Write a program that generates and prints 50 random integers, each between 3 and 6.

```
from random import randint
for n in range(1,51):
    a=randint(3,6)
    print(n,'. acak nilai',a)
```

2. **Write a program that generates a random number, x, between 1 and 50, a random number y between 2 and 5, and computes xy.**

```
from random import randint
x=randint(1,50)
y=randint(2,5)
z=x*y
print('acak nilai x: ',x)
print('acak nilai y: ',y)
print('perkalian xy: ',z)
```

Write a program that generates a random number between 1 and 10 and prints your name that many times.

4. **Write a program that generate sarandom decimal numbe rbetween 1 and 10 with two decimal places of accuracy. Examples are 1.23, 3.45, 9.80, and 5.00.**

```
import random
x=round(random.random()*9+1,2)
print('acak nilai x: ',x)
```

5. **Write a program that generates 50 random numbers such that the first number is between 1 and 2, the second is between 1 and 3,the third is between 1 and 4,..., and the last is between 1 and 51.**

```
from random import randint
for n in range(2,51):
   x=randint(1,n+1)
   print(n,'. nilai acak : ',x)
```

6. Write a program that asks the user to enter two numbers, x and y, and computes $|x-y|$ $x+y$.

```
import math
x=eval(input('masukan nilai pertama'))
y=eval(input('masukan nilai kedua'))
z=abs(x-y)/(x+y)
print('hasil |x-y|/(x+y) = ',z)
```

7. Write a program that asks the user to enter an angle between -180° and 180°. Using an expression with the modulo operator, convert the angle to its equivalent between 0° and 360°.

```
x=eval(input('masukan sudut dari -180 sampai 180 : '))
y=x%360
print('hasil dari',x,' adalah ',y)
```

8. Write aprogram that asks the user for a number of seconds and prints out how many minutes and seconds that is. For instance, 200 seconds is 3 minutes and 20 seconds. [Hint: Use the // operator to get minutes and the % operator to get seconds.]

```
x=eval(input('masukan jumlah detik '))
y=round(x/60)
z=x%60
print(x, ' detik sama dengan',y, 'Menit ',z,' detik')
```

9. Write a program that asks the user for an hour between 1 and 12 and for how many hours in the future they want to go. Print out what the hour will be that many hours into the future. An example is shown below.

```
x=eval(input('masukan jam sekarang '))
y=eval(input('masukan jam selanjutnya '))
z=(x+y)%12
print(' jam sekarang ',x, 'jam berikutnya ',y,' jam kedepannya', z)
```

Write a program that draws “modular rectangles” like the ones below. The user specifies the width and height of the rectangle, and the entries start at 0 and increase typewriter fashion from left to right and top to bottom, but are all done mod 10. Below are examples of a 3×5 rectangle and a 4×8.

```
0 1 2 3 4
5 6 7 8 9
0 1 2 3 4

0 1 2 3 4 5 6 7
8 9 0 1 2 3 4 5
6 7 8 9 0 1 2 3
4 5 6 7 8 9 0 1
```

```
x=eval(input('jumlah kolom'))
y=eval(input('jumlah barisan '))
z=-1
for i in range(1,x+1):
    for j in range(1,y+1):
        z = (z+1)%10
        print(z,end=' ')
    print(' ')
```

1. Write a program that asks the user to enter a length in centimeters. If the user enters a negative length, the program should tell the user that the entry is invalid. Otherwise, the program should convert the length to inches and print out the result. There are 2.54 centimeters in an inch.

2. Ask the user for a temperature. Then ask them what units, Celsius or Fahrenheit, the temperature is in. Your program should convert the temperature to the other unit. The conversions are $F = \frac{9}{5}C + 32$ and $C = \frac{5}{9}(F - 32)$.

3. Ask the user to enter a temperature in Celsius. The program should print a message based on the temperature:

   - If the temperature is less than -273.15, print that the temperature is invalid because it is below absolute zero.
   - If it is exactly -273.15, print that the temperature is absolute 0.
   - If the temperature is between -273.15 and 0, print that the temperature is below freezing.
   - If it is 0, print that the temperature is at the freezing point.
   - If it is between 0 and 100, print that the temperature is in the normal range.
   - If it is 100, print that the temperature is at the boiling point.
   - If it is above 100, print that the temperature is above the boiling point.

4. Write a program that asks the user how many credits they have taken. If they have taken 23 or less, print that the student is a freshman. If they have taken between 24 and 53, print that they are a sophomore. The range for juniors is 54 to 83, and for seniors it is 84 and over.

Jawaban 1

```
x=eval(input('panjang dlam cm'))
if x<0:
   print('tidak dapat dimasukan')

if x>=0:
   y = x*2.56
   print(x,' cm sama dengan ',y,'inci')
```

Jawaban 2

```
x=eval(input('pilih konversi 1) C ke F atau 2) F ke C'))
if x==1:
   print('Celsius ke Fahrenheit')
   y=eval(input('Masukan nilai Celsius '))
   z=(9*y/5)+32
   print('suhu ',y,' Celsius = ',z,' Fahrenheit')
else:
   print('Fahrenheit ke Celcius')
   y=eval(input('Masukan nilai Fahrenheit '))
   z=5*(y-32)/9
   print('suhu ',y,' Fahrenheit = ',z,' Celsius')
```

Write a multiplication game program for kids. The program should give the player ten randomly generated multiplication questions to do. After each, the program should tell them whether they got it right or wrong and what the correct answer is.

```
Question 1: 3 x 4 = 12
Right!
Question 2: 8 x 6 = 44
Wrong.  The answer is 48.
...
...
Question 10: 7 x 7 = 49
Right.
```

```
from random import randint
a = randint(2,10)
b = randint(2,10)
c = a*b
d = randint(2,100)
print(a,' x ',b,' = ',d)
x = eval(input('apakah 1)benar atau 2)salah: '))
if c==d:
    if x==1:
        print('Anda benar')
    else:
        print('Anda Salah')


if c!=d:
    if x==2:
        print('Anda benar')
    else:
        print('Anda Salah')
```

