**1.1 Write a Python Program (with class concepts) to find the area of the triangle using the given formula.**

The formula for the area of a triangle with sides ( a ), ( b ), and ( c ) is:

[ \text{area} = \sqrt{s(s-a)(s-b)(s-c)} ]

where ( s ) is the semi-perimeter of the triangle:

[ s = \frac{a + b + c}{2} ]

**Answer:**

class Triangle:

def \_\_init\_\_(self):

self.a = float(input("Enter the length of side a: "))

self.b = float(input("Enter the length of side b: "))

self.c = float(input("Enter the length of side c: "))

class Area(Triangle):

def calculate\_area(self):

s = (self.a + self.b + self.c) / 2

area = (s \* (s - self.a) \* (s - self.b) \* (s - self.c)) \*\* 0.5

return area

# Example usage

triangle = Area()

print(f"The area of the triangle is: {triangle.calculate\_area()}")

**1.2 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**

Answer:   
def filter\_long\_words(words, n):

return [word for word in words if len(word) > n]

# Example usage

words\_list = ["apple", "banana", "cherry", "date"]

filtered\_words = filter\_long\_words(words\_list, 5)

print(filtered\_words)   
  
# Output: ['banana', 'cherry']

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

**Answer:**

def map\_words\_to\_lengths(words):

return [len(word) for word in words]

# Example usage

words\_list = ["ab", "cde", "erty"]

lengths = map\_words\_to\_lengths(words\_list)

print(lengths) # Output: [2, 3, 4]

**2.2 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.**

**Answer:**

def is\_vowel(char):

vowels = 'aeiouAEIOU'

return char in vowels

# Example usage

print(is\_vowel('a')) # Output: True

print(is\_vowel('b')) # Output: False