Q1.

a)

Code:

```
package Q_01;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Q_01_a {
    public static void main(String[] args) {
        DecimalFormat df = new DecimalFormat("#.##");
        Scanner scanner = new Scanner(System.in);
        double a,b,c;
        System.out.print("Enter value for A:");
        a = scanner.nextDouble();
        System.out.print("Enter value for B:");
        b = scanner.nextDouble();
        System.out.print("Enter value for C:");
        c = scanner.nextDouble();
        System.out.print("The square root of (B^2 + 4AC) is :
"+df.format(Math.sqrt(Math.pow(b,2)+4*a*c)));
    }
}
```

Output:

```
Enter value for A:5
Enter value for B:6
Enter value for C:7
The square root of (B^2 + 4AC) is : 13.27
Process finished with exit code 0
```

b)

Code:

```
package Q_01;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Q_01_b {
    public static void main(String[] args) {
        DecimalFormat df = new DecimalFormat("#.##");
        Scanner scanner = new Scanner(System.in);
        double x,y;
        System.out.print("Enter value for X: ");
        x = scanner.nextDouble();
        System.out.print("Enter value for Y: ");
        y = scanner.nextDouble();
        System.out.print("The square root of (X + 4Y^3) is:
"+df.format(Math.sqrt(x+4*(Math.pow(y,3)))));
    }
}
```

Output:

```
Enter value for X: 10
Enter value for Y: 20
The square root of (X + 4Y^3) is: 178.91
Process finished with exit code 0
```

c)

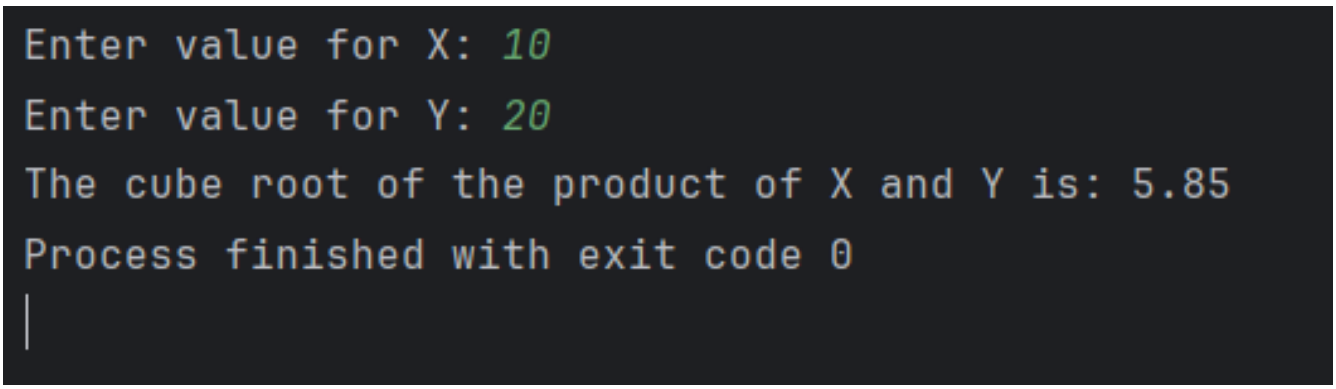
Code:

```
package Q_01;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Q_01_c {
    public static void main(String[] args) {
        DecimalFormat df = new DecimalFormat("#.##");
        Scanner scanner = new Scanner(System.in);
        double x,y;
        System.out.print("Enter value for X: ");
        x = scanner.nextDouble();
        System.out.print("Enter value for Y: ");
        y = scanner.nextDouble();
        System.out.print("The cube root of the product of X and Y
is: "+df.format(Math.cbrt(x*y)));
    }
}
```

Output:



d)

Code:

```
package Q_01;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Q_01_d {
    public static void main(String[] args) {
            DecimalFormat df = new DecimalFormat("#.##");
            Scanner scanner = new Scanner(System.in);
            final double PI = 3.1415926;
            double r;
            System.out.print("Enter the radius of the circle to
calculate the area: ");
            r = scanner.nextDouble();
            System.out.print("The area of the circle is:
"+df.format(PI*r*r));
    }
}
```

Output:

```
Enter the radius of the circle to calculate the area: 7
The area of the circle is: 153.94
Process finished with exit code 0
```

Q2.

