

OPERATORS AND EXPRESSIONS

1. Write a program that calculates mileage remuneration for a salesperson at a rate of Rs.25 per mile. Your program should interact with the user in this manner:

Sample Output:

MILEAGE REMUNERATION CALCULATOR

Enter beginning odometer reading: 13505.2

Enter ending odometer reading: 13810.6

You traveled 305.4 miles. At Rs.25 per mile, your remuneration is Rs.7635

2. The distance between two cities (in km.) is given as an input. Write the program to convert and print this distance in meters and feet.

Sample Output:

Enter the distance between two cities: 50km.

The distance between two cities is 50km or 31.06miles or 164042foot.

Hint: 1km is 0.621371mile and 3280.84foot.

3. In a town, the percentage of men is 52. The percentage of total literacy is 48. If total percentage of literate men is 35 of the total population, write a program to find the total number of women and illiterate men and women if the population of the town is 80,000.

Sample Output:

Total no. of men in the town: 41600

Total no. of literate people: 38400

Total no. of literate men: 28000

Total no. of women: 38400

Total no illiterate men is 13600 and women is 28000

4. Write a C program to compute the water tax using **ternary operator**. The water tax slab is as follows:
 - If units <100, then cost is Rs.1 per unit.
 - If 100>=units<=500, then cost is Rs.1.5 per unit
 - If units > 500, then cost is Rs.3 per unit.

5. Write a program to compute the roots of a quadratic equation in x of the form $ax^2+bx+c=0$. The two roots are defined as:

$$root_1 = \frac{-b + \sqrt{b^2 - 4ac}}{2a} \quad root_2 = \frac{-b - \sqrt{b^2 - 4ac}}{2a}$$

Sample output:

Enter the values for a, b and c: 10, 20, 6

The roots are: -0.368 and -1.632

6. Create a BMI calculator application that reads the user's weight in pounds and height in inches (or, if you prefer, the user's weight in kilograms and height in meters), then calculates and displays the user's body mass index.

Hint: **BMI** = weight (kg) / [height (m)]²

7. Create an application that calculates your daily driving cost, so that you can estimate how much money could be saved by carpooling, which also has other advantages such as reducing carbon emissions and reducing traffic congestion. The application should input the user's cost per day of driving to work:

- a) Total miles driven per day.
- b) Cost per gallon of gasoline.
- c) Average miles per gallon.
- d) Parking fees per day.
- e) Tolls per day.

Hint: $\text{DailyDrivingCost} = (\text{TotalMiles} / \text{MilesPerGallon}) * \text{GasolineCost} + \text{ParkingFees} + \text{Tolls}$

8. Write the program and trace the output for the following expressions:

- a) $z = a + b * 5 / 4 + c \% 3 * 5$, where $a=5$, $b=3$ and $c=14$.
- b) $y = x > z ? x : z$; where $x=2$ and $z=4$
- c) $m = ++i \&\& ++j \&\& ++k$; where $i=-5$, $j=6$, $k=0$