1. Write a program to perform input/output of all basic data types.

   Input

   ```
   Enter a character: C


   Enter an integer: -32768
   ```

   Output

   ```
   You entered character: 'C'


   You entered signed short: -32768
   ```

2. Write a program to enter two numbers and find their sum.

   Input

   ```
   Input first number: 20
   Input second number: 10
   ```

   Output

   ```
   Sum = 30
   ```

3. Write a program to enter two numbers and perform all arithmetic operations.

   Input

```
First number: 10

Second number: 5
```

Output

```
Sum = 15

Difference = 5

Product = 50

Quotient = 2

Modulus = 0
```

4. Write a program to enter the length and breadth of a rectangle and find its perimeter.

Input

```
Enter length: 5

Enter width: 10
```

Output

```
Perimeter of rectangle = 30 units
```

5. Write a program to enter the length and breadth of a rectangle and find its area.

Input

```
Enter length: 5
Enter width: 10
```

Output

```
Area of rectangle = 50 sq. units
```

6. Write a program to enter radius of a circle and find its diameter, circumference and area.

Input

```
Enter radius: 10
```

Output

```
Diameter = 20 units
```

```
Circumference = 62.79 units
```

```
Area = 314 sq. units
```

7. Write a program to enter length in centimeters and convert it into meters and kilometers.

   Input

   ```
   Enter length in centimeters = 1000
   ```

   Output

   ```
   Length in meter = 10 m


   Length in kilometer = 0.01 km
   ```

8. Write a program to enter temperature in Celsius and convert it into Fahrenheit.

   A. **Input temperature in Celsius from the user. Store it in some variable say `celsius`.**
   B. **Apply formula to convert the temperature to Fahrenheit i.e. `fahrenheit = (celsius * 9 / 5) + 32`.**
   C. **Print the value of `fahrenheit`.**

Input

```
Enter temperature in Celsius = 100
```

Output

```
Temperature in Fahrenheit = 212 F
```

9. Write a program to enter temperature in Fahrenheit and convert to Celsius
    A. Input temperature in Fahrenheit from user. Store it in some variable say `Fahrenheit`.
    B. Apply the temperature conversion formula `celsius = (fahrenheit - 32) * 5 / 9`.
    C. Print the value of `celsius`.

    Input

    ```
    Temperature in Fahrenheit = 205
    ```

    Output

    ```
    Temperature in celsius = 96.11 C
    ```

10. Write a program to convert days into years, weeks and days.

Days conversion formula

1 year = 365 days (Ignoring leap year)

1 week = 7 days

Using this we can define our new formula to compute years and weeks.

```
year = days / 365

week = (days - (year * 365)) / 7
```

Logic to convert days to years weeks and days

Step by step descriptive logic to convert days to years, weeks and remaining days -

Input days from user. Store it in some variable say `days`.

Compute total years using the above conversion table. Which is `years = days / 365`.

Compute total weeks using the above conversion table. Which is `weeks = (days - (year * 365)) / 7`.

Compute remaining days using `days = days - ((years * 365) + (weeks * 7))`.

Finally print all resultant values `years`, `weeks` and `days`.

Input

```
Enter days: 373
```

Output

```
373 days = 1 year/s, 1 week/s and 1 day/s
```

11. Write a program to enter two angles of a triangle and find the third angle.

12. Write a program to enter the base and height of a triangle and find its area.

Input

```
Enter the base of the triangle: 10


Enter the height of the triangle: 15
```

Output

```
Area of the triangle = 75 sq. units
```

13. Write a program to calculate the area of an equilateral triangle.

Input

```
Enter side of the equilateral triangle: 10
```

Output

```
Area of equilateral triangle = 43.3 sq. units
```

14. Write a program to enter marks of five subjects and calculate total, average, and percentage.

Input

```
Enter marks of five subjects: 95 76 85 90 89
```

Output

```
Total = 435

Average = 87

Percentage = 87.00
```

15. Write a program to enter P, T, R and calculate Simple Interest.

Simple Interest formula

A simple interest formula is given by.

$$SI = \frac{P \times T \times R}{100}$$

Where,

`P` is the principle amount

`T` is the time and

`R` is the rate

Logic to calculate simple interest

Step by step descriptive logic to calculate simple interest.

1. Input principle amount in some variable say `principle`.
2. Input time in some variable say `time`.
3. Input rate in some variable say `rate`.
4. Find simple interest using formula `SI = (principle * time * rate) / 100`.
5. Finally, print the resultant value of `SI`.

Input

```
Enter principle: 1200

Enter time: 2

Enter rate: 5.4
```

Output

```
Simple Interest = 129.600006
```

16. Write a program to enter P, T, R and calculate Compound Interest.

Compound Interest formula

Formula to calculate compound interest annually is given by.

$$CI = P\left(1 + \frac{R}{100}\right)^{T}$$

Where,

`P` is principle amount

`R` is the rate and

`T` is the time span

Logic to calculate compound interest

Step by step descriptive logic to find compound interest.

1. Input principle amount. Store it in some variable say `principle`.
2. Input time in some variable say `time`.
3. Input rate in some variable say `rate`.
4. Calculate compound interest using formula, `CI = principle * pow((1 + rate / 100), time)`.
5. Finally, print the resultant value of `CI`.

Input

```
Enter principle (amount): 1200

Enter time: 2

Enter rate: 5.4
```

Output

```
Compound Interest = 1333.099243
```