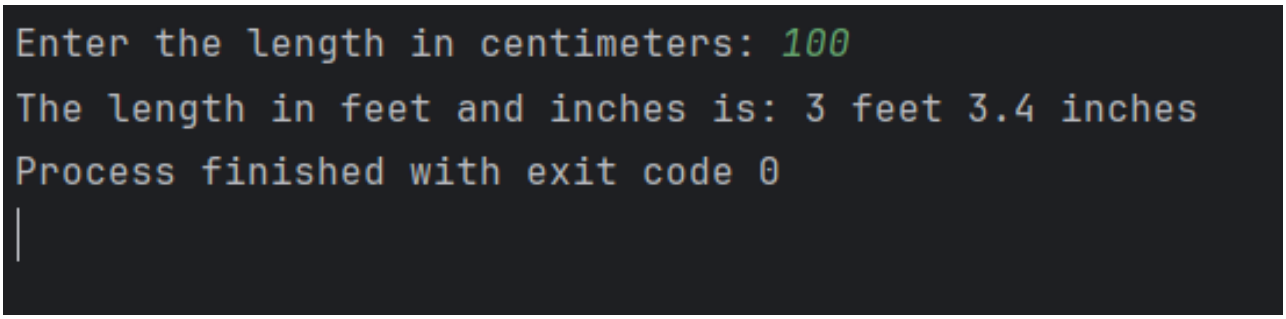
Code:

```
package Q_02;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Q_02 {
    public static void main(String[] args) {
        DecimalFormat df = new DecimalFormat("#.#");
        Scanner scanner = new Scanner(System.in);
        double cm, in ,ft;
        System.out.print("Enter the length in centimeters: ");
        cm = scanner.nextDouble();
        in = cm/2.54;
        ft = Math.floor(in/12);
        System.out.print("The length in feet and inches is: "+(int)ft+"
feet "+df.format(in%12)+" inches");
    }
}
```

Output:



Q3.

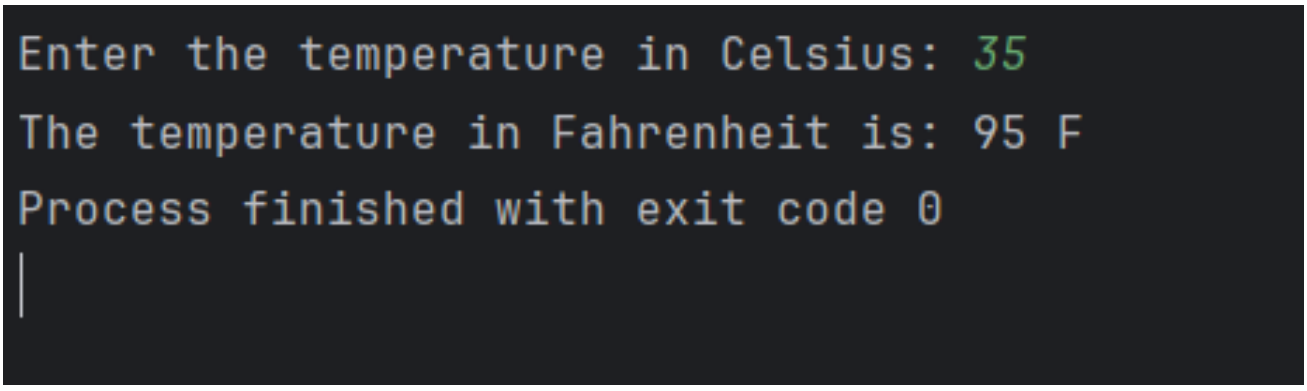
Code:

```
package Q_03;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Q_03 {
    public static void main(String[] args) {
        DecimalFormat df = new DecimalFormat("#.#");
        Scanner scanner = new Scanner(System.in);
        double celsius, fahrenheit;
        System.out.print("Enter the temperature in Celsius: ");
        celsius = scanner.nextDouble();
        fahrenheit = (celsius*1.8)+32;
        System.out.print("The temperature in Fahrenheit is:
"+df.format(fahrenheit)+" F");
    }
}
```

Output:



Q4.

