

**Reg No:** 23MCA1030

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**Subject:** Java Programming Lab

1. Declare a static integer variable to store numerical values. Perform addition, multiplication, and subtraction operations on two numbers using this variable, and then display the respective results.

input:

```
num1 = 8
```

```
num2 = 3
```

Output:

```
Addition Result: 11
```

```
Multiplication Result: 24
```

```
Subtraction Result: 5
```

### Code:

```
public class Main {  
    public static void main(String[] args) {  
        // Declaring static integer variable  
        int num1 = 8;  
        int num2 = 3;  
        int Addition = num1 + num2;  
        int Multiplication = num1 * num2;  
        int Subtraction = num1 - num2;  
  
        // Displaying the results  
        System.out.println("23MCA1030");  
        System.out.println("Addition Result: " + Addition);  
        System.out.println("Multiplication Result: " + Multiplication);  
        System.out.println("Subtraction Result: " + Subtraction);  
    }  
}
```

## Output:

```
Main.java
1 public class Main {
2     public static void main(String[] args) {
3         // Declaring static integer variable
4         int num1 = 8;
5         int num2 = 3;
6         int Addition = num1 + num2;
7         int Multiplication = num1 * num2;
8         int Subtraction = num1 - num2;
9
10        // Displaying the results
11        System.out.println("23MCA1030");
12        System.out.println("Addition Result: " + Addition);
13        System.out.println("Multiplication Result: " + Multiplication);
14        System.out.println("Subtraction Result: " + Subtraction);
15    }
16 }
17
```

input

```
23MCA1030
Addition Result: 11
Multiplication Result: 24
Subtraction Result: 5

...Program finished with exit code 0
Press ENTER to exit console.
```

2. Develop a class with two static variables representing the ages of two individuals. Write a static method to calculate the age difference and display the result.

input:

```
agePerson1 = 25  
agePerson2 = 30
```

Output:

```
Age Difference: 5 years
```

### Code:

```
public class Main {  
  
    // Defining the static variables for ages  
    static int agePerson1 = 25;  
    static int agePerson2 = 30;  
  
    // Static method for calculating & displaying age difference  
    public static void calcAgeDiffer() {  
        int ageDifference = Math.abs(agePerson1 - agePerson2);  
        System.out.println("Age Difference: " + ageDifference + " years");  
    }  
  
    public static void main(String[] args) {  
        System.out.println("23MCA1030");  
        // Calling the method to display age difference  
        calcAgeDiffer();  
    }  
}
```

## Output:

```
Main.java
1 public class Main {
2
3     // Defining the static variables for ages
4     static int agePerson1 = 25;
5     static int agePerson2 = 30;
6
7     // Static method for calculating & displaying age difference
8     public static void calcAgeDiffer() {
9         int ageDifference = Math.abs(agePerson1 - agePerson2);
10        System.out.println("Age Difference: " + ageDifference + " years");
11    }
12
13    public static void main(String[] args) {
14        System.out.println("23MCA1030");
15        // Calling the method to display age difference
16        calcAgeDiffer();
17    }
18 }
```

input

```
23MCA1030
Age Difference: 5 years

...Program finished with exit code 0
Press ENTER to exit console.
```

3. Create a class with a static variable for storing a weight in kilograms. Write static methods to convert this weight to pounds and grams. Display the converted values.

Input:

```
Weight in Kilograms: 75.0
```

Output:

```
Weight in Pounds: 165.3465 lbs
Weight in Grams: 75000.0 g
```

### Code:

```
public class Main {
    // static variable for weight in kilograms
    static double weightKg = 75.0;
    // Static method to convert to pounds
    static double convertToPounds() {
        return weightKg * 2.20462;
    }
    // Static method to convert to grams
    static double convertToGrams() {
        return weightKg * 1000;
    }
    // display conversions
    static void displayConversions() {
        double weightLbs = convertToPounds();
        double weightGrams = convertToGrams();
        System.out.println("23MCA1030");
        System.out.println("Weight in Pounds: " + weightLbs + " lbs");
        System.out.println("Weight in Grams: " + weightGrams + " g");
    }

    public static void main(String[] args) {
        displayConversions();
    }
}
```

## Output:

```
Main.java
1 public class Main {
2     // static variable for weight in kilograms
3     static double weightKg = 75.0;
4     // Static method to convert to pounds
5     static double convertToPounds() {
6         return weightKg * 2.20462;
7     }
8     // Static method to convert to grams
9     static double convertToGrams() {
10        return weightKg * 1000;
11    }
12    // display conversions
13    static void displayConversions() {
14        double weightLbs = convertToPounds();
15        double weightGrams = convertToGrams();
16        System.out.println("23MCA1030");
17        System.out.println("Weight in Pounds: " + weightLbs + " lbs");
18        System.out.println("Weight in Grams: " + weightGrams + " g");
19    }
20
21    public static void main(String[] args) {
22        displayConversions();
23    }
24 }
25
```

input

23MCA1030

Weight in Pounds: 165.3465 lbs

Weight in Grams: 75000.0 g

...Program finished with exit code 0

Press ENTER to exit console.

