B + W) = T$

109. $-\left(\frac{1}{3}\right)^{-4}(H) - \left(\frac{1}{3}\right)^{-3}(R + I) - \left(\frac{1}{3}\right)^{-2}(B) - \left(\frac{1}{3}\right)^{-1}(S + W) + \left(\frac{1}{3}\right)^{-1}(K + E) = T$

$-\left(\frac{1}{3}\right)^{-4}(V) - \left(\frac{1}{3}\right)^{-3}(P) - \left(\frac{1}{3}\right)^{-2}(K) + \left(\frac{1}{3}\right)^{-1}(R) + \left(\frac{1}{3}\right)^{-1}(B + W) = T$

110. $\left(\frac{1}{4}\right)^{-4}(H) + \left(\frac{1}{4}\right)^{-3}(R + I) + \left(\frac{1}{4}\right)^{-2}(B) + \left(\frac{1}{4}\right)^{-1}(S + W) - \left(\frac{1}{4}\right)^{-1}(K + E) = T$

$\left(\frac{1}{4}\right)^{-4}(V) + \left(\frac{1}{4}\right)^{-3}(P) + \left(\frac{1}{4}\right)^{-2}(K) - \left(\frac{1}{4}\right)^{-1}(R) - \left(\frac{1}{4}\right)^{-1}(B + W) = T$

111. $-\left(\frac{1}{4}\right)^{-4}(H) - \left(\frac{1}{4}\right)^{-3}(R + I) - \left(\frac{1}{4}\right)^{-2}(B) - \left(\frac{1}{4}\right)^{-1}(S + W) + \left(\frac{1}{4}\right)^{-1}(K + E) = T$

$-\left(\frac{1}{4}\right)^{-4}(V) - \left(\frac{1}{4}\right)^{-3}(P) - \left(\frac{1}{4}\right)^{-2}(K) + \left(\frac{1}{4}\right)^{-1}(R) + \left(\frac{1}{4}\right)^{-1}(B + W) = T$

112. $\left(\frac{2}{8}\right)^{-4}(H) + \left(\frac{2}{7}\right)^{-3}(R + I) + \left(\frac{3}{4}\right)^{-2}(B) + \left(\frac{4}{5}\right)^{-1}(S + W) - \left(\frac{5}{6}\right)^{-1}(K + E) = T$

$\left(\frac{2}{8}\right)^{-4}(V) + \left(\frac{2}{7}\right)^{-3}(P) + \left(\frac{3}{4}\right)^{-2}(K) - \left(\frac{4}{5}\right)^{-1}(R) - \left(\frac{5}{6}\right)^{-1}(B + W) = T$

113. $-\left(\frac{2}{8}\right)^{-4}(H) - \left(\frac{2}{7}\right)^{-3}(R + I) - \left(\frac{3}{4}\right)^{-2}(B) - \left(\frac{4}{5}\right)^{-1}(S + W) + \left(\frac{5}{6}\right)^{-1}(K + E) = T$

$-\left(\frac{2}{8}\right)^{-4}(V) - \left(\frac{2}{7}\right)^{-3}(P) - \left(\frac{3}{4}\right)^{-2}(K) + \left(\frac{4}{5}\right)^{-1}(R) + \left(\frac{5}{6}\right)^{-1}(B + W) = T$

Decimals with Positive Exponents

114. $3\ (H) + .3^1\ (R + I) + .3^2\ (B) + .3^3\ (S + W) - .3^4\ (K + E) = T$
$3\ (V) + .3^1\ (P) + .3^2\ (K) - .3^3\ (R) - .3^4\ (B + W) = T$

115. $-3\ (H) - .3^1\ (R + I) - .3^2\ (B) - .3^3\ (S + W) + .3^4\ (K + E) = T$
$-3\ (V) - .3^1\ (P) - .3^2\ (K) + .3^3\ (R) + .3^4\ (B + W) = T$

116. $4\ (H) + .4^1\ (R + I) + .4^2\ (B) + .4^3\ (S + W) - .4^4\ (K + E) = T$
$4\ (V) + .4^1\ (P) + .4^2\ (K) - .4^3\ (R) - .4^4\ (B + W) = T$

117. $-4\ (H) - .4^1\ (R + I) - .4^2\ (B) - .4^3\ (S + W) + .4^4\ (K + E) = T$
$-4\ (V) - .4^1\ (P) - .4^2\ (K) + .4^3\ (R) + .4^4\ (B + W) = T$

