

**Problem #5 (20 points).** In a series of experiments run in Carnegie Mellon University (Pittsburgh, USA) in 2010, volunteers were first shown some English words, while activity was being registered in different locations of their brains. Then the volunteers were asked to think of some other words from a preselected list of 60 words, while the researchers were measuring their brain activity again. Using the obtained data, the researchers were able to determine the words the volunteers were thinking of quite successfully.

Below you can find some data on the activity levels for four brain locations depending on which word the volunteers were thinking of.

Word	Translation	Location A	Location B	Location C	Location D
<i>airplane</i>	airplane	high	low	low	high
<i>apartment</i>	apartment	high	low	low	high
<i>arm</i>	arm	low	high	low	low
<i>corn</i>	corn	low	low	high	low
<i>cup</i>	cup	low	low	high	low
<i>igloo</i>	igloo	high	low	low	low
<i>key</i>	key	high	high	low	low
<i>lettuce</i>	lettuce	low	low	high	high
<i>screwdriver</i>	screwdriver	low	high	low	high

The same information is given below on six more words the volunteers were thinking of: *bed* ‘bed’, *butterfly* ‘butterfly’, *cat* ‘cat’, *cow* ‘cow’, *refrigerator* ‘refrigerator’, *spoon* ‘spoon’.

Word	Location A	Location B	Location C	Location D
1	low	low	high	high
2	low	low	high	low
3	high	low	low	low
4	low	low	low	high
5	low	high	high	low
6	low	low	low	low

Determine the correct correspondences.

—*Boris Iomdin*

**Editors:** Svetlana Burlak, Ivan Derzhanski, Hugh Dobbs, Dmitry Gerasimov, Ksenia Gilyarova, Stanislav Gurevich (editor-in-chief), Gabrijela Hladnik, Boris Iomdin, Bruno L’Astorina, Jae Kyu Lee, Aleksejs Peguševs, Maria Rubinstein, Daniel Rucki, Rosina Savisaar, Artūrs Semeņuks, Pavel Sofroniev, Todor Tchervenkov.

**English text:** Ivan Derzhanski, Ksenia Gilyarova, Boris Iomdin, Artūrs Semeņuks.

Good luck!