DISTANCE BWTEEN 2 POINTS

```
>>>t1=float(input("Enter t1 value in radian: "))
Enter t1 value in radian: 1
>>>g1=float(input('Enter g1 value in radian: '))
Enter g1 value in radian: 10
>>>t2=float(input("Enter t2 value in radian: "))
Enter t2 value in radian: 10
>>>g2=float(input('Enter g2 value in radian: '))
Enter g2 value in radian: 10
>>>import math
>>>x=math.sin(t1)*math.sin(t2)
>>>y=math.cos(t1)*math.cos(t2)*math.cos(g1-g2)
>>>d=6371.01*math.acos(x+y)
>>>print("The distance betwen two points on earth is",d,"km.")
The distance betwen two points on earth is 17308.853576105786 km.
```

BODY MASS INDEX:

```
>>>Weight=float(input("Enter ur weight: "))
Enter ur weight:55
>>>Height=float(input("Enter ur height: "))
Enter ur height:169
>>>print(round(Weight/(Height*Height)* 703,2))
1.35
```

27.EASTER:

```
>>>year=int(input('Enter any year: '))
Enter any year:2019
>>>a=year%19
>>>import math
>>>b=math.floor(year/100)
>>>c=year%100
>>>d=math.floor(b/4)
>>>e=b%4
>>>f=math.floor((b+8)/25)
>>>g=(b-f+1)/3
>>>h=((19*a)+b-d-g+15)%30
```

```
>>>i=math.floor(c/4)
>>>k=c%4
>>>l=(32+(2*e)+(2*i)-h-k)%7
>>>m=math.floor((a+11*h + 22*l)/(451))
>>>month=math.floor((h +l-7*m +114)/(31))
>>>day=(h +l-7*m +114)%31
>>>print('The Easter in year is: {}-{}-{}'.format(day,month,year))
```

The Easter in year is: 20.0-4-2019

FREE FALL:
```
>>>vi=float(input('Enter the initial speed: '))
Enter the initial speed: 45
>>>a=9.8
>>>d=float(input('Enter the height: '))
Enter the height: 110
>>>import math
>>>vf=math.sqrt((vi**2)+(2*a*d))
>>>print('The final speed of object',vf)
The final speed of object 64.66065264130884
```

HEAT CAPACITY:
```
>>>m=float(input("Enter the weight of material in grams: "))
Enter the weight of material in grams:100
>>>dt=float(input("Enter change in temperature: "))
Enter the change in temperature:10
>>>c=4.186
>>>q=m*dt*c
>>>print('Energy required is',q,"Joul.")
>>>qj=q*2.77e-7
>>>print('Energy in KWH',qj)
>>>price=qj*5
>>>print("The cost incurred in heating water is",price,"INR.")
Energy required is 4186.0 Joul.
Energy in KWH 0.001159522
The cost incurred in heating water is 0.00579761 INR.
```

29.WIND CHILL:
```
>>>T=float(input("Enter temperature of air: "))
Enter temperature of air:45
>>>V=float(input("Enter velocity: "))
```

Enter velocity: 56
>>>WCI=13.12+(0.6215*T)-(11.37*(V**0.16))+(0.3965*T*(V**0.6))
>>>print(round(WCI))
219


## 34.DAY OLD BREAD
```
>>>original_price = 3.49
>>>discount = 60/100
>>>user_input = int(input("Amount of loaves for day-old bread: "))
>>>regular_price = original_price*user_input
>>>day_old_bread_price = regular_price*discount
>>>print(f"Regular Price: {regular_price:.2f}\nDiscount: {discount*100:.02f}%\nTotal: {day_old_bread_price:.2f}")
```
Output:
Amount of loaves for day-old bread: 10
Regular Price: 34.90
Discount: 60.00%
Total: 20.94

## IDEAL GAS LAW
```
def ideal_gas(p, v, t):
    return (p * v) / (8.31446261815324 * 1000 * t)


p = float(input("P: "))
v = float(input("V: "))
t = float(input("T: "))

print(ideal_gas(p, v, t))
```

Output:
P: 9
V: 9
T: 8
0.0012177575948076017

## PRESSURE UNITS:
```
p = float(input('Enter pressure in kilopascals: '))
pound = p * .145038
merc = p * 7.501875
atm = p * .09869

print(f"""
{p} kilopascals = {pound} pound per square inch
{p} kilopascals = {merc} millimeters of mercury
{p} kilopascals = {atm} atm
""")
```

output:Enter pressure in kilopascals: 122
122.0 kilopascals = 17.694636 pound per square inch
122.0 kilopascals = 915.22875 millimeters of mercury
122.0 kilopascals = 12.04018 atm

30.celsius to kelvin
```
>>>c=float(input("Enter temperature of celsius: "))
Enter temperature of celsius: 34
>>>k=c+273.35
>>>print("Enter temperature in k scale",round(k,2))
Enter temperature in k scale 307.35
```

AREA AND VOLUME OF SPHERE
```
>>>r=float(input("Enter the radius: "))
Enter the radius: 10
>>>import math
>>>ac=math.pi*r*r
>>>vs=(4/3)*(math.pi)*(r**3)
>>>print("Area of circle is",ac)
Area of circle is 314.1592653589793
>>>print("Volume of sphere is",vs)
Volume of sphere is 4188.790204786391
```

33.SORT 3 INTEGERRS:
```
>>>a=int(input("Enter first number: "))
Enter first number:10
>>>b=int(input("Enter second number: "))
Enter second number:23
>>>c=int(input('Enter third number: '))
Enter third number: 1
>>>mn=min(a,b,c)
>>>mx=max(a,b,c)
>>>md=a+b+c-mn-mx
>>>print(mn,md,mx)
1 10 23
```

