The struggle between the Titans of Kronos and the environment of Zeus created a flood that swept the entire Earth, and a loud concussion of heaven. The abode of the gods – Olympus, under the onslaught of the immortals, also survived a concussion to its very foundations. The battle balanced the forces of the warring parties, and at that moment Zeus intervened in the matter.

He went down from Olympus and rushed into battle! As a result, Kronos and his titans were defeated, expelled from Olympus and sent to the underground kingdom of Tartarus. Among the exiled titans were the Atlas brothers, Prometheus, Epimeteus, Menoithios and others.

Immediately after the incident, the exiled titans began collecting their things for exile. Each of the N leaving Olympus Gods has exactly one valuable thing, and they want to take them with them in boxes. To do this, they want to order exactly M of the same boxes from the company «Supply Boxes to Olympus». Moreover, each item and each box has its own size, and the total size of all things in the box should not exceed the size of this box. By the old standards of Olympus, even the Gods are forbidden to put more than two items in one box, and our exiles decided to abide by this rule.

The gods want to spend as little money as possible on ordering boxes, and therefore want to order boxes as small as possible. However, they want all their things to fit. Help them determine the size of the boxes.

The first line of the input contains integers N and M ($1 \leq N, M \leq 10^5$). The next line contains space-separated N numbers a_i – the size of things. These are non-negative integers not exceeding 10^9.

Print one number – the minimum possible size of the boxes. If it is impossible to put the items in boxes, print -1.

Sample input:
5 4
3 5 3 7 5

Sample output:
7