Programming Exercise 10.4

About Lighthouses, v.3.0

Purpose. Learn more about file input by modifying your work from a previous exercise so that it uses file input instead of console input.

Requirements. Modify Exercise 5.2's `lighthouse2.cpp`, replacing console inputs with text file inputs. Name the new file **`lighthouse3.cpp`**. Here are the program specifications:

1. Name the input text file **`lighthouse.txt`**.
2. Read the height of the lighthouse, in feet, from the first line of the text file.
3. Calculate the distance in miles, using the formula shown below.
4. Output the answer to the console with a label and with both the input and output values, like `a 100.001 foot tall lighthouse can be seen from 9 miles away.`

Here's how to calculate distance:

distance in miles = square root of: *0.8 times the height in feet*

Echo the input value in the output summary, *without formatting*. But show the output *with formatting* for 0 decimal digits -- for example, do not say ...`8.94427191 miles`. Say `9 miles` instead. To avoid showing a decimal point, leave out `|ios::showpoint` in the `cout.setf` statement. Here's a useful test point: a 100 foot tall lighthouse can be seen from 9 miles away.

Optional Requirement. Do the exercise in metric units. You will have to determine the conversion factors and come up with a number to replace the 0.8 in the formula.

Program I/O. Input: a number from the first line of the text file. Output: echo the input and print the result of the calculation to the console screen.

Example. For example:

```
A 100.001 foot tall lighthouse can be seen from 9 miles away
```