

BattleSchool Precision Dice balance testing

(modified Pearson's Chi-square test,

per <http://deltasdnd.blogspot.com/2011/10/testing-balanced-dice-power.html>)

Die number /Results for each number (600 rolls)	BattleSchool white 9/16" die with Canadian soldier on it	BS black 9/16" die with Canadian soldier on it	Standard MMP purple 1/2" die
1	98 98-100= -2 -2 x -2= 4	105 105-100=5 5x5=25	82 82-100= -18 -18x-18=324
2	81 81-100= -19 -19x-19= 361	89 89-100= -11 -11 x -11=121	80 80-100= -20 -20x-20=400
3	94 94-100= -6 -6x-6= 36	111 111-100=11 11x11=121	106 106-100=6 6x6=36
4	119 119-100=19 19x19=361	89 89-100= -11 -11x-11=121	141 141-100=41 41x41=1681
5	102 102-100=2 2x2=4	91 91-100= -9 -9x-9= 81	105 105-100=5 5x5=25
6	106 106-100=6 6x6=36	115-100=15 15x15=225	86 86-100= -14 =14x-14=196
Test Results:	4+361+36+361+4+36 =802 Threshold number for 600 die rolls = 1107.50 802 is well under 1107.50, so die is probably balanced	25+121+121+121+81+225=694 Threshold number for 600 die rolls = 1107.50 694 is even lower than 1107.50 than the white die results, so die is probably balanced	324+400+36+1681+25+196 =2662 Threshold number for 600 die rolls = 1107.50 2662 is well over twice the threshold number, so this die is likely to be unbalanced. I would not want to use it.

In this test, each die is rolled 600 times and each result tabulated. An ideal distribution would be 100 results for each possibility (1 through 6). The test measures how far "off" from ideal the actual distribution is. The difference between each result and the ideal result is ascertained, that number squared, and all the squared results are added together to determine how far off "ideal" the results are. With 600 rolls, any number under 1107.50 is likely to be a balanced die. Numbers above that threshold are increasingly likely to indicate an unbalanced die. In this test, both Battleschool dice passed the test, but the MMP die failed the test miserably.