

Problem 5—Stars of Elendril

Saruman has just found the jewel he believes to be the Star of Elendril. And perhaps he believes this because it turns out everybody who finds a jewel seems driven to name that jewel the Star of Elendril. Of course, there are other kinds of stars, too. Imagine we take a regular polygon (one with all sides congruent and all angles congruent) with at least 5 sides and extend the sides until they intersect into a simple star. If we do this with a pentagon, we get a pentagram. If we do this with a hexagon, we get a Star of David. (If the polygon has more than six sides, the sides could be extended even further to form even larger stars, but this problem concerns itself only with the smallest star formed by extending the sides.) Given a regular polygon, you are to find the area of the star formed.

INPUT SPECIFICATION. The input file will consist of a number of cases. Each case will consist of an integer greater than four (representing the number of sides of the polygon) followed by one space, followed by a positive real number (representing the length of each side of the polygon), followed by <EOLN>. The last case is followed by 0<EOLN>.

OUTPUT SPECIFICATION. The output cases should appear in the same order as the corresponding input cases. Each output case should be in the form “Case c : The area of this n -sided polygon is A ” (where c is the case number, n is the number of sides of the polygon, and A is the area rounded to exactly two digits to the right of the decimal point), followed by <EOLN>.

SAMPLE INPUT.

```
5 1<EOLN>
5 2<EOLN>
0<EOLN>
<EOF>
```

SAMPLE OUTPUT.

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Case 1: The area of this 5-sided polygon is 5.57<EOLN>
Case 2: The area of this 5-sided polygon is 22.27<EOLN>
<EOF>
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