QUEENSLAND JUNIOR RATING LIST

The QJRL is a rating list for Junior Chess players in Queensland and Northern NSW. It is different to the Australian Chess Federation (ACF) ratings which is a national adult and junior list that is published four times a year. The QJ ratings are produced by myself six times a year and generally come out on or near the 1st of January, March, May, July, September and November. The QJ rating system (QJRS) began in June 1993 with the rating of the 1993 Queensland Junior Championships. The first official list was in October 1993 and included a little over 100 players. It was started as a joint CAQ/Qld Junior Chess League project. Its aims were to more accurately reflect the playing strength of juniors while also including many more players from school/club chess that were not ACF rated. Presently there are over 3800 players on the list. About 150 players are removed from each list due to inactivity (18 months). Each year over 100,000 games are rated on the list. The list appears on both the CAQ http://www.caq.org.au/ and Gardiner Chess websites http://www.gardinerchess.com/

1. How QJ Rating (changes) are Calculated: For players with current ratings

It is quite easy to understand the concept of how players with established ratings gain and lose points. It depends on three things...

1. Your score in that tournament
2. Your rating
3. The average of your opponents' ratings ("average opposition")

- If you get a 50% score (for example 3/6, 4/8...) against people who are rated the same as you (on average), you would neither gain nor lose points
- If you score 50% against people rated higher than you; then you would have played better than expected (from your rating) and would gain points
- On the other hand, if you score 50% against people rated lower than you, then you would lose points
- Consequently if you score 75% against people who are rated the same as you, you would gain points

Obviously there are many different variations of this theme.
The following formula is used to calculate the expected percentage when playing against a group of opponents (averaged) with a given rating difference (RD)

Percentage = 100 / (1 + 10 $^{(-RD/400)}$)

An approximation of this is presented in Table 1 (see end). This formula/table is based on the Elo System and is used for many rating systems around the world. It shows us what percentage (%) you would be expected to score against any group of opponents.

For example, take the line in Table 1 that says 107-113; 65; 35. This means that if you played a field whose average rating was 110 above yours (eg. Your rating was 1000 and the average of your opponents' was 1100), you would be expected to score 35%. If they were 110 points below you then you would be expected to score 65%. This leads to the idea of the "expected score".

If you were expected to score 65% in a 10-round tournament then your expected score (ES) would be 0.65 x 10 = 6.5 ie. 6.5/10. If you scored 6.5 points in this tournament then you would have done what is expected of you and your rating would not change. The more points you score above 6.5 the more your rating increases. The less points you score (below 6.5), the more you lose.

The amount your rating changes is determined by ...
1. The score you achieved : the achieved score (AS)

2. The score you were expected to get : the expected score (ES)
3. The "K-factor"

So that ...

Rating change = (AS-ES) x K

The K-factor is simply a number that determines the amount of change.
The QJRL uses different K-factors for different tournaments...
Lightning (5 mins per side) is 5; Open events are 20, and events with shorter time controls 10 (most club/school games) or 15.
As there are less events outside SE Queensland I do use higher K factors and may use a 'Bonus point system' for these events to improve accuracy.

Using the above formula to calculate your rating change from a tournament.
Let's say you scored 8 points in a 10 round school tournament in which your expected score was 6.5. You therefore scored more points than expected and your rating will go up.
Rating change = (AS-ES) x K
= (8.0-6.5) x 10
= + 15
You will therefore gain 15 points from this tournament.

2. How new (unrated) players get ratings

When a player plays in a tournament they get a score against an average opposition of players.

The following formula is used to calculate the difference (diff) between average opposition of opponents and your performance rating for a given percentage score (P)

Diff = 400 * Log(P / (1-P)) / log(10)

An approximation of this is presented in Table 2 (see end). If a player scores 3/5 (60%) this gives a diff of +72. So that against an average opposition of 600 their performance rating for that event is 600 + 72 = 672.

Performance ratings for players without a rating from all events are looked at over a (up to) 4 month period (which is 2 rating periods). This is to give those who play in few rated events a chance to play enough games to get a rating; and also to average out 'good' tournaments with 'bad' tournaments. A minimum of 8 (non-lightning) games is required to be played to get a rating (generally two tournaments). If less than 8 games are played then a 'provisional' rating (indicated by 'P') is given. Ratings will be published only if over 500.

3. How QJ ratings compare with ACF and FIDE ratings.

The ACF system is the national rating system which also includes a 'Quick play' rating (for events with shorter time controls). The FIDE system is for international ratings. One aim of QJ ratings is to tie in with both systems. Someone with a QJ rating of 1200 should be playing at 1200 ACF level. QJ and ACF ratings ideally should be similar but will rarely be exactly the same as different events are rated on the two systems. Also the QJ system uses the 'Elo' method of calculating ratings whereas the ACF system uses the 'Glicko2' method which considers the 'reliability' of a rating. In other words in the ACF system a new players' rating will change more rapidly than one who has played thousands of games.

Juniors playing in ACF rated/open events (and international events for that matter) can have these events rated on the QJRL also. Automatically all Queensland Open events, the Australian Open or Championships and Doeberl Cup are rated every year. In these events when juniors play adults their average opposition is calculated based on the ACF ratings of their adult opponents; if they happen to play someone with a QJ rating then this is used. I also rate the Australian Juniors and Australian Junior School Championships each year. The interstate junior events are somewhat more difficult to rate and I won't go into this here. Please be reassured I counteract the effect of any severely underrated (ACF) players in these events. I am always happy to rate other interstate events in which Queensland Junior players participate; I just need to know via email. I may be able to rate other International events.