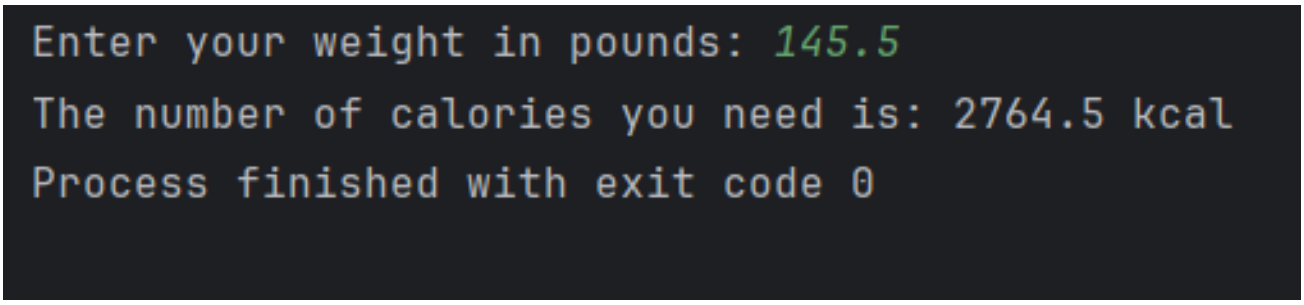
Code:

```
package Q_04;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Q_04 {
    public static void main(String[] args) {
        DecimalFormat df = new DecimalFormat("#.#");
        Scanner scanner = new Scanner(System.in);
        double calories, weight;
        System.out.print("Enter your weight in pounds: ");
        weight = scanner.nextDouble();
        calories = weight * 19;
        System.out.print("The number of calories you need is:
"+df.format(calories)+" kcal");
    }
}
```

Output:



Q5.

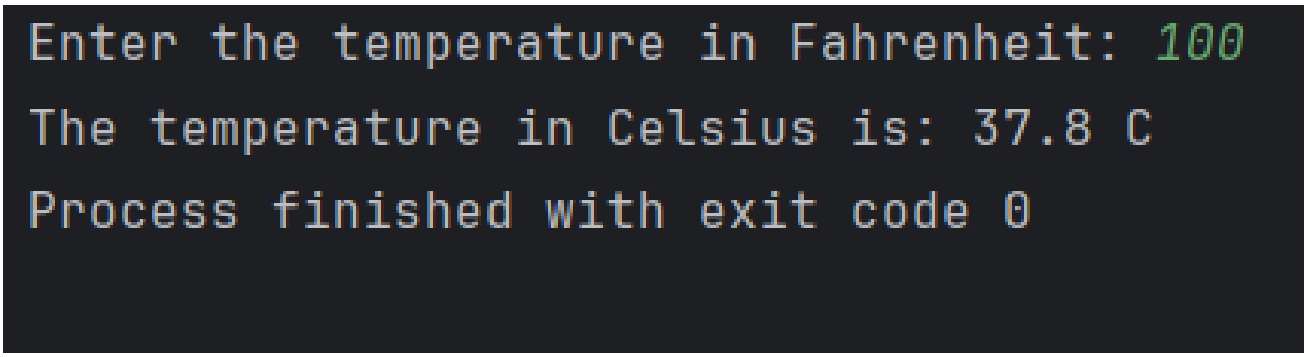
Code:

```
package Q_05;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Q_05 {
    public static void main(String[] args) {
        DecimalFormat df = new DecimalFormat("#.#");
        Scanner scanner = new Scanner(System.in);
        double celcius, fahrenheit;
        System.out.print("Enter the temperature in Fahrenheit: ");
        fahrenheit = scanner.nextDouble();
        celcius = (fahrenheit-32)*5/9;
        System.out.print("The temperature in Celsius is:
"+df.format(celcius)+" C");
    }
}
```

Output:



Q6.

Code:

```
package Q_06;

import java.time.Year;
import java.util.Scanner;

public class Q_06 {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        Year currentYear = Year.now();
        int year;
        System.out.print("Enter the year you were born: ");
        year = scanner.nextInt();
        System.out.print("You were born in "+year+" and will be(are)
"+(currentYear.getValue()-year)+" this year.");
    }
}
```

Output:

```
Enter the year you were born: 2003
You were born in 2003 and will be(are) 22 this year.
Process finished with exit code 0
```

Q7.

