## (F) Fakepapershelfmaker

F1. The following is a list of several Japanese words with their English meanings; use them to write definitions of the Japanese compounds.

| sakura | cherry blossom | kami | paper | nise | fake |
| :--- | :--- | :--- | :--- | :--- | :--- |
| shiru | soup | tana | shelf | tsukuri | maker |
| iro | color(ed) | tanuki | raccoon | hako | box |

(a) nisetanukijiru
(b) nisedanukijiru
(c) irogamibako
(d) irokamibako
(e) nisezakuradana
(f) nisesakuradana
fake soup made out of raccoons soup made out of fake raccoons box for colored paper colored box for paper shelf for fake cherry blossoms fake shelf for cherry blossoms

F2. Match the following four-member Japanese compound words with their English meanings; one of the Japanese words has two possible meanings.
(1) a fake shelf-maker made of paper
(2) a maker of fake shelves for paper
(3) a fake maker of shelves for paper
(4) a shelf-maker made of fake paper
(5) a maker of shelves for fake paper

B: nisekamitanadzukuri
D: nisekamidanadzukuri
D: nisekamidanadzukuri
C: nisegamitanadzukuri
A: nisegamidanadzukuri

F3. Explain your answers.
When we compound two Japanese words, the first word modifies/describes the second. For example, adding hashi before hako makes a word meaning a box (hako) for chopsticks (hashi). As another example, adding nuri before hashi makes a word meaning chopsticks (hashi) that are lacquered (nuri).

Every simple (noncompound) word has two forms: the basic form, used when it occurs alone, and the variant form, sometimes used in compound words.

| Basic | Variant | Basic | Variant |
| :---: | :---: | :---: | :---: |
| hako | $\underline{\text { bako }}$ | shiru | jiru |
| hana | $\underline{\text { bana }}$ | sora | zora |
| hashi | $\underline{\text { bashi }}$ | tana | dana |
| kami | gami | tanuki | $\underline{\text { danuki }}$ |
| kiri | giri | tsukuri | dzukuri |
| sakura | zakura |  |  |

The variant form has a different first letter, which depends on the first letter in the basic form. Specifically, we replace the initial $h$ with $b$, initial $k$ with $g$, initial $s$ with $z$, initial sh with $j$, initial $t$ with $d$, and initial $t s$ with $d z$. As a side note, some letters do not require replacement, but they do not occur in the problem.

We next deduce rules for compounding simple words; we denote basic forms by $a, b$, $c$, and $d$, and respective variants by $\underline{a}, \underline{b}, \underline{c}$, and $\underline{d}$. We first notice that two-member compounds have the following structure:

$$
\mathrm{a}+\mathrm{b} \rightarrow \mathrm{ab}
$$

Three-member compounds have two different structures, which depend on their meaning. If we first form a word containing $a$ and $b$, and then compound it with $c$, we use the following structure:

$$
(\mathrm{a}+\mathrm{b})+\mathrm{c} \rightarrow \mathrm{ab}+\mathrm{c} \rightarrow \mathrm{abc}
$$

If we first compound $b$ and $c$, and then add $c$, we use a different structure:

$$
\mathrm{a}+(\mathrm{b}+\mathrm{c}) \rightarrow \mathrm{a}+\mathrm{b} \underline{\mathrm{c}} \rightarrow \mathrm{ab} \underline{c}
$$

Thus, when we combine two (simple or compound) words into a larger compound word, we use the following rules:

- We use the original form of the first word.
- If the second word is simple (noncompound), we use its variant form.
- If the second word is compound, we do not change it.

When compounding four simple words, we can get five different internal structures; two of them give the same result, which is why the four compounds in Problem F2 correspond to five possible meanings.

We can now determine which English version corresponds to what structure.
(1) a fake shelf-maker made of paper
$\rightarrow$ fake + (paper $+($ shelf + maker $)$ )
$\rightarrow a+(b+(c+d))$
$\rightarrow a+(b+c \underline{d})$
$\rightarrow \mathrm{a}+\mathrm{bc} \underline{d}$
$\rightarrow$ abcd
$\rightarrow$ nise-kami-tana-dzukiri (B)
(3) a fake maker of shelves for paper
$\rightarrow$ fake $+(($ paper + shelf $)+$ maker $)$
$\rightarrow a+((b+c)+d)$
$\rightarrow a+(b \underline{c}+d)$
$\rightarrow \mathrm{a}+\mathrm{bcd}$
$\rightarrow$ abcd
$\rightarrow$ nise-kami-dana-dzukuri (D)
(5) a maker of shelves for fake paper

$$
\begin{aligned}
& \rightarrow((a+b)+c)+d \\
& \rightarrow(a \underline{b}+c)+d \\
& \rightarrow(\mathrm{abc})+\mathrm{d} \\
& \rightarrow \text { abcd } \\
& \rightarrow \text { nise-gami-dana-dzukuri (A) } \\
& \rightarrow((a+b)+c)+d \\
& \rightarrow(a \underline{b}+c)+d \\
& \rightarrow \text { abcd } \\
& \text { - }
\end{aligned}
$$

(2) a maker of fake shelves for paper
$\rightarrow($ fake $+($ paper + shelf $))+$ maker
$\rightarrow(a+(b+c))+d$
$\rightarrow(a+b \underline{c})+d$
$\rightarrow a b c+d$
$\rightarrow$ abcd
$\rightarrow$ nise-kami-dana-dzukuri (D)
(4) a shelf-maker made of fake paper
$\rightarrow(\mathrm{a}+\mathrm{b})+(\mathrm{c}+\mathrm{d})$
$\rightarrow \mathrm{ab}+\mathrm{c} \underline{d}$
$\rightarrow$ abcd
$\rightarrow$ nise-qami-tana-dzukuri (C)

