

# TELEPHONE WORDS

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## Introduction

Problem 1642, "Telephone Synonyms", in the Journal of Recreational Mathematics 21:2, pp. 156-8, 1989, concerned the relationship between words and US telephone numbers. The letters Q and Z are omitted, then the digits 2 to 9 are assigned respectively to ABC,DEF,GHI,JKL,MNO,PRS,TUV and WXY. Thus DOG is dialled as 364. Note that neither of the digits 0 or 1 is permitted. The problem was restricted to 7-letter words because of the structure of the telephone numbering system. Victor Feser gave some interesting answers, and this article expands upon those. The acceptability of words such as hyphenated words, acronyms and names is a somewhat personal matter, so I present a number of examples, allowing the reader to discard those he dislikes. I am indebted to Susan Thorpe for words marked \*. Words found by Feser are marked with #.

The problem says "Telephone synonyms are words that are spelled differently but are dialled identically on a [US] telephone." Thus the word "synonym" is being used for words of usually different meaning that, upon translation, result in the same number. I would prefer to say "words which translate to the same set of digits when dialled: for short, telephone homonyms". A homonym is the "same name", like 6666, "used to denote different things" like MOON and NOON. But let this not spoil the game!

## Longest Words Translating Into Strictly Ascending or Descending Digits

There are only eight digits (2 to 9), so eight is the maximum length of word possible. "Strictly" means a following digit is more or less than (not equal to) the preceding one. The longest I found were:

Ascending BEIKOST 2345678; ADHORT, BIJOUX; ADIOS, ADOPT, AELST  
 Descending SOLEA, SOLFA, SOLID#, TRIFA, TROIC, TROKE, UNKID, UNLID,  
 UNLIE, USNEA, USNIC, VOKIE, VOLGA, VOLGE, WOKIE, WROKE, YOKIE

## Words Containing the Strings 23456789 or 98765432 After Translation

None were found, although BEIKOSTY would qualify if it were valid.

## Longest Words Consisting of the Same Digit Repeated After Translation

digit 2 BACABA; ABABA, ABACA, BACCA

- digit 3 DEEDEED; DEEDED#, FEEDED  
 digit 4 HIGH-HIGH\* (higher than normal high tide); IHIIHI\* (Maori);  
 IGIGI; GIGI, HIGH#  
 digit 5 KKK (acronym)  
 digit 6 MONOÏN\* (plant genus); MONÏM\* (Khmer language), MOOOO;  
 MOON#, MOMO, MONO, NONO, NOON#, ONON  
 digit 7 PPS, RPS (acronyms)  
 digit 8 TUT-TUT; TUTU#, TUUT  
 digit 9 XXXX (Australian beer acronym)

#### Longest Words Containing Runs of the Same Digit After Translation

- digit 2 MACCABAW, MACCABAEAN, CACCABIS (6 in row)  
 digit 3 FIDDLE-DEE-DEE (7); BEEFEED, BALEFEEDER, FIDDLE-DE-DEE,  
 UNDEEDED (6)  
 digit 4 HIGH-HIGHISH (9); GIGGING, HIGHISH, MALPIGHIINEAE, THIGGIT,  
 WHIGGISH (5)  
 digit 5 FOLKLORE, KILLJOY, MILKLESS, WHELKLIKE, YOLKLESS (3)  
 digit 6 CACODAEMONONOMANIA, HOMONOMOUS, MONONOMIAL,  
 PNEUMONOMONILIASIS (7)  
 digit 7 AIRSPRAY, CROSSPRODUCT (4)  
 digit 8 GUTTUROPALATAL, STUTTER (4)  
 digit 9 ASPHYXY, CYWYDD (3)

#### Longest Words Containing Solely Even Digits After Translation

COMBINATION BUTTON, MONOCONTAMINATING, MONOCONTAMINATION (17);  
 NONCOMMUNICATING, NONCOMMUNICATION, NONCONTAMINATION (16). Borg-  
 mann noted "non-communicating" in *Language on Vacation*. For less  
 obviously hyphenated words, I offer THANATOGNOMONIC and UNCOMMUN-  
 ICATING (15).

#### Longest Words Containing Solely Odd Digits After Translation

FRESS-REFLEXES, WELL-EXPRESSED (13); SLEEPLESSESS (12); DERE-  
 PRESSED, DEREPPRESSES, EXPRESSLESS, FRESS-REFLEX, PREFERREDLY,  
 PERPLEXEDLY, REDRESSLESS, SELF-SEEKERS, SLEEPLESSLY (11). Borg-  
 mann noted well-expressed.

#### Words Using One Each of the 8 Digits After Translation

In numerical order, these are ADROITLY, CLIENTRY, BLOWIEST,  
 ANESTHYL, BROWLIFT, CRYOLITE, BUNGERLY, CYPENTIL, EARTHOWL,  
 DICOTYLS, DILATORY, FILATORY, DIOCTYLS, DIPLOVAX, FLUSHBOX,  
 ENTHALPY, DOVYALIS, FOXTAILS, EPICOTYL, DYSTOKIA, GALEWORT,  
 HAYLOFTS, HECTORLY, GEOLATRY, IDOLATRY, INTERLAY, GRUNWALD,  
 GUNLAYER, GUNWALES, HYRTENAL, LAUWINES, LAWNIEST, LEGATORY,  
 KEYPUNCH, LIPOCYTE, KNITWEAR, LOPHEAVY, KYANITES, LYNCHETS,  
 LYTERIAN, NEURALGY, OVALWISE, SCOLYTID, PENALITY, PENTYLIC,  
 PHLYCTEN, PLAYTIME, PLOWGATE, PLUMEGAY, SODALITY, STAYHOLE,  
 STEAMILY, STIBENYL, SULFAGYN, TALEYSIM, TANKWISE, TENSIBLY,

THENARLY, UNBIRDLY, UNCLERGY, UNFAIRLY, UNEASILY, TWANGLER, TWANGLES, TWANKIES, TYROIDAL, WATERLOG, WHETROCK, WRECKGUN, WRENTAIL.