SUM OF N NATURAL NUM

```
>>> n=int(input("enter a num:"))
enter a num:23
>>> ans=(n*(n+1))/2
>>> print(ans)
276.0
```

HEIGHT UNITS:
```
>>>f=int(input("Enter Height value in feet: "))
Enter Height value in feet:10
>>>i=int(input("Enter height value in inch: "))
Enter Height value in inch:122
>>>fcm=f*12*2.54
>>>icm=i*2.54
>>>hcm=fcm+icm
>>>print("The height in cm is",hcm)
The height in cm is 614.6800000000001
```

24.UNITS OF TIME

```
>>>s=int(input('Enter number of seconds: '))
Enter number of seconds: 100
>>>d=s//(24*60*60) # this gives no of days
>>>r=s%(24*60*60)   # this gives remaining seconds after excluding days
>>>h=r//(60*60)     # this gives number of hours
>>>r=r%(60*60)    # this gives remaining seconds after excluding hours
>>>m=r//60    # This gives total minutes
>>>r=r%60 # these are the remaining seconds
>>>print('{}:{}:{}:{}'.format(d,h,m,r))
0:0:1:40
```

AREA OF TRIANGLE:(CASE 1)
```
>>> #area of traingle#
>>> length=int(input("length:"))
length:23
>>> breadth=int(input("breadth:"))
breadth:10
>>> area=(length*breadth)/2
>>> print(area)
115.0
```

AREA OF TRAINGLE (AGAIN CASE2)
```
>>> a=int(input("a:"))
```

```
a:10
>>> b=int(input("b:"))
b:21
>>> c=int(input("c:"))
c:10
>>> s=(a+b+c)/2
>>> area=(s*(s-a)*(s-b)*(s-c)) ** 0.5
>>> print(area)
(2.0584109705026808e-15+33.616402246522455j)
```

AREA OF REGULAR POLYGON
```
>>> from math import tan, pi
>>> n_sides = int(input("Input number of sides: "))
Input number of sides: 6
>>> s_length = float(input("Input the length of a side: "))
Input the length of a side: 5
>>> p_area = n_sides * (s_length ** 2) / (4 * tan(pi / n_sides))
>>> print("The area of the polygon is: ",p_area)
The area of the polygon is:  64.9519052838329
```
CURRENT TIME
```
>>> from time import time, ctime
>>> t = time()
>>> ctime(t)
'Mon May 22 11:44:16 2023'
>>>
```

WIDGETS AND GIZMOS:

```
>>>widgets = int(input("Please enter number of widgets: "))
Please enter number of widgets:10
>>>gizmos = int(input("Please enter number of gizmos: "))
Please enter number of gizmos:10
>>>total_weight = widgets * 75 + gizmos * 112
>>>print("Total weight is: {}".format(total_weight))
Total weight is: 1870
```

Arthematic

```
>>>import math

>>>a = int(input("Please enter integer a: "))
Please enter integer a:2
>>>b = int(input("Please enter integer b: "))
Please enter integer b:2
>>>print("The sum of a and b: {}".format(a+b))
The sum of a and b: 4
>>>print("The difference when b is subtracted from a: {}".format(b-a))
The difference when b is subtracted from a:2
>>>print("The product of a and b: {}".format(a*b))
The product of a and b:4
>>>print("The quotient when a is divided by b: {}".format(a/b))
The quotient when a is divided by b:1
>>>print("The remainder when a is divided by b: {}".format(a%b))
The remainder when a is divided by b:0
>>>print("The result of log10 a: {}".format(math.log10(a)))
The result of log10 a: 0.301029
>>>print("The result of a power b: {}".format(a**b))
The result of a power b:4
```

Compound interest
```
>>>deposit = int(input("Please enter the deposit amount:"))
Please enter the deposit amount:10

# interest calculated for 3 years .
>>>amt_1_year = deposit+(deposit*0.04)
>>>amt_2_year = amt_1_year+(amt_1_year*0.04)
>>>amt_3_year = amt_2_year+(amt_2_year*0.04)

>>>print(f"Amount in Savings account after 1st year:{amt_1_year}")
Amount in Savings account after 1st year:10.4
>>>print(f"Amount in Savings account after 2nd year:{amt_2_year}")
Amount in Savings account after 1st year:10.816
>>>print(f"Amount in Savings account after 3rd year:{amt_3_year}")
Amount in Savings account after 1st year:11.2486
```

Fuelefficiency
```
>>val = int(input('Please enter the fue efficency for vehicle in miles-per- gallon (MPG):'))
Please enter the fue efficency for vehicle in miles-per- gallon (MPG):500

>>>can_lt_per_100km = 235//val
```

```
>>>print(f'Equivalent Fuel efficency in canadian units:{can_lt_per_100km}')
Equivalent Fuel efficency in canadian units:0.47
```

VOLUME OF CYLINDER:
```
>>>height=int(iinput("height:"))
height:38
>>>radius=int(iinput("radius:"))
radius:35

>>>pie=3.14285714286

>>>volume=pie*(radius*radius)*height

 >>>print("volume of the cube="str(volume))

volume of the cube=146300.000032
```

SORT OF 3 INTEGERS:

```
num=[97,18,1]

>>> sorted(num)

[1,18,97]
```

SUM OF DIGITS IN AN INTEGER:

```
Def Sum(n):
    sum=0;
   for digit in str(n):
    sum += int(digit)
   return sum
n=34456
print(sum(n))
Sum: 22
```