Directions in Writing (Solution)

As suggested by the format, this is a criss-cross or fill-in crossword, where you are given a blank grid and words to fill it in with. A few features are unconventional however. The puzzle says to fill in words only horizontally (despite the appearance of vertical words in the grid), though the specified lengths (which match the spaces in the grid) don’t correspond to the lengths of the given words.

The trick is that the grid must be rotated to accommodate all the words, and intersecting cells actually contain different letters that look the same when rotated. While this is not practical to do using the Latin alphabet and is largely dependent on case and font choice, there are writing systems which make systematic use of rotational symmetry (with phonetic correspondences!). Two of them are Hangul and Canadian Aboriginal Syllabics, which are showcased in this puzzle.

Looking up some of these names reveals that they are the common English names for municipal-level places in four regions: Nunavut, Québec, North Korea, and South Korea. These include cities, towns, villages, hamlets, counties, and districts. The English names are usually transcriptions of a native name in Korean (North Korea and South Korea, which have slightly different transcription systems\(^1\)), Inuktitut (Nunavut and Québec), or Cree (Québec), though several of the names in Canada are not standard transcriptions and many of the places in Nunavut have entirely different names in English.

The native names, when written in their common non-Latin-based writing systems (Hangul for Korean and Canadian Aboriginal Syllabics for Inuktitut and Cree), match the specified lengths, if the Hangul jamo (letters) are written out separately rather than in blocks as is normally done (this would be impossible to use in a word grid), and the Syllabics characters are counted based on how many characters they are in Unicode (digraphs and diacritics not counted separately).

Then the task is just to fill in the grid with these names. Some of the intersecting letters look slightly different in different orientations, depending on your font, but this is only a matter of scaling and the similarity reflects rotational symmetry inherent to the writing systems, so it is not just a coincidence that they happen to look similar when rotated. The grid is uniquely solvable, with the technical exception of Ŏrang (ㅜㅓㄹㅏㅇ), which can be filled in in two possible directions; but since it’s rotationally symmetric, this doesn’t matter!

Though realizing this fact is not necessary for solving, the grid is roughly divided into four regions associated with the four geographic regions. The top left is Nunavut, the bottom left is Québec, the top right is North Korea, and the bottom right is South Korea, reflecting the relative geographical position of the regions (as seen with the Prime Meridian at the center).

When the grid is filled out, the highlighted squares, in the original orientation, contain the following rotated characters:

\[
\begin{array}{cccccccc}
C & A & L & L & I & N & A & Z & I & M & U & T & H
\end{array}
\]

This is supposed to resemble Latin characters spelling out **CALL IN AZIMUTH**. The answer is **AZIMUTH**.

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\(^1\)North Korea uses some form of McCune-Reischauer Romanization, though there is some uncertainty over the exact variant, depending on which one refers to, so in the interest of simplicity, the puzzle text omits apostrophes and diacritics, while the names in the solution use standard McCune-Reischauer. South Korea uses Revised Romanization, which lacks diacritics.
### Nunavut
- Repulse Bay
- Igloolik
- Iqaluit
- Arctic Bay
- Grise Fiord
- Pond Inlet
- Resolute
- Whale Cove
- Qikiqtarjuaq

### Québec
- Chisasibi
- Nemaska
- Eastmain
- Inukjuak
- Puvirnituq
- Kuujjuarapik
- Whapmagoostui
- Kangiqsualujuaq

### North Korea
- Úiju
- Ch’ŏnma
- Ch’ŏnnae
- Namp’o
- Örang
- Puryŏng
- Únp’a
- Anak
- Únoch’ŏn
- Pot’onggang
- Samjiyŏn
- Kimjŏngsuk

### South Korea
- Mapo
- Suji
- Yeosu
- Boseong
- Dalseo
- Jongno
- Songpa
- Ulju
- Yuseong
- Jeongseon
- Seogwipo
- Tongyeong
- Seodaemun