

FIFTEEN-LETTER TRANSDELETION PYRAMIDS

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There are two bibles in the world of Scrabble. There's the American bible, the Official Tournament and Club Word List, and there's the British bible, Official Scrabble Words, 4th Edition. Both sources are used widely throughout the world that plays English-language Scrabble. Some countries use one or the other source, and some countries use both sources together. The combination of these two sources is often referred to as "world dictionary".

To assist Scrabble players, there is a computer program called Lexpert. Lexpert has a range of Scrabble-related functionality. It can find transpositions of a given set of letters, it can build lists of words satisfying various criteria, it can identify words that have a specific pattern of letters in particular positions, and so on. Lexpert is available for desktop PCs, and also for pocket PCs. The functionality available for pocket PCs is a subset of that available for desktops. Lexpert contains all the "world dictionary" words, plus many other longer words (of length 10-15 letters) extracted from Webster's Tenth New Collegiate Dictionary.

One of Lexpert's capabilities is to find all the words that can be built from some or all of a specified set of letters. For example, if I enter AEINRST into Lexpert, it comes back with all the 7-letter words that can be made from those letters, as well as all the 6-letter words, 5-letter words, and so on.

A good Scrabble friend of mine, Nick Deller, recently wrote a program that made use of the word files built into Lexpert. He concluded that only 28 of the 3178 15-letter words were capable of successful transdeletion from 15 letters down to 2 letters, effectively a set of 28 transdeletion pyramids. He supplied me with a list of the 28 words, but gave me no clues as to what the actual series of transdeletions were—that is, what the component 14-letter, 13-letter, etc., words were. A good couple of hours manipulating Lexpert soon turned up at least one transdeletion pyramid starting with each of the 28 given 15-letter words. These examples are given below.

ANTIALCOHOLISMS
MISALLOCATIONS
MISALLOCATION
COLLIMATIONS
OSCILLATION
COLLATIONS
LATOSOLIC
LOCALIST
STOICAL
COITAL
OCTAL
COAT
CAT
AT

CENTRALISATIONS
CARTELISATIONS
LATERIZATIONS
RETALIATIONS
RETALIATION
ALTERATION
RATIONALE
ORIENTAL
ELATION
ENTAIL
ALIEN
NAIL
AIL
LA

CONTRAINEDICATED
CONTRAINEDICATE
ACCREDITATION
RATIOCINATED
RATIOCINATE
ANTIEROTIC
INTRICATE
INTERACT
CERTAIN
CANTER
CRATE
TEAR
ART
AT

CONTRAINDICATES
 CONTRAINDICATE
 ACCREDITATION
 RATIOCINATED
 RATIOCINATE
 ANTIEROTIC
 INTRICATE
 INTERACT
 CERTAIN
 CANTER
 CRATE
 TEAR
 ART
 AT

COUNTERSHADINGS
 COUNTERSHADING
 UNDERCOATINGS
 UNDERCOATING
 UNDERACTING
 DENATURING
 INTEGRAND
 TREADING
 DARTING
 RATING
 TRAIN
 RANT
 TAN
 AT

DESTRUCTIONISTS
 DESTRUCTIONIST
 REDUCTIONISTS
 DESTRUCTIONS
 DESTRUCTION
 DISCOUNTER
 DOCTRINES
 CONSIDER
 CRONIES
 COSINE
 EOSIN
 SINE
 SIN
 IS

DICTATORIALNESS
 DISSERTATIONAL
 TRADITIONLESS
 ORIENTALISTS
 ANTISTORIES
 STRIATIONS
 STRONTIAS
 STRAINTS
 ARTISTS
 STARTS
 STATS
 STAT
 TAT
 AT

DISCONSOLATIONS
 CONSOLIDATIONS
 COLONISATIONS
 NONSOCIALISTS
 SONICATIONS
 ANICONISTS
 ONANISTIC
 CONTAINS
 ACTIONS
 CASINO
 SCION
 ICON
 ION
 IN

DISCOURAGEMENTS
 DISCOURAGEMENT
 DOCUMENTARIES
 REEDUCATIONS
 AUCTIONEERS
 CAUTIONERS
 COUNTRIES
 CORNIEST
 CISTERN
 SINTER
 INERT
 TINE
 NIT
 IN

DISHEARTENMENTS
 DISHEARTENMENT
 HEREDITAMENTS
 HEREDITAMENT
 DETERMINATE
 TERMINATED
 DETRIMENT
 REMITTED
 DEMERIT
 DIETER
 TIRED
 EDIT
 TIE
 IT

GENERALIZATIONS
 RENATIONALIZES
 NATIONALIZERS
 NATIONALIZER
 NATIONALIZE
 ALIENATION
 LINEATION
 LENITION
 ETIOLIN
 LIONET
 INLET
 TILE
 LIT
 IT

INTERMEDIATIONS
 DETERMINATIONS
 ANTIMODERNIST
 TERMINATIONS
 INSEMINATOR
 ANTIMONIES
 ANTINOISE
 ENATIONS
 ANOINTS
 NATION
 ANION
 ANON
 NON
 ON

INTRANSIGEANCES
 INTRANSIGENCES
 ASTRINGENCIES
 TRANSIENCIES
 TRANSCIENCES
 RESISTANCE
 CANISTERS
 ARTINESS
 RETINAS
 SINTER
 INERT
 TINE
 NIT
 IN

