Programming Exercise 5.2

About Lighthouses, v.2.0

Purpose. Practice writing programs that use console keyboard input, perform a simple calculation, and output nicely formatted results.

Requirements. Write a program to determine how far away a boat can see a lighthouse at sea. Name the file **`lighthouse2.cpp`**. It's a modification of Exercise 4.2's `lighthouse1.cpp`, replacing programmer-defined inputs with console inputs. Here are the program specifications:

1. Prompt the user to enter the height of the lighthouse, in feet, with any number of decimal digits (for example, `100` or `55.5`)

2. Calculate the distance in miles, using the formula shown below.

3. Output the answer with a label and with both the input and output values, like `a 100 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 console keyboard. Output: echo the input and print the result of the calculation to the console screen.

Example. For example, with user input in blue:

```
What's the lighthouse height in feet? 100.001
A 100.001 foot tall lighthouse can be seen from 9 miles away
```