118. $5\ (H) + .5^1\ (R + I) + .5^2\ (B) + .5^3\ (S + W) - .5^4\ (K + E) = T$
$5\ (V) + .5^1\ (P) + .5^2\ (K) - .5^3\ (R) - .5^4\ (B + W) = T$

119. $-5\ (H) - .5^1\ (R + I) - .5^2\ (B) - .5^3\ (S + W) + .5^4\ (K + E) = T$
$-5\ (V) - .5^1\ (P) - .5^2\ (K) + .5^3\ (R) + .5^4\ (B + W) = T$

120. $6\ (H) + .6^1\ (R + I) + .6^2\ (B) + .6^3\ (S + W) - .6^4\ (K + E) = T$
$6\ (V) + .6^1\ (P) + .6^2\ (K) - .6^3\ (R) - .6^4\ (B + W) = T$

121. $-6\ (H) - .6^1\ (R + I) - .6^2\ (B) - .6^3\ (S + W) + .6^4\ (K + E) = T$
$-6\ (V) - .6^1\ (P) - .6^2\ (K) + .6^3\ (R) + .6^4\ (B + W) = T$

Decimals with Negative Exponents

122. $.3^{-4}\ (H) + .3^{-3}\ (R + I) + .3^{-2}\ (B) + .3^{-1}\ (S + W) - .3^{-1}\ (K + E) = T$
$.3^{-4}\ (V) + .3^{-3}\ (P) + .3^{-2}\ (K) - .3^{-1}\ (R) - .3^{-1}\ (B + W) = T$

123. $-.3^{-4}\ (H) - .3^{-3}\ (R + I) - .3^{-2}\ (B) - .3^{-1}\ (S + W) + .3^{-1}\ (K + E) = T$
$-.3^{-4}\ (V) - .3^{-3}\ (P) - .3^{-2}\ (K) + .3^{-1}\ (R) + .3^{-1}\ (B + W) = T$

124. $.4^{-4}(H) + .4^{-3}\ (R + I) + .4^{-2}(B) + .4^{-1}(S + W) - .4^{-1}(K + E) = T$
$.4^{-4}\ (V) + .4^{-3}\ (P) + .4^{-2}\ (K) - .4^{-1}\ (R) - .4^{-1}\ (B + W) = T$

125. $-.4^{-4}(H) - .4^{-3}(R + I) - .4^{-2}(B) - .4^{-1}(S + W) + .4^{-1}(K + E) = T$
$-.4^{-4}(V) - .4^{-3}(P) - .4^{-2}(K) + .4^{-1}(R) + .4^{-1}(B + W) = T$

126. $.5^{-4}(H) + .5^{-3}(R + I) + .5^{-2}(B) + .5^{-1}(S + W) - .5^{-1}(K + E) = T$
$.5^{-4}(V) + .5^{-3}(P) + .5^{-2}(K) - .5^{-1}(R) - .5^{-1}(B + W) = T$

127. $-.5^{-4}(H) - .5^{-3}(R + I) - .5^{-2}(B) - .5^{-1}(S + W) + .5^{-1}(K + E) = T$
$-.5^{-4}(V) - .5^{-3}(P) - .5^{-2}(K) + .5^{-1}(R) + .5^{-1}(B + W) = T$

128. $.6^{-4}(H) + .6^{-3}(R + I) + .6^{-2}(B) + .6^{-1}(S + W) - .6^{-1}(K + E) = T$
$.6^{-4}(V) + .6^{-3}(P) + .6^{-2}(K) - .6^{-1}(R) - .6^{-1}(B + W) = T$

129. $-.6^{-4}(H) - .6^{-3}(R + I) - .6^{-2}(B) - .6^{-1}(S + W) + .6^{-1}(K + E) = T$
$-.6^{-4}(V) - .6^{-3}(P) - .6^{-2}(K) + .6^{-1}(R) + .6^{-1}(B + W) = T$

Integers with Positive Exponents

130. $2^4 (H) + 2^3 (R + I) + 2^2 (B) + 2^1 (S + W) - 2^0 (K + E) = T$
$2^4 (V) + 2^3 (P) + 2^2 (K) - 2^1 (R) - 2^0 (B + W) = T$

