**Graphemes and Corresponding Phonemes  
Based on Devin's Program and Words in the GR1GR3  
Limited GPC Set (Eliminates Very Low Frequency GPCs [fewer than 30])**

**a (3499 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| a/aw/ | 101 | 3% |
| a/ā/ | 474 | 14% |
| a/ă/ | 1675 | 48% |
| a/ĕ/ | 31 | 1% |
| a/ŏ/ | 108 | 3% |
| a/ə/ | 1110 | 32% |

**a-e (389 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| a-e/ā/ | 341 | 88% |
| a-e/ə/ | 48 | 12% |

**ai (209 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ai/ā/ | 209 | 100% |

**air (47 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| air/ĕr/ | 47 | 100% |

**ar (578 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ar/er/ | 139 | 24% |
| ar/or/ | 41 | 7% |
| ar/ĕr/ | 33 | 6% |
| ar/ŏr/ | 365 | 63% |

**are (61 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| are/ĕr/ | 61 | 100% |

**au (68 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| au/aw/ | 68 | 100% |

**aw (74 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| aw/aw/ | 74 | 100% |

**ay (149 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ay/ā/ | 149 | 100% |

**b (1410 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| b/b/ | 1410 | 100% |

**c (2130 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| c/k/ | 1612 | 76% |
| c/s/ | 482 | 23% |
| c/sh/ | 36 | 2% |

**ch (376 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ch/ch/ | 313 | 83% |
| ch/k/ | 63 | 17% |

**ck (312 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ck/k/ | 312 | 100% |

**d (2734 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| d/d/ | 2691 | 98% |
| d/t/ | 43 | 2% |

**e (3845 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| e/-/ | 397 | 10% |
| e/ē/ | 217 | 6% |
| e/ĕ/ | 1388 | 36% |
| e/ĭ/ | 217 | 6% |
| e/ə/ | 1626 | 42% |

**ea (419 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ea/ē/ | 317 | 76% |
| ea/ĕ/ | 102 | 24% |

**ear (103 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ear/er/ | 32 | 31% |
| ear/ĭər/ | 71 | 69% |

**ed (703 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ed/d/ | 435 | 62% |
| ed/t/ | 268 | 38% |

**ee (271 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ee/ē/ | 271 | 100% |

**eer (30 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| eer/ĭər/ | 30 | 100% |

**er (1295 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| er/er/ | 1295 | 100% |

**ew (55 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ew/oo/ | 55 | 100% |

**ey (57 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ey/ē/ | 57 | 100% |

**f (1074 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| f/f/ | 1074 | 100% |

**g (1118 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| g/g/ | 813 | 73% |
| g/j/ | 305 | 27% |

**h (649 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| h/-/ | 49 | 8% |
| h/h/ | 600 | 92% |

**i (4120 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| i/-/ | 261 | 6% |
| i/y/ | 56 | 1% |
| i/ē/ | 216 | 5% |
| i/ī/ | 368 | 9% |
| i/ĭ/ | 2839 | 69% |
| i/ə/ | 380 | 9% |

**i-e (349 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| i-e/ī/ | 296 | 85% |
| i-e/ĭ/ | 53 | 15% |

**ie (235 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ie/ē/ | 190 | 81% |
| ie/ī/ | 45 | 19% |

**igh (98 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| igh/ī/ | 98 | 100% |

**ir (85 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ir/er/ | 85 | 100% |

**ire (47 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ire/īer/ | 47 | 100% |

**j (215 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| j/j/ | 215 | 100% |

**k (656 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| k/k/ | 656 | 100% |

**kn (33 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| kn/n/ | 33 | 100% |

**l (3456 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| l/l/ | 3414 | 99% |
| l/əl/ | 42 | 1% |

**le (293 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| le/əl/ | 293 | 100% |

**m (1948 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| m/m/ | 1948 | 100% |

**n (4095 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| n/n/ | 3906 | 95% |
| n/ng/ | 189 | 5% |

**ng (1055 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ng/ng/ | 1055 | 100% |

**o (2271 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| o/aw/ | 109 | 5% |
| o/oo/ | 34 | 1% |
| o/ō/ | 472 | 21% |
| o/ŏ/ | 720 | 32% |
| o/ŭ/ | 118 | 5% |
| o/ə/ | 818 | 36% |

**o-e (187 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| o-e/ō/ | 154 | 82% |
| o-e/ŭ/ | 33 | 18% |

**oa (99 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| oa/ō/ | 99 | 100% |

**oi (71 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| oi/oy/ | 71 | 100% |

**oo (269 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| oo/oo/ | 178 | 66% |
| oo/ʊ/ | 91 | 34% |

**or (515 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| or/er/ | 231 | 45% |
| or/or/ | 284 | 55% |

**ore (50 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ore/or/ | 50 | 100% |

**ou (270 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ou/ow/ | 192 | 71% |
| ou/ŭ/ | 37 | 14% |
| ou/ə/ | 41 | 15% |

**ow (280 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ow/ow/ | 125 | 45% |
| ow/ō/ | 155 | 55% |

**oy (40 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| oy/oy/ | 40 | 100% |

**p (2099 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| p/p/ | 2099 | 100% |

**ph (89 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ph/f/ | 89 | 100% |

**qu (97 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| qu/kw/ | 97 | 100% |

**r (2440 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| r/r/ | 2440 | 100% |

**s (5878 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| s/s/ | 3602 | 61% |
| s/sh/ | 37 | 1% |
| s/z/ | 2201 | 37% |
| s/zh/ | 38 | 1% |

**sh (390 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| sh/sh/ | 390 | 100% |

**t (4270 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| t/-/ | 37 | 1% |
| t/ch/ | 64 | 1% |
| t/d/ | 775 | 18% |
| t/sh/ | 189 | 4% |
| t/t/ | 3205 | 75% |

**tch (84 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| tch/ch/ | 84 | 100% |

**th (374 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| th/th\*/ | 104 | 28% |
| th/th/ | 270 | 72% |

**u (1301 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| u/-/ | 44 | 3% |
| u/oo/ | 143 | 11% |
| u/yoo/ | 71 | 5% |
| u/yə/ | 33 | 3% |
| u/ŭ/ | 959 | 74% |
| u/ʊ/ | 51 | 4% |

**u-e (52 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| u-e/oo/ | 52 | 100% |

**ur (184 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ur/er/ | 184 | 100% |

**ure (56 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| ure/er/ | 56 | 100% |

**v (742 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| v/v/ | 742 | 100% |

**w (600 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| w/w/ | 600 | 100% |

**wh (72 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| wh/w/ | 72 | 100% |

**wr (39 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| wr/r/ | 39 | 100% |

**x (149 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| x/ks/ | 149 | 100% |

**y (1103 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| y/y/ | 79 | 7% |
| y/ē/ | 892 | 81% |
| y/ī/ | 72 | 7% |
| y/ĭ/ | 60 | 5% |

**z (144 words)**

|  |  |  |
| --- | --- | --- |
| GPC | N | Cons |
| z/z/ | 144 | 100% |