Percentile

For a list of \( n \) numbers in increasing order \( x_0, x_1, \ldots, x_{n-1} \) and a natural number \( i \) between 0 and 100, both of them included, we define the \( i \)th percentile as the (unique) number \( x_j \) such that \( \frac{j}{n} < \frac{i}{100} < \frac{j+1}{n} \). Such \( j \) will not exists when \( i = 0 \), \( i = 100 \), or when \( \frac{k}{n} = \frac{i}{100} \) for any \( k > 0 \); in these cases, the corresponding percentile is \( x_0 \), \( x_{n-1} \), or \( (x_{k-1} + x_k)/2 \).

Input
The input consists of four lines. In the first one the number \( n \leq 1000 \) is given, and in the following one the \( n \) integer numbers \( x_0, x_1, \ldots, x_{n-1} \), in increasing order and separated by spaces. In the third line there is the number \( q \leq 101 \) of questions. The fourth line contains \( q \) numbers between 0 and 100, both of them included, that correspond to the \( q \) percentiles that your program must compute. Your program must solve 10 inputs as the described ones in a time of 1 second.

Output
For each one of the \( q \) questions, your program must print in a line the corresponding percentile.

Sample input 1

\[
\begin{array}{ccccccccc}
10 \\
0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\
8 \\
0 & 10 & 13 & 20 & 25 & 40 & 75 & 80 \\
\end{array}
\]

Sample output 1

\[
\begin{array}{ccccccccc}
0 \\
9 \\
1 \\
1.5 \\
2 \\
3.5 \\
7 \\
7.5 \\
\end{array}
\]

Sample input 2

\[
\begin{array}{ccccccccc}
20 \\
-4 & -3 & -3 & -3 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 2 & 3 & 4 & 5 \\
8 \\
0 & 5 & 10 & 15 & 20 & 25 & 30 & 78 \\
\end{array}
\]

Sample output 2

\[
\begin{array}{ccccccccc}
-4 \\
-3 \\
-2 \\
-0.5 \\
0 \\
3 \\
6.5 \\
\end{array}
\]

Sample input 3

\[
\begin{array}{ccccccccc}
1 \\
13 \\
5 \\
0 & 25 & 50 & 75 & 100 \\
\end{array}
\]

Sample output 3

\[
\begin{array}{ccccccccc}
13 \\
13 \\
13 \\
13 \\
13 \\
\end{array}
\]