131. $-2^4 (H) - 2^3 (R + I) - 2^2 (B) - 2^1 (S + W) + 2^0 (K + E) = T$
$-2^4 (V) - 2^3 (P) - 2^2 (K) + 2^1 (R) + 2^0 (B + W) = T$

132. $3^4 (H) + 3^3 (R + I) + 3^2 (B) + 3^1 (S + W) - 3^0 (K + E) = W$
$3^4 (V) + 3^3 (P) + 3^2 (K) - 3^1 (R) - 3^0 (B + W) = T$

133. $-3^4 (H) - 3^3 (R + I) - 3^2 (B) - 3^1 (S + W) + 3^0 (K + E) = T$
$-3^4 (V) - 3^3 (P) - 3^2 (K) + 3^1 (R) + 3^0 (B + W) = T$

134. $4^4 (H) + 4^3 (R + I) + 4^2 (B) + 4^1 (S + W) - 4^0 (K + E) = T$
$4^4 (V) + 4^3 (P) + 4^2 (K) - 4^1 (R) - 4^0 (B + W) = T$

135. $-4^4 (H) - 4^3 (R + I) - 4^2 (B) - 4^1 (S + W) + 4^0 (K + E) = T$
$-4^4 (V) - 4^3 (P) - 4^2 (K) + 4^1 (R) + 4^0 (B + W) = T$

136. $5^4 (H) + 5^3 (R + I) + 5^2 (B) + 5^1 (S + W) - 5^0 (K + E) = T$
$5^4 (V) + 5^3 (P) + 5^2 (K) - 5^1 (R) - 5^0 (B + W) = T$

137. $-5^4 (H) - 5^3 (R + I) - 5^2 (B) - 5^1 (S + W) + 5^0 (K + E) = T$
$-5^4 (V) - 5^3 (P) - 5^2 (K) + 5^1 (R) + 5^0 (B + W) = T$

138. $6^4 (H) + 6^3 (R + I) + 6^2 (B) + 6^1 (S + W) - 6^0 (K + E) = T$
$6^4 (V) + 6^3 (P) + 6^2 (K) - 6^1 (R) - 6^0 (B + W) = T$

139. $-6^4 (H) - 6^3 (R + I) - 6^2 (B) - 6^1 (S + W) + 6^0 (K + E) = T$
$-6^4 (V) - 6^3 (P) - 6^2 (K) + 6^1 (R) + 6^0 (B + W) = T$

Integers with Negative Exponents

140. $2 (H) + 2^{-1} (R + I) + 2^{-2} (B) + 2^{-3} (S + W) - 2^{-4} (K + E) = T$
$2 (V) + 2^{-1} (P) + 2^{-2} (K) - 2^{-3} (R) - 2^{-4} (B + W) = T$

141. $-2 (H) - 2^{-1} (R + I) - 2^{-2} (B) - 2^{-3} (S + W) + 2^{-4} (K + E) = T$
$-2 (V) - 2^{-1} (P) - 2^{-2} (K) + 2^{-3} (R) + 2^{-4} (B + W) = T$

142. $3\ (H) + 3^{-1}\ (R + I) + 3^{-2}\ (B) + 3^{-3}\ (S + W) - 3^{-4}\ (K + E) = T$
$3\ (V) + 3^{-1}\ (P) + 3^{-2}\ (K) - 3^{-3}\ (R) - 3^{-4}\ (B + W) = T$

143. $-3\ (H) - 3^{-1}\ (R + I) - 3^{-2}\ (B) - 3^{-3}\ (S + W) + 3^{-4}\ (K + E) = T$
$-3\ (V) - 3^{-1}\ (P) - 3^{-2}\ (K) + 3^{-3}\ (R) + 3^{-4}\ (B + W) = T$

144. $4\ (H) + 4^{-1}\ (R + I) + 4^{-2}\ (B) + 4^{-3}\ (S + W) - 4^{-4}\ (K + E) = T$
$4\ (V) + 4^{-1}\ (P) + 4^{-2}\ (K) - 4^{-3}\ (R) - 4^{-4}\ (B + W) = T$

145. $-4\ (H) - 4^{-1}\ (R + I) - 4^{-2}\ (B) - 4^{-3}\ (S + W) + 4^{-4}\ (K + E) = T$
$-4\ (V) - 4^{-1}\ (P) - 4^{-2}\ (K) + 4^{-3}\ (R) + 4^{-4}\ (B + W) = T$

