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Assignment 2

1 Area of a Rectangle

```
L=float(input("What is the length value in meter?"))
W=float(input("What is the width value in meter?"))
Area=L*W
print(Area,"m")
```

```
What is the length value in meter? 5.8
What is the width value in meter? 4

23.2 m
```

2) Circumference of a Circle

```
r=float(input("What is the value of radius?"))
Circumference=2*3.14*r
print(Circumference,"m")
```

```
What is the value of radius? 9.9

62.172000000000004 m
```

3) Simple Interest

```
P=float(input("Enter the value of Principal?"))
R=float(input("Enter the value of Rate?"))
T=float(input("Enter the value of Time?"))
Simple_interest=(P*R*T)
print('RS',Simple_interest)
```

```
Enter the value of Principal? 1000
Enter the value of Rate? 5000
Enter the value of Time? 50

RS 250000000.0
```

4) BMI Calculator

```
w=float(input("Enter the value in kg"))
h=float(input("Enter the value in meters"))
BMI=(w/h**2)
print(BMI,"kg/m**2")
```

```
Enter the value in kg 55
Enter the value in meters 40

0.034375 kg/m**2
```

5) Speed of an Object

```
d=float(input("Enter the value in meter"))
t=float(input("Enter the value in sec"))
Speed=(d/t)
print(Speed,"m/s")
```

```
Enter the value in meter 5
Enter the value in sec 9.8

0.5102040816326531 m/s
```

6) Force Using Newton's Second Law:

```
m=int(input("Enter the mass value"))
a=int(input("Enter the acceleration"))
F=m*a
print(F,"Newton")
```

```
Enter the mass value 250
Enter the acceleration 5

1250 Newton
```

7) Compound Interest:

```
P=float(input("Enter the principal amount (P)?"))
r=float(input("Enter the annual interest rate in decimal (r)?"))
n=float(input("Enter the number of time interest in annual compound
per year?"))
t=float(input(" Enter the time in years (t): "))
A=P*(1+r/n)**(n-t)
print(f"The total amount after {t} years: {A:2f}")
```

```
Enter the principal amount (P)? 250
Enter the annual interest rate in decimal (r)? 14
Enter the number of time interest in annual compound per year? 2
 Enter the time in years (t):  4

The total amount after 4.0 years: 3.906250
```

8) Perimeter of a Triangle

```
a=int(input("value of one side of a triangle 'a'"))
b=int(input("value of second side of a triangle'b'"))
c=int(input("value of third side of a triangle'c'"))
Perimeter=a+b+c
print(Perimeter,"m")
```

```
value of one side of a triangle 'a' 15
value of second side of a triangle'b' 12
value of third side of a triangle'c' 10

37 m
```

9) Volume of a Sphere

```
r=float(input("Enter the value of radius"))
Volume_of_a_Sphere=4/3*3.14*r**3
print(Volume_of_a_Sphere,"m3")
```

```
Enter the value of radius 12.5

8177.083333333333 m3
```

10) Kinetic Energy:

```
m=int(input("Enter the mass value (kilogarams)"))
V=int(input("Enter the velocity value in (m/s)"))
Kinetic_Energy =1/2*m*V**2
print(Kinetic_Energy,"Joules")
```

```
Enter the mass value (kilogarams) 120
Enter the velocity value in (m/s) 380

8664000.0 Joules
```

11) Quadratic Equation Roots:

```
import math

# Taking inputs from the user
a = float(input("Enter the coefficient a: "))
b = float(input("Enter the coefficient b: "))
c = float(input("Enter the constant c: "))

# Checking if it's a valid quadratic equation
if a == 0:
    print("This is not a quadratic equation (a cannot be 0).")
else:
    # Calculating the discriminant
    discriminant = b**2 - 4*a*c

    if discriminant > 0:
        # Two real and distinct roots
        root1 = (-b + math.sqrt(discriminant)) / (2*a)
        root2 = (-b - math.sqrt(discriminant)) / (2*a)
        print(f"The roots are real and distinct: {root1:.2f},
{root2:.2f}")
    elif discriminant == 0:
        # One real and repeated root
        root = -b / (2*a)
        print(f"The root is real and repeated: {root:.2f}")
    else:
        # Complex roots
        real_part = -b / (2*a)
        imaginary_part = math.sqrt(-discriminant) / (2*a)
        print(f"The roots are complex: {real_part:.2f} +
{imaginary_part:.2f}i, {real_part:.2f} - {imaginary_part:.2f}i")


Enter the coefficient a:  25
Enter the coefficient b:  12
Enter the constant c:  66

The roots are complex: -0.24 + 1.61i, -0.24 - 1.61i
```

12) Temperature Conversion:

```
C=int(input("Enter the Celsuis °C Temperature Value?"))
F=9/5*C+32
print(f"The Temperature of {C} °C Celsius Changed into {F} °F
Fahernite")

Enter the Celsuis °C Temperature Value? 145
```

```
The Temperature of 145 °C Celsius Changed into 293.0 °F Fahernite
```

13) Gravitational Force:

```
m1=float(input("Enter the value of mass m1"))
m2=float(input("Enter the value of mass m2"))
r=float(input("Enter the value of radius "))
Gravitational_Force=9.8*m1*m2/r**2
print(Gravitational_Force,"M/m2")

Enter the value of mass m1 22.5
Enter the value of mass m2 41
Enter the value of radius  12

62.781250000000014 M/m2
```

14) Volume of a Cylinder:

```
r=float(input("Enter the value of radius"))
h=float(input("Enter the value of height"))
Volume_of_Cylinder=3.14*r**2*h
print(Volume_of_Cylinder,"m3")

Enter the value of radius 121
Enter the value of height 78

3585873.72 m3
```

15) Pressure:

```
F=float(input("Enter the value of force"))
A=float(input("Enter the value of area"))
P=F/A
print(P,"Pascals")

Enter the value of force 66
Enter the value of area 12.8

5.15625 Pascals
```

16) Electric Power:

```
V=float(input("Enter the value of voltage {V}"))
I=float(input("Enter the value of current {I}"))
```

```
P=V/I
print(P,"Watt")

Enter the value of voltage {V} 22.6
Enter the value of current {I} 12.6

1.7936507936507937 Watt
```

17) Perimeter of a Circle (Circumference):

```
r=float(input("Enter the value of radius {r}"))
Circumference_of_a_circle=2*3.14*r
print(Circumference_of_a_circle,"m")

Enter the value of radius {r} 95

596.6 m
```

18) Future Value in Savings:

```
PV=float(input("Enter the value of PV "))
r=float(input("Enter the annual interest rate value in {decimal}"))
t=float(input("Enter the value time in years "))
FV=PV*(1+r)**t
print(FV,"Rs")

Enter the value of PV  2500
Enter the annual interest rate value in {decimal} 450.8
Enter the value time in years  5

4.706208258359624e+16 Rs
```

19) Work Done by a Force:

```
f=float(input("Enter the value of force{f}"))
d=float(input("Enter the value of distance"))
Theeta=float(input("Enter the angle between force and direction of
movement in {degree}"))
W=f*d*math.cos(Theeta)
print(W)

Enter the value of force{f} 44
Enter the value of distance 12
Enter the angle between force and direction of movement in {degree} 60

-502.87405365920256
```

20) Heat Transfer:

```
m=float(input("Enter the value of mass"))
c=float(input("Enter the value of specific heat capacity"))
Q=m*c
print(Q,"Joules")
```

```
Enter the value of mass 153
Enter the value of specific heat capacity 65

9945.0 Joules
```