

An Area Shape Resolver Calculator



Your task is to create an area calculator of the following shapes:

Square

Rectangle

Triangle

Circle

Hexagon

Each class should be in a different module (different file) , and a main module should control everything.

Try to use git during the task

Step 1

Shape Base Class

Firstly, create a file calculator.py and open it. Since we already have the objects to work with, it'll be easy to abstract them in a class.

In the team, discuss, and make a list of what are the common characteristics of geometrical shapes.

You can analyze the common characteristics and find out that all of these are 2D shapes. Therefore, the best option is to create a class Shape with a method `get_area()` from which each shape will inherit.

Read about the magic function `__str__()` and implement a reason implementation for it.

<https://www.digitalocean.com/community/tutorials/python-str-repr-functions>

After coding go to the website and compare your code.

Step 2

Rectangle Class

Since we implemented the formula of area of the Rectangle, we could create a simple Rectangle class that does nothing but inherit from the Shape class.

After coding go to the website and compare your code.

Step 3

Square Class

We can take an excellent approach to polymorphism with the Square class.

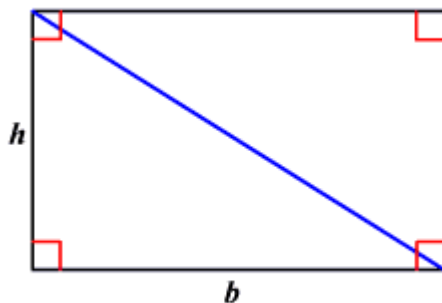
Remember that a square is just a rectangle whose four sides are all equal. That means we can use the same formula to get the area.

After coding go to the website and compare your code.

Step 4

Triangle Class

A triangle is half as big as the rectangle that surrounds it.



Relation between triangles and rectangles

Therefore, we can inherit from the Rectangle class and modify the `get_area` method to match the triangle area formula, which is one-half of the base multiplied by the height.

After coding go to the website and compare your code.

Step 5

Circle Class

You can find the circle area with the formula πr^2 , where r is the circle's radius. That means we have to modify the `get_area()` method to implement that formula.

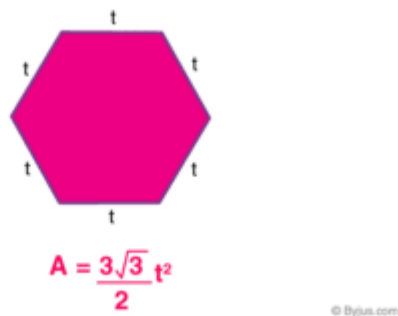
Note: We can import the approximate value of π from the `math` module

After coding go to the website and compare your code.

Step 6

Regular Hexagon Class

We only need the length of a side of a regular hexagon to calculate its area. It's similar to the `Square` class, where we only pass one argument to the constructor.



Hexagon area formula

However, the formula is quite different, and it implies the use of a square root. That's why you'll use the `sqrt()` function from the `math` module.

After coding go to the website and compare your code.

1. Add Perimeter calculations to the all hierarchy
2. Add exceptions
3. Add as many dunder functions as you can

<https://www.tutorialsteacher.com/python/magic-methods-in-python>