

Top Award Masterpoint Formula

Technical Manual — Stratified, Stratiflighted and Bracketed (Pairs and Teams)

1. Overview

This document covers Regional, Sectional and Local Sectional, Stratified, Stratiflighted and Bracketed Pairs and Teams. Minor variations in format will be covered in the final document by adjusting the Rating factor of the event. It does not cover KOs or club tournaments.

The masterpoint (MP) awards for a covered event are based on the size of the field, the strength of the field, the number of sessions, and several other (adjustable) parameters. Awards are compressed near a ceiling using a smooth-min function, preventing runaway values at very large or strong events. This document describes the calculation of the top award only.

The core formula is:

$$\text{Award} = Z(B \times R \times S \times M \times P \times F, N_{\text{eff}}, n)$$

The factors in the formula are relate to:

B: Field Size

R: Rating of the tournament

S: Number of Sessions

M: Strength of Field

P: Event Restrictions

F: Location (Online/F2F)

N_{eff}, n : Smoothing constants that ensure that the awards stay within reasonable bounds for very large events

2. Formula Factors

2.1 B — Field Size

B captures the size of the event. It is a power of the table count for the **event**:

$$B = K \times T_{\text{eff}}^{\alpha}$$

Parameter	Description
K	Scale factor. Controls the overall magnitude of awards. Default: 0.1.
α	Exponent controlling how quickly B grows with field size. Default: 0.5.

T_eff	Effective tables — the cumulative table count from the bottom stratum upward within the same flight, if stratified. Top stratum uses all tables of the flight; lower strata add progressively fewer.
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Example: For a flight with 3 strata, respectively 11, 3 and 6 tables in the top, middle and bottom strata, T_eff is 6 for the bottom stratum, 9 for the middle stratum, 20 for the top stratum. With default $K = 0.1$ and $\alpha = 0.5$: $B = 0.1 \times 20^{0.5} = 0.1 \times 4.472 = 0.447$.

2.2 R — Tournament Rating

R reflects the prestige of the event:

Tournament type	R value
Local Sectional / STaC	7.5
Fund game at Local Sectional	10
Full Sectional	10
Fund games at Sectionals	12.5
Regional	12.5
No “Regional at Nationals” as the Regionals at Nationals already get a bump due to the bigger fields and (for the top strats) stronger fields	

2.3 S — Sessions Factor

S accounts for the number of sessions played. The “number of sessions” is derived from the board count through a piecewise calculation, to avoid “chopping into sessions with a small number of boards”, then S is computed from a piecewise interpolation (using the same table as reference).

The reference for most events is that 24-28 boards are one session. However, for events with a low limit, we propose that for events with a limit of 299 or less, 18 boards are enough to count as one session (18-28), and between 300 and 750, 21-28 boards are one session. $Q=24$, 21 or 18 depending on the limit of the event.

Calculating the S factor: Step 1 — Boards to Sessions (continuous piecewise):

Boards range	Sessions formula	Example
< Q	boards / Q	18 boards (Open) → 0.75
Q – 28	1.00 (flat)	28 boards → 1.00
28 – 2Q	$1 + (\text{boards} - 28) / (2Q - 28)$	36 boards → 1.40
2Q – 54	2.00 (flat)	48 boards → 2.00
54 – 72	$2 + (\text{boards} - 54) / 18$	63 boards → 2.50
72 – 81	3.00 (flat)	72 boards → 3.00
81 – 96	$3 + (\text{boards} - 81) / 15$	90 boards → 3.60
≥ 96	4.00 (flat)	120 boards → 4.00

Step 2 — sessions to S (piecewise linear interpolation):

Sessions	S formula	Example
≤ 1	1.000	sess = 1.00 → S = 1.000

1 – 2	$1.000 + (\text{sess} - 1) \times 0.750$	$\text{sess} = 1.40 \rightarrow S = 1.300$
2 – 3	$1.750 + (\text{sess} - 2) \times 0.250$	$\text{sess} = 2.50 \rightarrow S = 1.875$
3 – 4	$2.000 + (\text{sess} - 3) \times 0.500$	$\text{sess} = 3.60 \rightarrow S = 2.300$
≥ 4	2.500 (flat)	$\text{sess} = 4.00 \rightarrow S = 2.500$

2.4 M — Strength of Field

M is a piecewise linear function of the SoF (Strength of Field), defined as the average masterpoint holdings of all players in the same flight in the cumulative strata up to and including the stratum being scored. For bracketed teams or pairs, it's the average masterpoint holdings of all the players in the bracket. Higher SoF increases M, reflecting that stronger events warrant higher awards.

