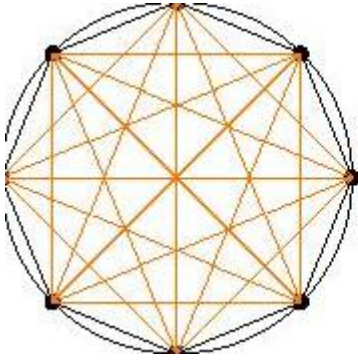
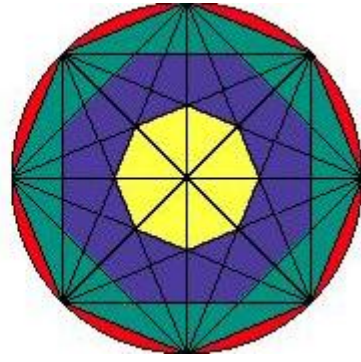


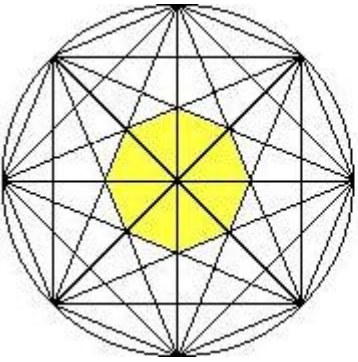
Mr. Arnold Gerald Nostik is in charge of the design of the main rose window of the new cathedral in his town. The rose window is circular, $2r$ units wide. Since Mr. A. G. Nostik knows little about Virgins, Saints and Angels, he is thinking about a geometric pattern: Let n be an even integer number, at least 4. Mr. Nostik plans to pick n points, each at distance r of the center of the window, these points being the vertices of a regular polygon. (The next page shows an example with $n = 8$.) These points are to be joined with straight lines, and the resulting regions colored as shown in the example. (The colors of the example are arbitrary.) Note that for $n = 8$ there are four regions. We number these regions 1, 2, 3 and 4 starting to count from the center of the rose. In general, there are $n/2$ regions.



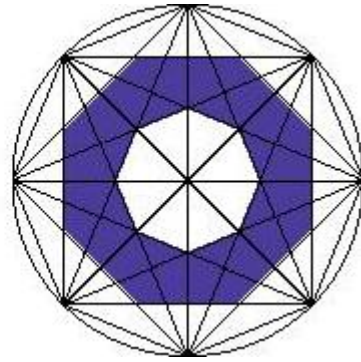
A regular octagon inside a circle



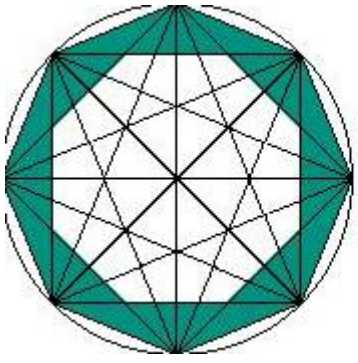
A rose window with 8 points



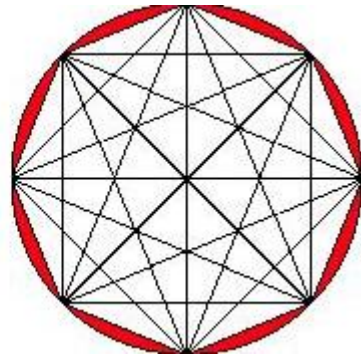
First region of the rose above



Second region of the rose above



Third region of the rose above



Fourth region of the rose above

Write a program to help Mr. Nostik to know how much glass of every color he needs in order to build a given rose window.

Input

Input begins with one integer $0 \leq m \leq 100000$; m lines follow, each with r (a real number between 1 and 100), n (an even integer number between 4 and 40), and k ($1 \leq k \leq n/2$).

Output

For every combination of r , n and k , print the area (in square units) of the k -th region of a rose window with n points and radius r , rounded to four decimal digits.

Sample Input

```
4
50 8 3
9.238794 8 2
10 4 1
20 4 1
```

Sample Output

```
2928.9322
100.0000
200.0000
800.0000
```