146. $5\ (H) + 5^{-1}\ (R + I) + 5^{-2}\ (B) + 5^{-3}\ (S + W) - 5^{-4}\ (K + E) = T$
$5\ (V) + 5^{-1}\ (P) + 5^{-2}\ (K) - 5^{-3}\ (R) - 5^{-4}\ (B + W) = T$

147. $-5\ (H) - 5^{-1}\ (R + I) - 5^{-2}\ (B) - 5^{-3}\ (S + W) + 5^{-4}\ (K + E) = T$
$-5\ (V) - 5^{-1}\ (P) - 5^{-2}\ (K) + 5^{-3}\ (R) + 5^{-4}\ (B + W) = T$

148. $6\ (H) + 6^{-1}\ (R + I) + 6^{-2}\ (B) + 6^{-3}\ (S + W) - 6^{-4}\ (K + E) = T$
$6\ (V) + 6^{-1}\ (P) + 6^{-2}\ (K) - 6^{-3}\ (R) - 6^{-4}\ (B + W) = T$

149. $-6\ (H) - 6^{-1}\ (R + I) - 6^{-2}\ (B) - 6^{-3}\ (S + W) + 6^{-4}\ (K + E) = T$
$-6\ (V) - 6^{-1}\ (P) - 6^{-2}\ (K) + 6^{-3}\ (R) + 6^{-4}\ (B + W) = T$

Roots

150. $\sqrt{121}\ (H) + \sqrt{100}\ (R + I) + \sqrt{81}\ (B) + \sqrt{64}\ (S + W) - \sqrt{49}\ (K + E) = T$
$\sqrt{121}\ (V) + \sqrt{100}\ (P) + \sqrt{81}\ (K) - \sqrt{64}\ (R) - \sqrt{49}\ (B + W) = T$

151. $-\sqrt{121}\ (H) - \sqrt{100}\ (R + I) - \sqrt{81}\ (B) - \sqrt{64}\ (S + W) + \sqrt{49}\ (K + E) = T$
$-\sqrt{121}\ (V) - \sqrt{100}\ (P) - \sqrt{81}\ (K) + \sqrt{64}\ (R) + \sqrt{49}\ (B + W) = T$

152. $\sqrt{144}\ (H) + \sqrt{64}\ (R + I) + \sqrt{49}\ (B) + \sqrt{36}\ (S + W) - \sqrt{1}\ (K + E) = T$
$\sqrt{144}\ (V) + \sqrt{64}\ (P) + \sqrt{49}\ (K) - \sqrt{36}\ (R) - \sqrt{1}\ (B + W) = T$

153. $-\sqrt{144}\ (H) - \sqrt{64}\ (R + I) - \sqrt{49}\ (B) - \sqrt{36}\ (S + W) + \sqrt{1}\ (K + E) = T$
$-\sqrt{144}\ (V) - \sqrt{64}\ (P) - \sqrt{49}\ (K) + \sqrt{36}\ (R) + \sqrt{1}\ (B + W) = T$

154. $\sqrt[3]{125}\ (H) + \sqrt[3]{64}\ (R + I) + \sqrt[3]{27}\ (B) + \sqrt[3]{8}\ (S + W) - \sqrt[3]{1}\ (K + E) = T$
$\sqrt[3]{125}\ (V) + \sqrt[3]{64}\ (P) + \sqrt[3]{27}\ (K) - \sqrt[3]{8}\ (R) - \sqrt[3]{1}\ (B + W) = T$

155. $-\sqrt[3]{125}\ (H) - \sqrt[3]{64}\ (R + I) - \sqrt[3]{27}\ (B) - \sqrt[3]{8}\ (S + W) + \sqrt[3]{1}\ (K + E) = T$
$-\sqrt[3]{125}\ (V) - \sqrt[3]{64}\ (P) - \sqrt[3]{27}\ (K) + \sqrt[3]{8}\ (R) + \sqrt[3]{1}\ (B + W) = T$

156. $\sqrt{25}\ (H) + \sqrt[3]{64}\ (R + I) + \sqrt[4]{81}\ (B) + \sqrt[5]{32}\ (S + W) - \sqrt[6]{1}\ (K + E) = T$
$\sqrt{25}\ (V) + \sqrt[3]{64}\ (P) + \sqrt[4]{81}\ (K) - \sqrt[5]{32}\ (R) - \sqrt[6]{1}\ (B + W) = T$

