2020/2021 SOUTHERN CALIFORNIA REGIONAL
INTERNATIONAL COLLEGIATE PROGRAMMING CONTEST

Problem 3
Curve Speed

To help with vehicle stability, the outer edge of a road in a curve is raised with respect to the inner edge. This is called superelevation and is specified as the difference in elevation divided by the width of the road. It needs to be higher for faster speeds and sharper curves.

The radius of a curve is the radius of the section of a circle along the middle of the road where the curve is constant. See Figure 1 for a drawing of this.

In some cases the curve may need a lower speed limit than straight portions of the road. The superelevation shouldn't be more than about .12 to keep vehicles from sliding off the road in slippery conditions.

Your job is to calculate the maximum speed on a curve, given the radius of the curve and the superelevation.

The maximum speed is given by this formula:

$$V = \sqrt{(R * (S + .16))/.067}$$

where V is the maximum speed in miles per hour, R is the radius of the curve in feet, and S is the superelevation.

The input is a series of lines terminated by end-of-file. Each line will be a test case consisting of R and S separated by whitespace. R will be an integer greater than 99 and less than 5281 and S will be a real number greater than .009 and less than 1.0. Neither will have leading zeros.

For each test case print a line containing the maximum speed rounded to the nearest integer. It is guaranteed the answer before rounding will not be within 10^{-3} of a half-integer value.

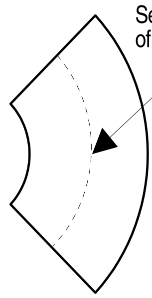

Figure 1. Section of a circle along the middle of a road with radius R.

Sample Input

```
1433   .09
1433 .12
2000 .09
600 .12
```

Problem 3
Curve Speed (continued)

Output for the Sample Input

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73
77
86
50
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