MINERALIZATIONS
 LINEARIZATIONS
 LINEARIZATION
 NATIONALIZER
 NATIONALIZE
 ALIENATION
 LINEATION
 LENITION
 ETIOLIN
 LIONET
 INLET
 TILE
 LIT
 IT

MISDESCRIPTIONS
 MISDESCRIPTION
 MISDIRECTIONS
 MISDIRECTION
 MODERNISTIC
 MIDSECTION
 SEMITONIC
 CENTIMOS
 INCOMES
 COSINE
 EOSIN
 SINE
 SIN
 IS

NEUROSCIENTISTS
 NEUROSCIENTIST
 INTERSECTIONS
 INTERCESSION
 INCENSORIES
 EIRENICON
 NINESCORE
 INCENSOR
 CRONIES
 COSINE
 EOSIN
 SINE
 SIN
 IS

OPERATIONALISMS
 ANISOMETROPIAS
 OPERATIONISMS
 OPERATIONISM
 PATRIMONIES
 PROTAMINES
 PATRONISE
 PANTRIES
 RETINAS
 SINTER
 INERT
 TINE
 NIT
 IN

PRESUPPOSITIONS
 PROPITIOUSNESS
 SUPERPOSITION
 PREPOSITIONS
 REPOSITIONS
 POROSITIES
 ISOTOPIES
 ISOTOPES
 POSTIES
 POSSET
 POSTS
 STOP
 OPT
 TO

PRETTIFICATIONS
 PETRIFACTIONS
 PETRIFICATION
 PETRIFACTION
 CREPITATION
 ANTIEROTIC
 INTRICATE
 INTERACT
 CERTAIN
 CANTER
 CRATE
 TEAR
 ART
 AT

REDINTEGRATIONS
 REDINTEGRATION
 DETERIORATING
 INTERROGATED
 INTERROGATE
 INTEGRATOR
 RETORTING
 OTTERING
 GENITOR
 IGNORE
 REIGN
 REIN
 IRE
 RE

REINSTALLATIONS
 REINSTALLATION
 ALLITERATIONS
 RETALIATIONS
 RETALIATION
 ALTERATION
 RATIONALE
 ORIENTAL
 ELATION
 ENTAIL
 ALIEN
 NAIL
 AIL
 LA

SCLEROTIZATIONS
 SCLEROTIZATION
 CREOLIZATIONS
 ICONOLATRIES
 LATROCINIES
 CLARIONETS
 RELATIONS
 ORIENTAL
 ELATION
 ENTAIL
 ALIEN
 NAIL
 AIL
 LA

SEAWORTHINESSES
 WATERISHNESSES
 SWARTHINESSES
 WATERISHNESS
 SWARTHINESS
 TRASHINESS
 HASTINESS
 ASHINESS
 SHINESS
 HISSES
 SISES
 SESS
 ESS
 ES

SENSATIONALIZED
 DENATIONALIZES
 DENATIONALIZE
 NATIONALIZED
 NATIONALIZE
 ALIENATION
 LINEATION
 LENITION
 ETIOLIN
 LIONET
 INLET
 TILE
 LIT
 IT

TELEPROCESSINGS
 TELEPROCESSING
 PRESELECTIONS
 PREELECTIONS
 PERCENTILES
 PESTILENCE
 SPLENETIC
 PECTINES
 INSPECT
 INCEST
 CENTS
 SENT
 NET
 EN

TERGIVERSATIONS
 INTERROGATIVES
 INTERROGATIVE
 OVERTREATING
 INTERROGATE
 INTEGRATOR
 RETORTING
 OTTERING
 GENITOR
 IGNORE
 REIGN
 REIN
 IRE
 RE

TRISOCTAHEDRONS
 ORCHESTRATIONS
 ORCHESTRATION
 RETROACTIONS
 RETRACTIONS
 CINERATORS
 ACTIONERS
 CORNIEST
 CISTERN
 SINTER
 INERT
 TINE
 NIT
 IN

UNDERESTIMATION
 DETERMINATIONS
 ANTIMODERNIST
 TERMINATIONS
 INSEMINATOR
 ANTIMONIES
 ANTINOISE
 ENATIONS
 ANOINTS
 NATION
 ANION
 ANON
 NON
 ON

I have not attempted to identify all the different words that could be used in effecting transdeletions of the 28 15-letter specimens. I felt it sufficient merely to prove that there is at least one pyramid for each of the 28 15-letter words.

Interestingly, only two of these 28 pyramids are capable of being extended upwards to 16 letters. The last of the pyramids, the one beginning with UNDERESTIMATION, is the only one starting with a singular noun, capable of being pluralized. It can obviously be extended to the 16-letter level by starting it with UNDERESTIMATIONS. Also, the twelfth pyramid, which begins with INTERMEDIATIONS, can be extended to INDETERMINATIONS. Perhaps other pyramids can be extended upwards. Can any Word Ways reader extend any other pyramids here to more than 15 letters?

My Scrabble-playing programmer friend Nick Deller also determined that the number of 14-letter words in Lexpert capable of being transdeleted down to just 2 letters was 156. For words of length 13, 12, 11, ... 3 the corresponding numbers are 530, 1914, 5396, 13530, 23684, 28705, 26467, 18988, 11256, 4958 and 1161.