4. Some more technical issues…

(a) Rating 'all games'
All games submitted to the QJRL are rated. By this I mean that even games played against unrated players count. I do this by assigning new players a provisional rating based on their performance in that same event. For those mathematicians out there the event simply gets run through the ratings program over and over again so that by the 4th or 5th 'cycle' the unrated players have an accurate performance rating from the event. This is done because whilst it would be fortunate for a certain player to lose 3 games against unrated players but win against 3 rated players; the other way around would not be as fortunate! It is simply more accurate and more fair to rate all games. At times (particularly for lower divisions with few rated players) it may be necessary to use previous performance rating data as the starting point for some players. Obviously some events with very few (or no) rated players it may be impossible to produce reliable data however these events will still be included in the system.

(b) Prevention of ratings deflation
The injection of points into a junior rating system is vital as there are a large number of rapidly improving players participating. Without the prevention of ratings deflation players would simply "swap" ratings points. Players who were improving slowly would actually go down because more quickly improving (and therefore underrated) players would take rating points off them. The QJRS therefore has mechanisms for prevention of ratings deflation.
(i) The "3% rule".
Simply speaking this states that the "Percentage expected" table (Table 1) presented below is altered by -3%. Therefore a player playing an average opposition the same rating as him/herself is only expected to score 47% (and not 50%) in order not to lose or gain points.
(ii) 'Rating ceilings'
In Swiss Perfect (the most frequently used tournament pairing software) it is possible to assign a 'ceiling' to a ratings difference. This basically is to try to protect top players from losing points. A player rated 2000 who plays opponents rated 2100, 1900, 1800, 1950 and 500 will have the 'average opposition' significantly dropped by playing the 500 rated player (eg. in the first round). The ratings ceiling for the system is 500 for those rated above and 400 for those rated below. In other words the 2000 rated player would in effect be playing someone 1600 and the 500 rated player someone 1000. A ceiling is also used for calculating performance ratings on players scoring close to 100% or 0%.

(c) Overshooting
It is quite possible for players to "overshoot" their true rating. A person who is rated at 1000 and plays in several tournaments in which they perform at 1100 strength can actually accrue enough points by the end of the rating list to rise over 1100. This results because ratings only change every 2 months. If ratings changed automatically after every tournament this would not happen. The idea of a rating system is for players to approach their recent performance rating – the more they play the closer they should get to this. Players should not go above this. In order to prevent against overshooting in the QJRS players playing a large number of games and gaining many points have their performance ratings calculated for each tournament and do not rise above the

(weighted) average of these. Similarly it is theoretically possible for someone to overshoot in the negative direction but this is very very uncommon.

More information is available in the FAQ sections.

Thankyou
David McKinnon
qjrl@hotmail.com
February 2020

Table 1

RD	+	-	RD	+	-	RD	+	-	RD	+	-
0-3	50	50	92-98	63	37	198-206	76	24	345-357	89	11
4-10	51	49	99-106	64	36	207-215	77	23	358-374	90	10
11-17	52	48	107-113	65	35	216-225	78	22	375-391	91	9
18-25	53	47	114-121	66	34	226-235	79	21	392-411	92	8
26-32	54	46	122-129	67	33	236-245	80	20	412-432	93	7
33-39	55	45	130-137	68	32	246-256	81	19	433-456	94	6
40-46	56	44	138-145	69	31	257-267	82	18	457-484	95	5
47-53	57	43	146-153	70	30	268-278	83	17	485-517	96	4
54-61	58	42	154-162	71	29	279-290	84	16	518-559	97	3
62-68	59	41	163-170	72	28	291-302	85	15	560-619	98	2
69-76	60	40	171-179	73	27	303-315	86	14	620-735	99	1
77-83	61	39	180-188	74	26	316-323	87	13	>735	100	0
84-91	62	38	189-197	75	25	329-344	88	12			

RD : difference between your rating and the average of your opponents'
+ : percentage expected to score if our rating was the amount in the first column above our opponents' average rating
- : percentage expected to score if our rating was the amount in the first column below our opponents' average rating.

So using the line 107-113; 65; 35. This means that if you played a field whose average rating was 110 above yours (eg. Your rating was 1000 and the average of your opponents' was 1100), you would be expected to score 35%. If they were 110 points below you then you would be expected to score 65%.

Table 2

P	diff	P	diff	P	diff	P	diff	P	diff	P	diff
100		83	+273	66	+117	49	-7	32	-133	15	
99	+677	82	+262	65	+110	48	-14	31	-141	14	-296
98	+569	81	+251	64	+102	47	-21	30	-149	13	-309
97	+538	80	+240	63	+95	46	-29	29	-158	12	-322
96	+501	79	+230	62	+87	45	-36	28	-166	11	-351
95	+470	78	+220	61	+80	44	-43	27	-175	10	-366
94	+444	77	+211	60	+72	43	-50	26	-184	9	-383
93	+422	76	+202	59	+65	42	-57	25	-193	8	-401
92	+401	75	+193	58	+57	41	-65	24	-202	7	-422
91	+383	74	+184	57	+50	40	-72	23	-211	6	-444
90	+366	73	+175	56	+43	39	-80	22	-220	5	-470
89	+351	72	+166	55	+36	38	-87	21	-230	4	-501
88	+336	71	+158	54	+29	37	-95	20	-240	3	-538
87	+322	70	+149	53	+21	36	-102	19	-251	2	-589
86	+309	69	+141	52	+14	35	-110	18	-262	1	-677
85	+296	68	+133	51	+7	34	-117	17	-273	0	
84	+284	67	+125	50	0	33	-125	16	-284		

P : percentage score eg. 6/8 = 75%
diff : amount added or subtracted to average opposition to calculate performance rating

So if a player scores 3/5 (60%) this gives a diff of +72. So that against an average opposition of 600 their performance rating for that event is 600 + 72 = 672.