

# 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<sup>1</sup>), 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 (let-

ters) 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 Örang (o ʃ æ ʃ o), 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:

C A L L | o A æ | m U 7 H

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

---

<sup>1</sup>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    ᓇᐅᓴᑦ  
 Igloolik        ᐃᓴᓂᑦᑦᑦ  
 Iqaluit          ᐃᓴᑦᑦᑦᐅᐅᑦ  
 Arctic Bay      ᐃᑦᑦᑦᑦᑦᑦᑦ  
 Grise Fiord      ᐅᐅᑦᑦᐅᑦᑦᑦᑦ  
 Pond Inlet      ᑦᑦᑦᑦᑦᑦᑦᑦᑦ  
 Resolute        ᓴᑦᑦᑦᑦᑦᐅᑦᑦᑦᑦ  
 Whale Cove     ᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦ  
 Qikiqtarjuaq   ᓴᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦ

**Québec**

Chisasibi        ᑦᑦᑦᑦᑦᑦ  
 Nemaska        ᑦᑦᑦᑦᑦᑦ  
 Eastmain        ᐃᑦᑦᑦᑦᐅᑦ  
 Inukjuak        ᐃᑦᑦᑦᑦᑦᑦᑦ  
 Puvirnituq      ᑦᑦᑦᑦᑦᑦᑦᑦᑦ  
 Kuujuarapik    ᐅᑦᑦᑦᑦᑦᑦᑦᑦ  
 Whapmagoostui ᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦ  
 Kangiqsualujjuaq ᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦ

**North Korea**

Ŭiju              ᑦᑦᑦᑦᑦᑦᑦ  
 Ch'ŏnma        ᑦᑦᑦᑦᑦᑦᑦ  
 Ch'ŏnnae       ᑦᑦᑦᑦᑦᑦᑦᑦ  
 Namp'ŏ         ᑦᑦᑦᑦᑦᑦᑦ  
 Ŏrang           ᑦᑦᑦᑦᑦᑦᑦ  
 Puryŏng        ᑦᑦᑦᑦᑦᑦᑦ  
 Ŭnp'a           ᑦᑦᑦᑦᑦᑦᑦ  
 Anak            ᑦᑦᑦᑦᑦᑦᑦᑦ  
 Ŭnch'ŏn        ᑦᑦᑦᑦᑦᑦᑦᑦ  
 Pot'onggang   ᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦ  
 Samjiyŏn      ᑦᑦᑦᑦᑦᑦᑦᑦᑦ  
 Kimjŏngsuk   ᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦ

**South Korea**

Mapo             ᑦᑦᑦᑦᑦᑦᑦ  
 Suji              ᑦᑦᑦᑦᑦᑦᑦ  
 Yeosu            ᑦᑦᑦᑦᑦᑦᑦ  
 Boseong         ᑦᑦᑦᑦᑦᑦᑦᑦ  
 Dalseo          ᑦᑦᑦᑦᑦᑦᑦᑦ  
 Jongno          ᑦᑦᑦᑦᑦᑦᑦᑦ  
 Songpa          ᑦᑦᑦᑦᑦᑦᑦᑦ  
 Ulju              ᑦᑦᑦᑦᑦᑦᑦᑦ  
 Yuseong         ᑦᑦᑦᑦᑦᑦᑦᑦ  
 Jeongseon      ᑦᑦᑦᑦᑦᑦᑦᑦᑦ  
 Seogwipo       ᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦ  
 Tongyeong      ᑦᑦᑦᑦᑦᑦᑦᑦᑦ  
 Seodaemun     ᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦᑦ

