

HALFWAY WORDS

CHRISTOPHER McMANUS
Chevy Chase, Maryland

Letters and numerals stand as atoms and opposing symbols of a basic dichotomy: literature versus science, intuition versus logic, creativity versus automation. Since the gematria of Biblical times, mankind has delighted to marry the two elements by forms of letter arithmetic.

This article introduces a form of letter arithmetic called **halfway words**. These are trios of words where every letter in the middle word is exactly midway in the alphabet between the corresponding letters in the end words: AGE-J1G-SK1, NAVY-TERN-ZINC, CASED-DITCH-EQUAL. J is exactly halfway between A and S in the alphabet, 1 is halfway between G and K, and G is halfway between E and I; thus, J1G is halfway between AGE and SKI. Similarly, TERN is halfway between NAVY and ZINC, and DITCH halfway between CASED and EQUAL. Halfway words are closely related to collinear words, discussed in the May 1991 and August 1991 Kickshaws; significant differences are described at the end of this article.

Some 66 halfway trios are found among the two-letter words in the Official Scrabble Players Dictionary, including AD-HE-OF, AD-HI-ON, ID-OF-UH, IF-LO-OX, and LA-RE-XI. Three-letter and four-letter halfway trios number in the thousands. Twenty-six examples of each (one for each letter of the alphabet) are given below.

ail-hop-out, avid-cuff-etch	now-pro-rug, navy-peso-ripe
bad-eel-hit, back-echo-hems	oil-ten-yap, onyx-rots-upon
cup-ion-oil, city-mess-warm	pus-sop-vim, plug-rook-trio
dim-her-law, dawn-hero-limp	qua-rob-sic, quip-omen-meal
ego-get-icy, ecru-meow-ugly	rid-son-tux, raft-ship-toll
fez-icy-lax, flap-mock-tref	sky-too-use, sign-memo-gasp
gnu-mow-spy, guru-prop-yolk	tax-wet-zip, tong-whom-zaps
hep-lot-pyx, hark-mesh-rite	ugh-ken-act, unit-toes-spar
irk-nor-sly, iced-kill-most	vow-rho-nag, view-rein-name
jut-nor-rip, jack-olio-twos	wow-ump-ski, wigs-reel-mace
kin-mop-our, king-glop-copy	xis-mop-bum, xyst-mols-beer
lid-pen-tax, lieu-plot-toys	yip-pen-gal, your-shop-main
mug-ski-yak, mind-pope-surf	zip-too-nun, zips-wool-tune

Halfway word trios of five letters or more are far less common, and therefore more intriguing. For each letter of the alphabet except X, a pair of halfway word trios is provided.

audit-gongs-mixer, axiom-broil-cluck
beaus-knell-twice, bijou-denim-farce

cigar-jokes-quoit, cased-ditch-equal
 diode-hello-laity, disco-comet-buggy
 eruct-molds-ulcer, elude-comic-arena
 faked-neigh-vigil, forum-drops-bulky
 grace-mohel-slogs, gonad-flick-eider
 hired-ketch-naval, halve-ghoul-forts
 incur-gills-educt, imide-knell-moats
 japed-perch-vital, jived-notch-rural
 knurl-oomph-spend, kaput-germs-citer
 loopy-orlop-ruing, licit-gongs-buyer
 mousy-polio-siege, moxie-gruel-auras
 nixed-pouch-rural, nitro-helot-badly
 orbit-hokes-altar, oiled-hooch-aural
 power-slugs-visit, parse-scully-vexes
 quest-tolls-wiser, quite-knell-egads
 ranch-scoff-tepid, rival-ketch-dared
 spike-knell-clams, solve-photo-marry
 table-rhino-poppy, tangy-shift-rodeo
 ulcer-lolls-crust, usual-strep-quoit
 vague-tempo-risky, valid-scoff-perch
 wafer-reels-midst, wrath-nurse-exurb
 yeggs-video-smack, yogic-sleek-micas
 zoid-oriel-ducat, zoned-slick-lidar

Six-letter combinations are extremely rare. The 28 examples below were all that I could find. All words in this list and the preceding lists are found in the OSPD, except for MITIOR, PORTIO and ZOOTIC, all found in Stedman's Medical Dictionary.

