Programming Assignment 16

Question1. Write a function that stutters a word as if someone is struggling to read it. The first two letters are repeated twice with an ellipsis ... and space after each, and then the word is pronounced with a question mark ?. Examples stutter("incredible") ➞ "in... in... incredible?"

stutter("enthusiastic") ➞ "en... en... enthusiastic?"

stutter("outstanding") ➞ "ou... ou... outstanding?"

Hint :- Assume all input is in lower case and at least two characters long.

In [1]:

```
def stutter(str):
    print('{}... {}... {}?'.format(str[:2],str[:2],str))

stutter('incredible')
stutter("outstanding")
```

```
in... in... incredible?
ou... ou... outstanding?
```

Question 2.Create a function that takes an angle in radians and returns the corresponding angle in degrees rounded to one decimal place. Examples radians_to_degrees(1) ➞ 57.3

radians_to_degrees(20) ➞ 1145.9

radians_to_degrees(50) ➞ 2864.8

In [2]:

```
import math, numpy
def radians_to_degrees(n):
    return numpy.round(math.degrees(n),1)
print(radians_to_degrees(3.141))
print(radians_to_degrees(20))
print(radians_to_degrees(50))
```

```
180.0
1145.9
2864.8
```

Question 3. In this challenge, establish if a given integer num is a Curzon number. If 1 plus 2 elevated to num is exactly divisible by 1 plus 2 multiplied by num, then num is a Curzon number. Given a non-negative integer num, implement a function that returns True if num is a Curzon number, or False otherwise. Examples is_curzon(5) ➞ True 2 * *5 + 1 = 33 2* 5 + 1 = 11 33 is a multiple of 11

is_curzon(10) ➞ False 2 * *10 + 1 = 1025 2* 10 + 1 = 21 1025 is not a multiple of 21

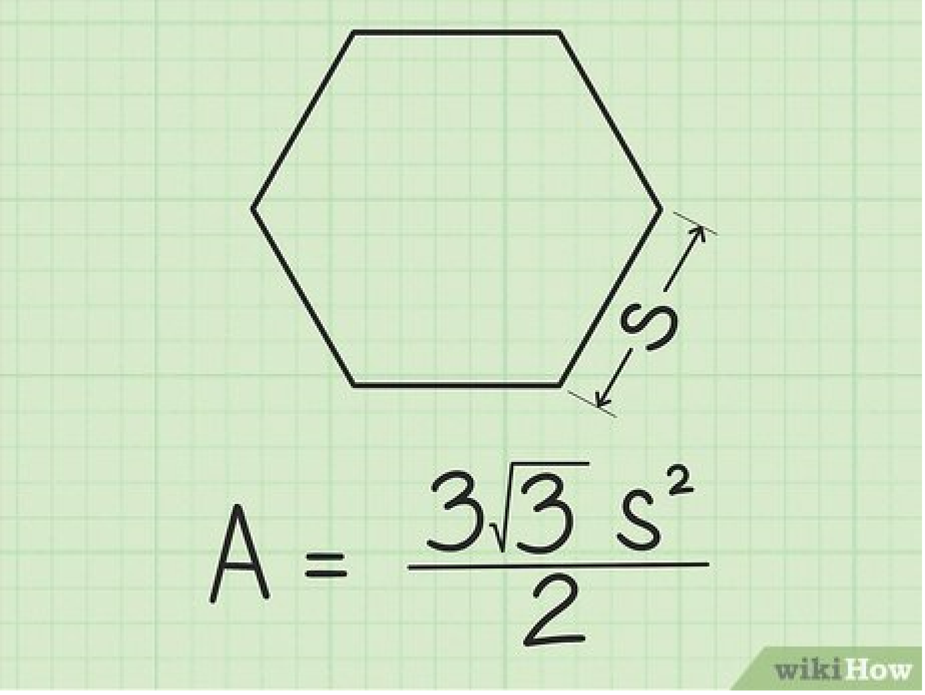
is_curzon(14) ➞ True 2 * *14 + 1 = 16385 2* 14 + 1 = 29 16385 is a multiple of 29

In [3]:

```
def is_curzon(n):
    pow= (2**n)+1
    mult=(2*n)+1
    if (pow % mult==0):
        return True
    else:
        return False
curzon=is_curzon(14)
if curzon:
    print('is_curzon? ', curzon)
```

```
is_curzon?  True
```

Question 4.Given the side length x find the area of a hexagon.



Examples

area_of_hexagon(1) ➞ 2.6

area_of_hexagon(2) ➞ 10.4

area_of_hexagon(3) ➞ 23.4

In [4]:
```
import numpy as np
def area_of_hexagon(l):
    return np.round((3*(3**.5)*l**2)/2,1)

print('area_of_hexagon(1) ➞ ',area_of_hexagon(1))
print('area_of_hexagon(2) ➞ ',area_of_hexagon(2))
print('area_of_hexagon(3) ➞ ',area_of_hexagon(3))
```

```
area_of_hexagon(1) ➞  2.6
area_of_hexagon(2) ➞  10.4
area_of_hexagon(3) ➞  23.4
```

Question 5. Create a function that returns a base-2 (binary) representation of a base-10 (decimal) string number. To convert is simple: ((2) means base-2 and (10) means base-10) 010101001(2) = 1 + 8 + 32 + 128. Going from right to left, the value of the most right bit is 1, now from that every bit to the left will be x2 the value, value of an 8 bit binary numbers are (256, 128, 64, 32, 16, 8, 4, 2, 1). Examples binary(1) ➞ "1" 1*1 = 1

binary(5) ➞ "101" 1*1 + 1*4 = 5

binary(10) ➞ "1010" 1*2 + 1*8 = 10

In [5]:
```
from pythonds.basic import Stack


def binary(decNumber):
    remstack = Stack()

    while decNumber > 0:
        rem = decNumber % 2
        remstack.push(rem)
        decNumber = decNumber // 2

    print(remstack.size())
    binString = ""
    while not remstack.isEmpty():
        binString = binString + str(remstack.pop())

    return binString

print(binary(123))
```

```
7
1111011
```