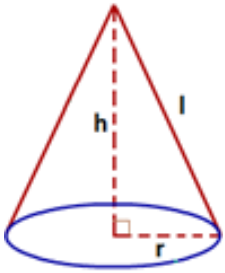
Object-Oriented Programming
Quiz 2

Use provided source code files as input and implement a new class in the provided files Cone.hpp and Cone.cpp for the **cone** that satisfies the following requirements:



1. The name of the class is **Cone**.
2. The encapsulated state of the class is defined by the height (*_height*) and the instance of the given class **Circle** as a base (*_base*) as floating-point values.
3. Ensure that the only way to construct the instance of the class **Cone** is by providing its **height** and a **radius** of base as floating-point values.
4. It should not be allowed to change these values once the instance of the class **Cone** has been constructed. The class should, however, provide the functions to retrieve the current values of cone **radius** and **height**.
5. The class behavior should be implemented by functions that return the **base area** (πr^2), **lateral area** ($\pi r\sqrt{r^2+h^2}$), **total surface area** and **volume** ($\frac{h}{3} basearea$), of the cone object. (For calculation of the total surface area try to reuse the functions for calculation of the base and the lateral surface area.)

NOTE 1: In task 4 and 5 you should try to reuse the behavior of the existing class **Circle** via the member variable *_base*.

NOTE 2: Functions in the task 5 must only calculate and return the result. (They **must not** store or 'print' calculated values).

Try to finish the class **Cone** declaration and definition so that **after uncommenting assert() statements of the test file** test.cpp, **the C++ program compilation succeeds and during the run there is no output** regarding invalid assert values and the only output message is OK.

At the end **submit only the contents the class Cone source files** – Cone.hpp and Cone.cpp, if it has been modified.