The default M curve:

SoF range	M formula	Key values
0 – 100	$0.800 + \text{SoF} / 500$	0.800 at 0 · 1.000 at 100
100 – 400	$1.000 + (\text{SoF} - 100) / 600$	1.500 at 400
400 – 1,200	$1.500 + (\text{SoF} - 400) \times 9 / 8000$	2.400 at 1,200
1,200 – 3,000	$2.400 + (\text{SoF} - 1,200) \times 11 / 18000$	3.500 at 3,000
3,000 – 5,000	$3.500 + (\text{SoF} - 3,000) \times 3 / 8000$	4.250 at 5,000
5,000 – 7,500	$4.250 + (\text{SoF} - 5,000) / 5000$	4.750 at 7,500
7,500 – 10,000	$4.750 + (\text{SoF} - 7,500) / 10000$	5.000 at 10,000
10,000 – 20,000	$5.000 + (\text{SoF} - 10,000) / 50000$	5.200 at 20,000
$\geq 20,000$	5.200 (flat)	

If adjustments are needed, the M curve is fully customizable.

2.5 P — Restrictions

P = 1.00 for unrestricted events; P = 0.80 for events with one restriction.

2.6 F — Field Factor

F = 1.00 for in-person events; F = 0.80 for online events.

P and F can, of course, be adjusted if considered appropriate.

3. Z function

The raw product $B \times R \times S \times M \times P \times F$ is passed through a smooth-min function Z that compresses large values toward a ceiling without any abrupt cutoff (so that a bigger event will always pay more, but as we get to higher numbers of tables, the increase will be progressively smaller):

$$Z(x, N_{\text{eff}}, n) = x \times N_{\text{eff}} / (x^n + N_{\text{eff}}^n)^{(1/n)}$$

Key properties:

- For $x \ll N_{\text{eff}}$: $Z(x) \approx x$ — no compression at low values.
- As $x \rightarrow \infty$: $Z(x) \rightarrow N_{\text{eff}}$ — hard asymptotic ceiling.
- n controls sharpness: higher n = more abrupt transition. Default n = 4.

3.1 N_eff — Effective Cap

N_eff is the actual ceiling used in the smooth-min Z function. It scales with tournament rating and number of sessions, so longer and more prestigious events have a higher ceiling:

$$N_{\text{eff}} = (\text{BaseN} + (\text{sessions} - 2) \times 5) \times R / 12.5$$

Sessions	N offset	N_eff (BaseN=50, R=12.5)	N_eff (BaseN=50, R=10)
1	BaseN – 5 = 45	45.00	36
2	BaseN = 50	50.00	40
3	BaseN + 5 = 55	55.00	44
4	BaseN + 10 = 60	60.00	48

The continuous sessions value derived from the board count is used in the N_eff formula, allowing for a smooth variation across all board counts.

BaseN physical meaning: Maximum MP award for a 2-sessions tournament Default: 50.

4. Worked Example

Regional Open Pairs, 2 sessions, 20 tables, SoF = 3,000, Pairs, in-person, unrestricted.

Parameters: K = 0.1, α = 0.5, R = 12.5, sessions = 2, S = 1.75, P = 1.0, F = 1.0, T = 1.0, BaseN = 50, n = 4.

Step	Calculation
B	$K \times T_{\text{eff}}^{\alpha} = 0.1 \times 20^{0.5} = 0.1 \times 4.472 = 0.4472$
M	SoF = 3,000 → M = 3.500 (from new piecewise)
N_eff	$(50 + (2-2) \times 5) \times 12.5 / 12.5 = 50.00$
34.24	$B \times R \times S \times M \times P \times F \times T = 0.4472 \times 12.5 \times 1.75 \times 3.500 \times 1 \times 1 \times 1 = 34.24$
Award	$Z(34.24, 50, 4) \approx 32.58$ MP

5. Quick Reference

Factor	Default	Description
K	0.1	Scale factor
α	0.5	T_eff exponent in $B = K \times T_{\text{eff}}^{\alpha}$
R	12.5 / 10 / 7.5	Regional / Full Sect. / Local Sect.
S	1.00/1.75/2.00/2.50	1/2/3/4+ sessions (Param); computed from boards (Boards)
M	Piecewise, 0.8–5.2	Strength of field factor (SoF-based)
P	1.00	1.00 unrestricted; 0.80 restricted
F	1.00	1.00 in-person; 0.80 online