157. $-\sqrt{25}\ (H) - \sqrt[3]{64}\ (R + I) - \sqrt[4]{81}\ (B) - \sqrt[5]{32}\ (S + W) + \sqrt[6]{1}\ (K + E) = T$
$-\sqrt{25}\ (V) - \sqrt[3]{64}\ (P) - \sqrt[4]{81}\ (K) + \sqrt[5]{32}\ (R) + \sqrt[6]{1}\ (B + W) = T$

Factorials and Summations

158. $6!\,(H) + 5!\,(R + I) + 4!\,(B) + 3!\,(S + W) - 2!\,(K + E) = T$

$6!\,(V) + 5!\,(P) + 4!\,(K) - 3!\,(R) - 2!\,(B + W) = T$

159. $-6!\,(H) - 5!\,(R + I) - 4!\,(B) - 3!\,(S + W) + 2!\,(K + E) = T$

$-6!\,(V) - 5!\,(P) - 4!\,(K) + 3!\,(R) + 2!\,(B + W) = T$

160. $\left(\sum_{j=1}^{6} j\right)(H) + \left(\sum_{j=1}^{5} j\right)(R + I) + \left(\sum_{j=1}^{4} j\right)(B) + \left(\sum_{j=1}^{3} j\right)(S + W) - \left(\sum_{j=1}^{2} j\right)(K + E) = T$

$\left(\sum_{j=1}^{6} j\right)(V) + \left(\sum_{j=1}^{5} j\right)(P) + \left(\sum_{j=1}^{4} j\right)(K) - \left(\sum_{j=1}^{3} j\right)(R) - \left(\sum_{j=1}^{2} j\right)(B + W) = T$

161. $-\left(\sum_{j=1}^{6} j\right)(H) - \left(\sum_{j=1}^{5} j\right)(R + I) - \left(\sum_{j=1}^{4} j\right)(B) - \left(\sum_{j=1}^{3} j\right)(S + W) + \left(\sum_{j=1}^{2} j\right)(K + E) = T$

$-\left(\sum_{j=1}^{6} j\right)(V) - \left(\sum_{j=1}^{5} j\right)(P) - \left(\sum_{j=1}^{4} j\right)(K) + \left(\sum_{j=1}^{3} j\right)(R) + \left(\sum_{j=1}^{2} j\right)(B + W) = T$

Fractions, Decimals, Factorials, Summations, Exponents, Roots

162. $4!\,(H) + \sqrt[3]{64}\,(R + I) + \left(\frac{3}{4}\right)^{-2}(B) + .025\,(S + W) - \left(\frac{1}{5}\right)^{3}(K + E) = T$

$4!\,(V) + \sqrt[3]{64}\,(P) + \left(\frac{3}{4}\right)^{-2}(K) - .025\,(R) - \left(\frac{1}{5}\right)^{3}(B + W) = T$

163. $-4!\,(H) - \sqrt[3]{64}\,(R + I) - \left(\frac{3}{4}\right)^{-2}(B) - .025\,(S + W) + \left(\frac{1}{5}\right)^{3}(K + E) = T$

$-4!\,(V) - \sqrt[3]{64}\,(P) - \left(\frac{3}{4}\right)^{-2}(K) + .025\,(R) + \left(\frac{1}{5}\right)^{3}(B + W) = T$

164. $\left(\sum_{j=1}^{3} j\right)(H) + \left(\frac{2}{5}\right)^{-1}(R + I) + 2!\,(B) + \left(\frac{5}{6}\right)^{0}(S + W) - (\sqrt[4]{16})^{-2}\,(K + E) = T$

$\left(\sum_{j=1}^{3} j\right)(V) + \left(\frac{2}{5}\right)^{-1}(P) + 2!\,(K) - \left(\frac{5}{6}\right)^{0}(R) - (\sqrt[4]{16})^{-2}\,(B + W) = T$

165. $-\left(\sum_{j=1}^{3} j\right)(H) - \left(\frac{2}{5}\right)^{-1}(R + I) - 2!\,(B) - \left(\frac{5}{6}\right)^{0}(S + W) + (\sqrt[4]{16})^{-2}\,(K + E) = T$

$-\left(\sum_{j=1}^{3} j\right)(V) - \left(\frac{2}{5}\right)^{-1}(P) - 2!\,(K) + \left(\frac{5}{6}\right)^{0}(R) + (\sqrt[4]{16})^{-2}\,(B + W) = T$