Code:

```
package Q_07;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Q_07 {
    public static void main(String[] args) {
        DecimalFormat df = new DecimalFormat("#.#");
        Scanner scanner = new Scanner(System.in);
        int w, h;
        double bmi;
        System.out.print("Enter your weight in kilograms: ");
        w = scanner.nextInt();
        System.out.print("Enter your height in centimeters: ");
        h = scanner.nextInt();
        bmi = w / Math.pow(h/100.0, 2);
        System.out.println("Your BMI is: "+df.format(bmi));
        if (bmi < 20){
            System.out.print("You are underweight.");
        } else if (bmi >= 20 && bmi < 25){
            System.out.print("You are normal weight.");
        } else{
            System.out.print("You are overweight.");
        }
    }
}
```

Output:

```
Enter your weight in kilograms: 66
Enter your height in centimeters: 174
Your BMI is: 21.8
You are normal weight.
Process finished with exit code 0
```

Q8.

Code:

```
package Q_08;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Q_08 {
    public static void main(String[] args) {
        DecimalFormat df = new DecimalFormat("#.#");
        Scanner scanner = new Scanner(System.in);
        final double PI = 3.14;
        double volume;
        int radius;
        System.out.print("Enter the radius of the sphere to calculate
the volume: ");
        radius = scanner.nextInt();
        volume = (4.0/3.0)*PI*Math.pow(radius, 3);
        System.out.print("The volume of the sphere is:
"+df.format(volume));
    }
}
```

Output:

```
Enter the radius of the sphere to calculate the volume: 7
The volume of the sphere is: 1436
Process finished with exit code 0
```

Q9.

Code:

```
package Q_09;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Q_09 {
    public static void main(String[] args) {
        DecimalFormat df = new DecimalFormat("#.##");
        Scanner scanner = new Scanner(System.in);
        int p,n;
        double r;
        System.out.print("Enter the investment amount in dollars: ");
        p = scanner.nextInt();
        System.out.print("Enter the annual interest rate in percentage:
");
        r = scanner.nextDouble();
        System.out.print("Enter the number of years: ");
        n = scanner.nextInt();
        System.out.print("The amount of money earned after "+n+" years
in dollars is: "+df.format(p*Math.pow(1+r/100, n)));
    }
}
```

Output:

```
Enter the investment amount in dollars: 1000
Enter the annual interest rate in percentage: 30
Enter the number of years: 3
The amount of money earned after 3 years in dollars is: 2197
Process finished with exit code 0
```

Q10.

Code:

```
package Q_10;

import java.text.DecimalFormat;
import java.util.Scanner;

public class Q_10 {
    public static void main(String[] args) {
        DecimalFormat df = new DecimalFormat("#.##");
        Scanner scanner = new Scanner(System.in);
        final int MONTHS_IN_YEAR = 12;
        int loanAmount, loanPeriod;
        double annualInterestRate, monthlyPayment, totalPayment,
monthlyInterestRate, numberOfPayments;
        System.out.print("Enter the loan amount: ");
        loanAmount = scanner.nextInt();
        System.out.print("Enter the annual interest rate: ");
        annualInterestRate = scanner.nextDouble();
        System.out.print("Enter the loan period in years: ");
        loanPeriod = scanner.nextInt();
        monthlyInterestRate = annualInterestRate/100.0/MONTHS_IN_YEAR;
        numberOfPayments = loanPeriod*MONTHS_IN_YEAR;
        monthlyPayment = loanAmount*monthlyInterestRate/(1-
Math.pow(1/(1+monthlyInterestRate), numberOfPayments));
        totalPayment = monthlyPayment*numberOfPayments;
        System.out.print("The monthly payment is:
"+df.format(monthlyPayment)+"\nThe total payment is:
"+df.format(totalPayment));
    }
}
```

Output:

```
Enter the loan amount: 1000
Enter the annual interest rate: 12.5
Enter the loan period in years: 3
The monthly payment is: 33.45
The total payment is: 1204.33
Process finished with exit code 0
```