ACM 2014: Roaming Romans

The English word "mile" derives from the Latin "mille passus", meaning "a thousand paces". A Roman mile was the distance a soldier would walk in 1000 paces (a pace being two steps, one with each foot).

Over time, the actual distance referred to as a "mile" has changed. The modern English mile is 5,280 (modern) feet. The Roman mile is believed to have been about 4,854 (modern) feet.

Write a program to convert distances in English miles into Roman miles and paces.

Input Format

Input will consist of one or more lines, each containing a single positive floating point number denoting a distance in English miles. End of input is indicated by a value of 0.0.

Output Format

For each input value, print a line of output of the form

```
  X English miles equals Y Roman miles or K paces.
```

where X is the value from the input, Y is the equivalent distance in Roman miles. Each of these should be printed to 2 decimal digits precision. K is an integer denoting the number of paces, and should be rounded to the closest integer.

Sample Input 0

```
1.0
20.267
454
0.0
```

Sample Output 0

```
1.00 English miles equals 1.09 Roman miles or 1088 paces.
20.27 English miles equals 22.05 Roman miles or 22046 paces.
454.00 English miles equals 493.84 Roman miles or 493844 paces.
```