

## SEESAW ALPHANUMERICS

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In traditional alphanumerics the values (alphabetical order) of the letters are added up to get the value of a word. Longer words tend to have higher values. A different approach which will eliminate that skew is to value words by alternately adding and subtracting their letter values. Thus WORD = +23-15+18-4 = +22, LOGOLOGY = -32, ANTIDISESTABLISHMENTARIANISM = +23. *Reversals* give the same result for odd-lettered words and opposite results for even-lettered words: AH = -7 and HA = +7 while BAT and TAB both = +21, ATE and ETA = -14. Values for even-lettered words should cluster around zero, theoretically in a gaussian distribution if all letters were equally frequent. Likewise, odd-lettered words should cluster around +13 since they add a value one more time than they subtract. (Thanks to Ross Eckler for insights here.)

What are the highest and lowest (most negative) scoring words? A computer savvy person could answer by solving seesaw equations for every word in the dictionary. The answers might well be BANANANAMES (+67) like KERATINIZES, LEGITIMATIZES (both +79) and OXAZOLIDINONES (-36). The highest and lowest values for short words in *Official Scrabble Words* or *Official Scrabble Players Dictionary* are probably these:

2 letters: 25 and -24 for ZA and AY.	(Za is in the latest OSPD but not in OSW.)
3 letters: 49 and -21 for ZAX=YAY and AWA.	(Yay is in OSPD but not in OSW.)
4 letters: 42 and -46 for ZEZE and AWAY.	(Zeze is in OSW but not in OSPD.)
5 letters: 63 and -38 for ZAXES and AWAVE.	(Awave is in OSW but not in OSPD.)

There's a limited range of possible outcomes, so each result can be called the **seesaw playground** of a class of otherwise random words. These can then serve as word-unit lipogram pools for making sentences and other word play mosaics. If there be say 288 different seesaw results and 144,000 OSW words, an average Scrabble playground would hold 500 words, while MW Pocket Dictionary at 40,000 words would have an average of only 139 words. Tough. But playgrounds between -13 and +26 should have far more, perhaps 80% of all words, or thousands each. They might serve as pools for another constrained way to parody Mary's Lamb, to define words from their own playground, or for more ambitious 'lipo-word' constructs, essays and poems.

To point out the challenge such 'lipograms' present, here is an 'encoded' version of Mary's Lamb:

Mary Had a Little Seesaw-Alphanumeric Dictionary ( ) = negative values

5 11 1 8 22, / 8 (8) 41 9 (18) (3), / (9) 12 (7) 5 12 17 22 41 11 5 (8).  
(11) (16) 23 5 12 6 28, / 29 (10) 1 17 4. / (11) 11 17 (31) 33 (9) (20) / 5 19 1 22 (19) 12.

Only six groups had more than one of the words (14 of 36 words excluding repeats): 1 = a, against / 5 = Mary, to / 8 = little, its / 11 = had, sure, made / 12 = everywhere, went, school / (8) = fleece, go. The mean of Mary's 47 words is 6.3, surprisingly close to the theoretical 6.5 despite the very small sample size. Although the mean for the 36 *different* words is only 4.8, their median is 7, while that for all 47 is 6. All her words fall in the range -31 to 41, with 79% between -11 and 23. The five

below -11 are all evens, the five above 23 are all odds. All these results accord with theory despite Mary having 28 evens to 19 odds, unlike the whole dictionary where the two are about equal as estimated from Chambers *Anagrams* (2001).

Most playgrounds will contain definitives like CHEETAH = CAT = 22, UNBENDING = UNCOM-PROMISING = 16, antonyms like UNSHAKABLE = TRACTABLE = 14, or other cognate pairings like BED = HOME = 1.

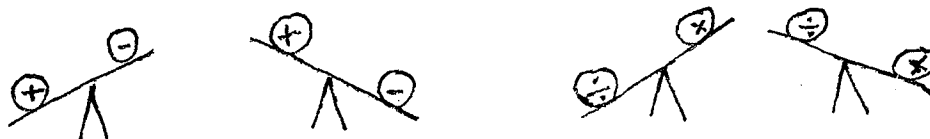
Or turn it around and ask how long a piece can be written without any words from the same playground. Ultimately a story, essay or poem with one word from each?

The MysterioUS forcE that controls the play of letters and allows or forbids 'random' connections in logology, like cognate anagrams or seesaw coincidences, must have been wearing faulty glasses when it missed a good seesaw opportunity. RINGNECK PARROT is colloquially called the 28 parrot because its call is said to sound like "twenty-eight", so its seesaw number rightly should be 28, no? Can you believe it? It's 27! Wake up, Muse! Visit Dr. Duck's amateur optometry and photometry booth in the Dealy Deli and have your eyes cross examined! (*Muse replies: "Probe deeper, you shallow doubter, and note that the seesaw result for 'twenty-seven' is 28!"*)

That raises the question, is any number's name a self-seesawyer? Apparently not. Nineteen=20 and twenty-seven=28 are the closest below a hundred, where 60 is the highest result, while hundred=14, thousand=34, million=12 and billion=1. For intervening and higher numbers, these can only be added to and subtracted from sub-100 results. Here are some extreme results below ten thousand: four=-6, 7=45, 47=-41, 74=60, 1574=-116, 5774=139, 14(=6014)=0. Note all the 7s.