bulbar-kopeck-tithed	moulin-phloem-sacral
capote-merino-witchy	moulin-pirogi-scored
caveat-heughs-mitior	mullas-propel-sortie
dipped-mensch-valval	nuchae-trined-zootic
faunae-kelped-picric	octavo-repent-uglify
fulham-kronen-portio	papyri-sermon-vitals
fusile-googol-hikers	pavise-scroll-venues
glebae-nocked-uratic	pulped-smooch-vernal
ickier-knolls-mysost	purist-smolts-velour
living-neroid-panada	raphae-termed-vitric
luffas-pommel-tittle	rawest-skulls-tusser
mental-scorch-yapped	rental-scorch-tapped
misfit-renigs-wailer	senior-timers-umlaut
mopper-prongs-sunlit	tactic-weewee-zigzag

Only five seven-letter examples are known to me. These words are found in the OSPD, except for TAILGUT and XANTHAN, found in Stedman's Medical and Webster's II New Riverside, respectively.

auxetic-grumped-morulae	fierier-megohms-tailgut
miltier-pommels-sunfast	pillbox-tempehs-xanthan
ballast-kennels-tippier	

To understand why combinations become so scarce as their length increases, consider one method for finding potential halfway words.

Half the alphabet has place numbers evenly divisible by two: B,D,F,...,Z; the rest are called odd. To sandwich a halfway word, two end words must fall into identical groups at each position. For example, ABLE is odd-even-even-odd (OEE0). Any other word that mates with ABLE to produce a halfway word must also be OEE0. All four-letter words fall into 16 mutually exclusive groups (0000, 00E0, E000, etc.). Seven-letter words fall into 128 such groups. Thus, ABLE has potential matches among 1/16th of all four-letter words, but ABILITY has potential matches among only 1/128th of all seven-letter words. And ten-letter words are separated into 1024 unique groups! Additionally, end words of each trio must differ from each other at every position, a condition that becomes increasingly restrictive with length.

On the other hand, halfway words are somewhat easier to find than one might expect because of an amazing symmetry, previously noted in *Word Ways*, among the vowels and semi-vowels:

A	E	l	O	U	W	Y
1	5	9	15	21	23	25

Not only are all vowels and semi-vowels odd-numbered (an event whose probability is less than one percent), but E is exactly halfway in the alphabet between A and l, O halfway between l and U, W halfway between U and Y, and O halfway between E and Y!

A natural corollary to halfway words is third-way words. These are quartets of words where each letter of the first word differs from the same position in the last word by a multiple of three, and the letters of the middle words fall exactly one-third and two-thirds of the distance between those two end letters. Besides AX-ES-IN-MI, other third-way quartets found in the OSPD are

act-fir-kop-pun	cry-dor-elk-fid	foh-ill-lip-oft
alp-coo-ern-gum	cry-dos-elm-fig	ivy-lot-oho-raj
ark-col-elm-gin	cry-for-ilk-lid	raj-sel-tin-ump
ars-coo-elk-gig	dud-irk-nor-sly	
ave-bog-chi-dak	fig-ilk-loo-ors	rids-slim-tong-ursa

How do halfway words differ from collinear words? Halfway words number letters strictly arithmetically, from 1 to 26. N is halfway from B to Z, and also halfway from Z to B. Collinear words derive from geometry: (a) letters are considered to continue cyclically in an infinite line ABC...XYZABC...XYZABC..., so A is the 1st, 27th, 53rd, etc. letter; (b) the final letter of a trio must have a number higher than the starting letter. Thus for collinear words, N is halfway from B to Z, but A is halfway from Z to B. As a result, collinear midpoints are not unique: AID-JEL-SAT and AID-WRY-SAT are both collinear. Indeed, JEL, JEY, JRL, JRY, WEL, WEY, WRL and WRY are all possible midpoints on the AID-SAT line.

I close with a brief list of words often occurring in trios: JELL, LEI, MEMO, OHM, IRK, HELL, PHI, LOO, IMP, FIX, RHO, SOIL, ELK and MOM occurred at least 20 times apiece. Mavens may want to experiment with these words first.