1 Write a Python Program(with class concepts) to find the area of the triangle using the below

formula. area = (s*(s-a)*(s-b)*(s-c)) ** 0.5 Function to take the length of the sides of triangle from user should be defined in the parent class and function to calculate the area should be defined in subclass.

In [1]:
```
class Triangle:
    def __init__(self, side1, side2, side3):
      self.side1 = side1
      self.side2 = side2
      self.side3 = side3
      print ("Initialised Triagle super class [" +  str(side1) + "," + str(side2) + "," + str(side3) + "]")
```

In [2]:
```
class Triangle_Utilities(Triangle):
    def __init__(self, side1, side2, side3):
       print ("Initialised Utils Child class" )
       super(Triangle_Utilities, self).__init__(side1, side2, side3)

    def get_area(self):
      s = (self.side1 + self.side2 + self.side3)/2
      print (str(s))
      return (s*(s-self.side1)*(s-self.side2)*(s-self.side3))**0.5

instance = Triangle_Utilities(3,4,5)

print ("Area of triangle = " + str(instance.get_area()) )
```

```
Initialised Utils Child class
Initialised Triagle super class [3,4,5]
6.0
Area of triangle = 6.0
```

2 Write a function filter_long_words() that takes a list of words and an integer n and returns the list of words that are longer than n.

In [3]:
```
class list_Utilities:
    def __init__(self, wordlist):
      self.wordlist = wordlist
      print ("Initialised list_Utilities object")

    def filter_long_words(self, n):
      return list(filter(lambda x:len(x) > n, self.wordlist))

instance = list_Utilities(["Sreekanth","is","attending","Data Science","Course", "with", "AcadGild"])

print ("New List of Words with Length greater than 2: " + str(instance.filter_long_words(3)) )
print ("New List of Words with length greater than 3: " + str(instance.filter_long_words(4)) )
```

```
Initialised list_Utilities object
New List of Words with Length greater than 2: ['Sreekanth', 'attending', 'Data Science', 'Course', 'with', 'A
cadGild']
New List of Words with length greater than 3: ['Sreekanth', 'attending', 'Data Science', 'Course', 'AcadGil
d']
```

3 Write a Python program using function concept that maps list of words into a list of integers representing the lengths of the corresponding words.

In [4]:
```
wordlist = ['sree', 'kanth', 'acad', 'gild' , 'se' , 'Bangalore', 'Machine Learning', 'Deep Learning']
def wordlength(wordlist):
  return list(map(lambda x: len(x), wordlist))

print ("List of Words : " + str(wordlist))
print ("word lengths in array  " + str(wordlength(wordlist)))
```

```
List of Words : ['sree', 'kanth', 'acad', 'gild', 'se', 'Bangalore', 'Machine Learning', 'Deep Learning']
word lengths in array  [4, 5, 4, 4, 2, 9, 16, 13]
```

4 Write a Python function which takes a character (i.e. a string of length 1) and returns True if it is a vowel, False otherwise.

In [5]:
```
def vowel_check(char):
  if(char == 'a' or char == 'e' or char == 'i' or char == 'o' or char == 'u'):
    return True
  else:
    return False

# Take user input
char = input("Enter character: ");

# If Invalid input, exit
if (char.isalpha() == False):
 exit();

# Invoke function
if (vowel_check(char)):
  print(char, "is a vowel.");
else:
 print(char, "is not a vowel.");
```

```
Enter character: d
d is not a vowel.
```