Poser: is there a spelled equation whose arithmetic result equals its seesaw alphanumeric result?

Although the present alternades are arbitrary tweaks, they and their ilk create a supply of platforms for experimental logology. But those explored here look forbidding without computer power.



A different type of seesaw alphanumeric, alternating division and multiplication of letter values instead of subtraction/addition, can serve a different logological if not cryptographic function: to give most words a unique valuation. WORD ( $23 \div 15 \times 18 \div 4$ ) = 6.9, WARD ( $23 \div 1 \times 18 \div 4$ ) = 103.5, LOGOLOGY = 0.083..., ANTIDISESTABLISHMENTARIANISM = 0.83... Of number names below a decillion, only six (3, 10, 30, 33, 40 and 50) gave integral results (45, 56, 1, 45, 9 and 5).

I note five classes of exception to such uniqueness, with OSW+OSPD counts [ ]:

1. [30]: All **Xyy, yyX** (etc) words = X. (A=ADD=ALL=1; EEL=LOO=AALII=APPAL=12)
2. [81]: 'Neutral' letter A based equalities: (AB=ABA=0.5; BA=BAA=2)
3. [39\*]: All even-lettered **palindromes** = 1. (AA=BOOB=REDDER) \*John Foster (Ta to Jeff.)
4. [? hundreds]: By far the largest group of exceptions are **anagram** pairs that swap only even-space and/or only odd-space letters. (ADOBE=ABODE= 9.375; BELOW=BOWEL= 7.36)

5. [ $>300$  + overlaps with above]: Coincidental **arithmetical equalities** occur. The permutations of the 26 letters (8 billion heptagrams alone) vastly exceed the  $\sim 144,000$  words in OSW, by so much that it would take a major alphanumeric analysis to say how many coincidences to expect here, and so complicated it would probably be easier to solve the whole dictionary and find the answer directly. However, examination of integral results from all 17,576 **trigrams** found only 250 non-unique Scrabble words, occurring in 87 groups, and only 92/40,000 MWPD words in 37 groups. Similarly, all 676 bigrams gave only 2 integral Scrabble equalities: UG=OE=3 and DA=TE=4, none being in MWPD. Non-integral results should throw up some more equalities. For longer words equalities will be diminishingly fewer. BALL=JELL=RILL=2 were the only integral tetragram equalities I discovered easily.

Overall, I expect the total number of non-unique Scrabble words to be not much greater than 1200, or 0.8%, and only 0.3% of MWPD words. Are there other types of exceptions?

Unlike additives, multiplicative seesaws offer no lipo-word play except for the tiny playgrounds of the equalities (below). The largest group of Scrabble trigrams was #8 (12 words), of MWPD #4 (5).

<u>value</u>	<u>phrase or sentence</u>	<u>interpretation or comment</u>
1	<b>Add Ann, all ass.</b>	Add that sexy lady to the invite list—or to your little black book.
2	<b>Bee? Air foe, boo!</b>	dumb urban bias
4	<b>Dee, tea, cot fun.</b>	happy date
5	<b>Coy, err, ebb, old.</b>	the long sad story if Dee had forever acted shy
8	<b>Ooh, PhD, bad bet, rid! (hee hee)</b>	PhD is not a Scrabble word—you lose, ha ha!
11	<b>Eek!</b>	total dialogue from a D-grade (ing) horror movie; also critic's reaction
14	<b>née gab bag</b>	born talker
28	<b>Teg get dag? Gad! Ban!</b>	A second-year sheep gets dried feces around its anus. Yuk!
52	<b>Met dam, dam' mad!</b>	Another forest flooded for Power, dammit!
84	<b>LAG ♥ FAN GAL</b>	a tree carving: ex-convict loves exotic dancer
100	<b>eat-yet day</b>	Although it's late I still haven't slowed my eating on such a day.
126	<b>GAR! rag</b>	a pirates' tabloid
160	<b>Jap hat</b>	broad conical headgear (There are only seven equalities above 120 that aren't reversal pairs. For more cognate reversal pairs see 08-59.)
234	<b>Ram, mar!</b>	double whammy, strong cognates
288	<b>par lax rap</b>	typically lazy thinking and loose lips
320	<b>pat = tap</b>	synonyms
414	<b>raw war</b>	a redundancy
437	<b>saw was was saw</b>	old home movies or snaps When last seen it wasn't! As I was sawing up the stair... (see sawing)
575	<b>Yaw way</b>	Turning to Yahweh?