5. Example tables

Regional

$R = 12.5 \cdot \text{Boards} = 48 \cdot \text{Sessions} = 2.00 \cdot S = 1.750 \cdot K = 0.1 \cdot P = 1 \cdot F = 1 \cdot N = 50.00$

Tables \ SoF	100	300	700	1,500	3,000	4,500	6,000	10,000	20,000
5	4.89	6.52	8.99	12.62	17.06	19.75	21.58	24.12	25.03
10	6.92	9.22	12.70	17.80	23.89	27.44	29.77	32.85	33.90
15	8.47	11.29	15.53	21.69	28.80	32.72	35.15	38.18	39.15
20	9.78	13.03	17.90	24.88	32.58	36.54	38.86	41.58	42.40
30	11.97	15.93	21.81	29.91	37.93	41.47	43.33	45.29	45.85
40	13.81	18.36	25.01	33.73	41.35	44.28	45.68	47.07	47.45
50	15.43	20.48	27.73	36.68	43.61	45.96	47.02	48.03	48.29

Full Sectional

$R = 10 \cdot \text{Boards} = 24 \cdot \text{Sessions} = 1.00 \cdot S = 1.000 \cdot K = 0.1 \cdot P = 1 \cdot F = 1 \cdot N = 36.00$

Tables \ SoF	100	300	700	1,500	3,000	4,500	6,000	10,000	20,000
5	2.24	2.98	4.11	5.78	7.82	9.07	9.94	11.15	11.60
10	3.16	4.22	5.81	8.16	11.04	12.80	13.99	15.67	16.27
15	3.87	5.16	7.11	9.99	13.49	15.59	17.02	18.98	19.67
20	4.47	5.96	8.21	11.52	15.52	17.88	19.46	21.60	22.34
30	5.48	7.30	10.05	14.07	18.80	21.51	23.24	25.48	26.22
40	6.32	8.43	11.59	16.17	21.41	24.25	26.00	28.14	28.82
50	7.07	9.42	12.94	17.98	23.53	26.38	28.05	30.00	30.59

Local Sectional

$R = 7.5 \cdot \text{Boards} = 24 \cdot \text{Sessions} = 1.00 \cdot S = 1.000 \cdot K = 0.1 \cdot P = 1 \cdot F = 1 \cdot N = 27.00$

Tables \ SoF	100	300	700	1,500	3,000	4,500	6,000	10,000	20,000
5	1.68	2.24	3.08	4.33	5.87	6.81	7.45	8.37	8.70
10	2.37	3.16	4.36	6.12	8.28	9.60	10.49	11.75	12.20
15	2.90	3.87	5.34	7.49	10.12	11.70	12.76	14.23	14.76
20	3.35	4.47	6.16	8.64	11.64	13.41	14.60	16.20	16.76
30	4.11	5.47	7.54	10.55	14.10	16.13	17.43	19.11	19.67
40	4.74	6.32	8.69	12.13	16.06	18.19	19.50	21.10	21.61
50	5.30	7.06	9.70	13.48	17.65	19.79	21.04	22.50	22.94

Example for Bracketed Teams

(Iselin, 4 brackets)

Top award by stratum

Bracket	SoF (avg MP)	Tables	T_eff	B	M	S	P	F	T	Award (MP)
1	4,124	7	7	0.265	3.921	1.750	1.00	1.00	1.00	22.5
2	2,286	8	8	0.283	3.064	1.750	1.00	1.00	1.00	18.9
3	1,551	7	7	0.265	2.615	1.750	1.00	1.00	1.00	15.1
4	606	8	8	0.283	1.732	1.750	1.00	1.00	1.00	10.7

Awards actually given : 14.63 / 12.07 / 8.97 / 6.61

Example for Swiss Teams

Top award by stratum

Flight	Stratum	SoF (avg MP)	Tables	T_eff	B	M	S	P	F	T	Award (MP)
A	A1	4,327	4	12	0.346	3.998	1.750	1.00	1.00	1.00	29.4
A	A2	2,271	8	8	0.283	3.054	1.750	1.00	1.00	1.00	18.8
B	B1	1,154	4	22	0.469	2.348	1.750	1.00	1.00	1.00	23.8
B	B2	965	12	18	0.424	2.136	1.750	1.00	1.00	1.00	19.7
B	B3	484	6	6	0.245	1.595	1.750	1.00	1.00	1.00	8.5

If the B flight had 12 teams also like the A flight we would award 17.7 with these formulas.

Awards given: Top award A flight 15.05 // Top award B flight 8.40. Note the very significant bump on the mid range of MPAvg, but the effect happens because the Mid-range Swiss is currently severely penalized compared to bracketed