Outstanding are the three pairs of numerical homonyms: DILATORY and FILATORY 34528679, GEOLATRY and IDOLATRY 43652879, and TWANGLER and TWANGLES 89264537. There are no words beginning with J,M,R,V,X, or Y, but after translation, numbers starting with each of the digits 2 to 9 appear. Feser mentions just STEAMILY.

#### Largest Sets of Words With Same Numerical Equivalent

##### 4-letter words:

7663 POME, POND, PONE, POOD, POOF, ROME, ROND, RONE, ROOD, ROOF, SNOD, SOME, SOND, SONE (14)

7687 POTS, POUR, POUS, RNVR, ROTS, ROUP, ROUS, SMUR, SNUP, SNUR, SOTS, SOUP, SOUR, SOUS (14)

Also of interest are the numerical palindromes:

2222 AAAA, AABA, AABB, ABAC, ABBA, ACCA, BABA, BABB, BACA, BCAA, CABA, CACA, CACC (13)

7667 POMP, POMS, PONS, POOP, POOR, ROMP, ROMS, ROOP, ROOS, SNOP, SONS, SOOP, SOOR (13)

2662 AMMA, ANNA, ANOA, ANOC, BOMA, BOMB, BONA, BOOB, COMA, COMB, CONA, COOB (12)

The most difficult were words starting with 8 or 9, for which I found only sets of eight; next most difficult were words starting with 3 or 6, for which I found only sets of size 10.

##### 5-letter words:

22737 ACRES, BARDS, BARER, BARES, BARFS, BASER, BASES, CAPER, CAPES, CARDS, CARER, CARES, CASER, CASES (14)

26637 AMMER, ANMDP, BONDS, BONER, BONES, BOODS, BOOER, COMER, COMES, CONER, CONES, CONFR, COOER, COOFS (14)

26737 AMPER, ANREP, ANSER, BORDS, BORER, BORES, BOSER, COPER, COPEs, CORDS, CORER, CORES, CORFS, COSES (14)

72837 PATER, PATES, PAVER, PAVES, RATER, RATES, RAVER, RAVES, SATER, SATES, SAUER, SAVER, SAVES, SCUDS

Of interest are the following sets of nine based on five different digits:

52637 JAMES, JANES, KAMES, KANES, LAMER, LAMES, LANDS, LANER, LANES

54837 JIVES, KHUDS, KITER, KITES, KIVER, LITER, LITES, LIVER, LIVES

64537 MIKER, MIKES, MILDS, MILER, MILES, NILES, OGLER, OGLES, OILER

The most difficult were words starting with 8, for which I found only sets of seven; next most difficult were words starting with 3 or 9, for which I found only sets of size eight; for words of length 5 or 6 I found only sets of size nine.

##### 6-letter words:

727437 PAPIER, PARGES, PARIES, PASHES, RAPHER, RAPIDS, RAPIER, RASHER, RASHES, SAPIDS, SARGES, SASHES, SCRIES (13)

287437 BURGER, BURIER, BURIES, BUSHER, BUSHES, BUSIER, BUSIES,  
CUPIDS, CURIES, CSHES (10)

727733 PARRED, PARSED, PARSEE, PASSED, PASSEE, RAPPED, RAPPEE,  
RASPED, SAPPED, SASSED (10)

728467 PATHOS, PATINS, PATIOS, PAVINS, PAVIOR, RATIOS, RAVINS,  
SATINS, SAVINS, SAVIOR (10)

The following set consists of six different digits:

628437 MATHER, MATHES, MATIER, MATIES, MAUGER, MAVIES, NATHER,  
NAUGER, NAVIES (9)

I found no sets of any size for words starting with the digits 8 or 9.  
Words starting 5 were next most difficult: I found sets of seven of  
these. For words starting 3 or 4 I found sets of eight.

7-letter words:

4277437 GAPIER, GASPIER, GASSIER, HAPPIER, HAPIER, HARPIES,  
HARRIER, HARRIES, HARSHER (9)

4277464 GAPPING, GARRING, GASPING, GAS-RING, GASSING, HAPPING,  
HARPING, HASPING, HASSING (9)

7277464 PARRING, PARSING, PASSING, RAPPING, RAPPINI, RASPING,  
SAPPING, SARRING, SASSING (9)

7282437 PATCHER, PATCHES, RATCHER, RATCHES, RAVAGER, RAVAGES,  
SAUCIER, SAVAGER, SAVAGES (9)

I found no sizeable sets of words starting 3,5,8, or 9. For 6, the largest  
set I found had seven members; for 2 I found a set of eight members.

## Other Amusements

Unfortunately, PRIME 77463 is not, and neither are SQUARE (ends in 3,  
beside having the invalid Q) nor CUBE 2823. On the other hand, EVEN  
3836 and ODD 633 both work. We may surely rely upon some reader to  
find other mathematical terms which render examples of themselves upon  
translation. There are, however, other entertainments such as BAD EGG\*  
223344, HIGH NOON\* 44446666, and OW! 69.

## Parochial Concerns

The United Kingdom did once have letters on the dials of telephones,  
but that was long ago. The system was not the same as in the United  
States, so even if we had letters today, it would still be impossible to  
dial 800-SEX-LINE with any certainty--indeed the 800 numbers do not  
normally operate internationally!