

Questions:

1) Area of a Rectangle:

Write a Python program to calculate the area of a rectangle. Use the formula:

$$\textit{Area} = \textit{length} \times \textit{width}$$

Take length and width as inputs from the user.

2) Circumference of a Circle:

Write a Python program to calculate the circumference of a circle. Use the formula:

$$\textit{Circumference} = 2\pi r$$

Take the radius r as input from the user.

3) Simple Interest:

Write a Python program to calculate the simple interest. Use the formula:

$$\textit{Simple Interest} = \textit{Principal} \times \textit{Rate} \times \textit{Time}$$

Take Principal, Rate, and Time as inputs from the user.

4) Speed of an Object:

Write a Python program to calculate the speed of an object. Use the formula:

$$\textit{Speed} = \textit{Distance} / \textit{Time}$$

Take Distance and Time as inputs from the user.

5) BMI Calculator:

Write a Python program to calculate the Body Mass Index (BMI). Use the formula:

$$\text{BMI} = \frac{\textit{Weight(Kg)}}{(\textit{Height}).^2}$$

Take Weight (in kilograms) and Height (in meters) as inputs from the user.

6) Force Using Newton's Second Law:

Write a Python program to calculate the force on an object. Use the formula:

$$F = ma$$

Take m (mass in kilograms) and a (acceleration in meters/second²) as inputs from the user.

7) Compound Interest:

Write a Python program to calculate compound interest. Use the formula:

$$A = P * \left(1 + \frac{r}{n}\right)^{n \cdot t}$$

Where:

A= total amount

P = principal amount

r = annual interest rate (decimal)

n = number of times interest is compounded per year

t = time in years

Take P, r, n, and t as inputs from the user.

8) Perimeter of a Triangle:

Write a Python program to calculate the perimeter of a triangle. Use the formula:

$$\textit{Perimeter} = a + b + c$$

Take a, b, and c (lengths of the three sides) as inputs from the user.

9) Volume of a Sphere:

Write a Python program to calculate the volume of a sphere. Use the formula:

$$\textit{Volume} = \frac{4}{3} \pi r^3$$

Take r (radius) as input from the user.

10) Kinetic Energy:

Write a Python program to calculate the kinetic energy of an object. Use the formula:

$$KE = \frac{1}{2} m V^2$$

Take m (mass in kilograms) and v (velocity in meters/second) as inputs from the user.

11) Quadratic Equation Roots:

Write a Python program to find the roots of a quadratic equation. Use the formula:

$$X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Take a, b, and c as inputs from the user.

12) Temperature Conversion:

Write a Python program to convert a temperature from Celsius to Fahrenheit. Use the formula:

$$F = \frac{9}{5} C + 32$$

Take C (temperature in Celsius) as input from the user.

13) Gravitational Force:

Write a Python program to calculate the gravitational force between two objects. Use the formula

$$F = G \frac{m1 * m2}{r^2}$$

m1, m2 are the masses of the objects

r = distance between the centers of the objects

Take m1, m2 and r as inputs from the user.

14) Volume of a Cylinder:

Write a Python program to calculate the volume of a cylinder. Use the formula:

$$Volume = \pi r^2 h$$

Take radius(r) and height(h) as inputs from the user

15) Pressure:

Write a Python program to calculate the pressure exerted by a force on a surface. Use the formula:

$$P = \frac{F}{A}$$

P = pressure

F = force

A = area

Take F(force) and A(area) as inputs from the user.

16) Electric Power:

Write a Python program to calculate the electric power consumed. Use the formula:

$$P = \frac{V}{I}$$

where:

P = power

V = voltage

I = current

Take V(voltage) and I(current) as inputs from the user.

17) Perimeter of a Circle (Circumference):

Write a Python program to calculate the perimeter (circumference) of a circle. Use the formula:

$$P = 2\pi r$$

Take r (radius) as input from the user.

18) Future Value in Savings:

Write a Python program to calculate the future value of an investment. Use the formula:

$$FV = PV(1 + r)^t$$

where:

- FV= future value
- PV= present value
- r= annual interest rate (as a decimal)
- t= time in years

Take PV, r, and t as inputs from the user.

19) Work Done by a Force:

Write a Python program to calculate the work done by a force. Use the formula:

$$W = f \cdot d \cos\theta$$

where:

W = work done

f= force

d = distance

theta = angle between force and direction of movement (in degrees)

Take f, d, and θ as inputs from the user.

20) Heat Transfer:

Write a Python program to calculate the amount of heat transferred. Use the formula:

$$Q = mc (\Delta T)$$

where:

Q= heat transfer

m = mass

c = specific heat capacity

ΔT

Take m, c, T as inputs from the user.