Write a program that lets the user play Rock-Paper-Scissors against the computer. There should be five rounds, and after those five rounds, your program should print out who won and lost or that there is a tie.

```
from random import randint
print("permainan batu, kertas, gunting melawan komputer")
print("================================")
print("Aturan permainan bahwa 1) Batu, 2)Kertas, 3)Gunting")
x = eval(input('pemain: '))
y = randint(1,3)
if x==1:
    print('pemain memilih batu')
elif x==2:
    print('pemain memilih kertas')
elif x==3:
    print('pemain memilih gunting')
```

```
if y==1:
    print('komputer memilih batu')
elif y==2:
    print('komputer memilih kertas')
elif y==3:
    print('komputer memilih gunting')

if x==1 and y==1:
    print('keduanya tidak ada yang menang dan kalah')
elif x==1 and y==2:
    print('Anda kalah')
elif x==1 and y==3:
    print('Anda menang')
elif x==2 and y==1:
    print('Anda menang')
elif x==2 and y==2:
    print('keduanya tidak ada yang menang dan kalah')
elif x==2 and y==3:
    print('Anda kalah')
elif x==3 and y==1:
    print('Anda kalah')
elif x==3 and y==2:
    print('Anda menang')
elif x==3 and y==3:
    print('keduanya tidak ada yang menang dan kalah')
```

```
>>> import math
>>> dir(math)
['__doc__', '__name__', '__package__', 'acos', 'acosh', 'asin',
'asinh', 'atan', 'atan2', 'atanh', 'ceil', 'copysign', 'cos',
'cosh', 'degrees', 'e', 'exp', 'fabs', 'factorial', 'floor',
'fmod', 'frexp', 'fsum', 'hypot', 'isinf', 'isnan', 'ldexp',
'log', 'log10', 'log1p', 'modf', 'pi', 'pow', 'radians', 'sin',
'sinh', 'sqrt', 'tan', 'tanh', 'trunc']
```

This gives a list of all the functions and variables in the `math` module. You can ignore all of the ones that start with underscores. To get help on a specific function, say the `floor` function, you can type `help(math.floor)`. Typing `help(math)` will give you help for everything in the `math` module.

Write a program that counts how many of the squares of the numbers from 1 to 100 end in a 1.

Write a program that counts how many of the squares of the numbers from 1 to 100 end in a 4 and how many end in a 9.

Write a program that asks the user to enter a value n, and then computes $(1+\frac{1}{2}+\frac{1}{3}+\cdots+\frac{1}{n})-\ln(n)$. The ln function is `log` in the `math` module.

Write a program to compute the sum $1-2+3-4+\cdots+1999-2000$.

Jawaban 1

```
from math import sqrt
a = 0
for i in range(1,101):
    b = sqrt(i)
    c = round(sqrt(i))
    if(b==c):
        a = a+1

print('Banyaknya bilangan kuadrat adalah ',a)
```

Jawaban 3

```
from math import log, e
a = eval(input('masukan banyaknya nilai n : '))
b=0
for i in range(1,a+1):
    b = b+1/i

c = log(a)/log(e)
d = b-c
print('Hasilnya adalah : ',d)
```

Jawaban 4

```
from math import pow
a = eval(input('masukan banyaknya nilai n : '))
b=0
for i in range(1,a+1):
    b = b+pow(-1,(i+1))*i

print('Hasilnya adalah : ',b)
```

In the last chapter there was an exercise that asked you to create a multiplication game for kids. Improve your program from that exercise to keep track of the number of right and wrong answers. At the end of the program, print a message that varies depending on how many questions the player got right.

```
from random import randint
print('permainan perkalian')
print('==================')
x = eval(input('Masukan berapa soal'))
benar = 0
salah = 0
for i in range(1,x+1):
    a = randint(1,10)
    b = randint(1,10)
    c = a*b
    print('Berapa nilai dari ',a,' x ',b,' ?')
    y = eval(input('Masukan jawaban anda : '))
    if y==c:
        benar = benar+1
    elif y!=c:
        salah = salah+1

print('Dari ',x,' soal yang benar = ',benar,' soal yang salah = ',salah)
f = (benar/x)*100
print('Nilai anda adalah ',f)
```

Ask the user for a number and then print the following, where the pattern ends at the number that the user enters.

```
1
 2
  3
   4
```

Write a program that asks the user to enter a string, then prints out each letter of the string doubled and on a separate line. For instance, if the user entered `HEY`, the output would be

```
HH
EE
YY
```

Jawaban 1

```
x=eval(input("masukan banyaknya angka : "))
for i in range(1,x+1):
    print(' '*i,i)
```

Jawaban 2

```
x=input('masukan banyaknya kata : ')
y = len(x)
for i in range(1,y+1):
    z = x[(i-1):i]
    print(z.upper()*2)
```

Write a program that generates the 26-line block of letters partially shown below. Use a loop containing one or two print statements.

```
abcdefghijklmnopqrstuvwxyz
bcdefghijklmnopqrstuvwxyza
cdefghijklmnopqrstuvwxyzab
...
yzabcdefghijklmnopqrstuvwx
zabcdefghijklmnopqrstuvwxy
```

```
x=input('masukan banyaknya kata : ')
y = len(x)
print(x)
for i in range(1,y+1):
    z = x[0:1]
    m = x[1: ]
    x = m+z
    print(x)
```