4. Implement a class with a static variable representing a distance in meters. Write static methods to calculate the distance in kilometers and centimeters. Display the calculated values.

input

```
Distance in Meters: 1500.0
```

Output:

```
Distance in Kilometers: 1.5 km
Distance in Centimeters: 150000.0 cm
```

### Code:

```
public class Main {
    // static variable for distance in meter
    static double distanceMeter = 1500.0;
    // Method to convert into kilometer
    static double MeterToKilometer() {
        return distanceMeter / 1000;
    }
    // Static method to convert to centimeter
    static double MeterToCentimeter() {
        return distanceMeter * 100;
    }
    // Static method to display conversions
    static void output() {
        double distanceKm = MeterToKilometer();
        double distanceCm = MeterToCentimeter();
        System.out.println("23MCA1030");
        System.out.println("Distance in Kilometers: " + distanceKm + " km");
        System.out.println("Distance in Centimeters: " + distanceCm + " cm");
    }
    public static void main(String[] args) {
        //calling function
        output();
    }
}
```

## Output:

```
Main.java
1 public class Main {
2     // static variable for distance in meter
3     static double distanceMeter = 1500.0;
4     // Method to convert into kilometer
5     static double MeterToKilometer() {
6         return distanceMeter / 1000;
7     }
8     // Static method to convert to centimeter
9     static double MeterToCentimeter() {
10        return distanceMeter * 100;
11    }
12    // Static method to display conversions
13    static void output() {
14        double distanceKm = MeterToKilometer();
15        double distanceCm = MeterToCentimeter();
16        System.out.println("23MCA1030");
17        System.out.println("Distance in Kilometers: " + distanceKm + " km");
18        System.out.println("Distance in Centimeters: " + distanceCm + " cm");
19    }
20    public static void main(String[] args) {
21        //calling function
22        output();
23    }
24 }
25
```

input

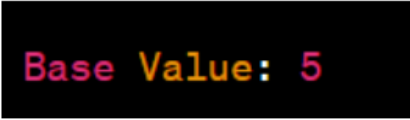
```
23MCA1030
Distance in Kilometers: 1.5 km
Distance in Centimeters: 150000.0 cm

...Program finished with exit code 0
Press ENTER to exit console.
```



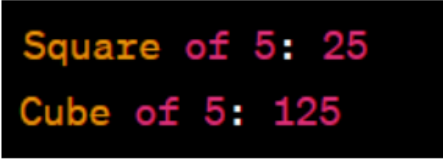
5. Declare a static integer variable to represent a base value. Implement static methods to calculate the square and cube of this base value. Display the results.

input



Base Value: 5

Output:



Square of 5: 25  
Cube of 5: 125

### Code:

```
public class Main {  
    // Static variable for the base value  
    static int BaseValue = 5;  
    // Static method to calculate the square of base value  
    static int calculateSquare() {  
        return BaseValue * BaseValue;  
    }  
    // Static method to calculate the cube of base value  
    static int calculateCube() {  
        return BaseValue * BaseValue * BaseValue;  
    }  
    // Display the results  
    static void output() {  
        System.out.println("23MCA1030");  
        System.out.println("Square of " + BaseValue + ": " +  
calculateSquare());  
        System.out.println("Cube of " + BaseValue + ": " +  
calculateCube());  
    }  
    public static void main(String[] args) {  
        output();  
    }  
}
```

## Output:

```
Main.java
1 public class Main {
2     // Static variable for the base value
3     static int BaseValue = 5;
4     // Static method to calculate the square of base value
5     static int calculateSquare() {
6         return BaseValue * BaseValue;
7     }
8     // Static method to calculate the cube of base value
9     static int calculateCube() {
10        return BaseValue * BaseValue * BaseValue;
11    }
12    // Display the results
13    static void output() {
14        System.out.println("23MCA1030");
15        System.out.println("Square of " + BaseValue + ": " + calculateSquare());
16        System.out.println("Cube of " + BaseValue + ": " + calculateCube());
17    }
18    public static void main(String[] args) {
19        output();
20    }
21 }
```

input

```
23MCA1030
Square of 5: 25
Cube of 5: 125

...Program finished with exit code 0
Press ENTER to exit console.
```