**MatheMatical Methods**

**Question 1:**

Report

**Marks: +10-0**

**Description:**

Write a program to print the LCM of given three numbers.

**Constraints:**

Input          :- First Line of Input Consists of One Integer Value (n1).

                     Second Line of Input Consists of One Integer Value (n2).

                     Third Line of Input Consists of One Integer Value (n3).

Output        :- Print the LCM of given three values.

Constraints  :-

                     'n1' Value is Must be Greater than zero or else Print "**InvalId First Input**".

                     'n2' Value is Must be Greater than zero or else Print "**Invalid Second Input**".

                     'n3' Value is Must be Greater than zero or else Print "**InvaliD ThirD Input**".

                     In the Given Three Inputs if any of two or three values are less than or equal to zero then Print "**Sorry** **Invalid Inputs!**".

**Example:**

Input 1  :    2

                  5

                  6

Output 1:    30

Input 2  :   12

                 -2

                  4

Output 2:    Invalid Second Input

**Explanation:**

NA

**Your Code: java**

import java.util.Scanner;

class Main

{

public static void main(String[]args)

{

Scanner sc=new Scanner(System.in);

int a=sc.nextInt();

int b=sc.nextInt();

int c=sc.nextInt();

int z=0;

if(a>b && b>c)

z=a;

if(b>a && b>c)

z=b;

else

z=c;

if(a<=0 && b<=0 || a<=0 && c<=0|| b<=0 && c<=0)

{

System.out.print("Sorry Invalid Inputs!");

return;

}

else if(a<=0)

{

System.out.print("InvalId First Input");

return;

}

else if(b<=0)

{

System.out.print("Invalid Second Input");

return;

}

else if(c<=0)

{

System.out.print("InvaliD ThirD Input");

return;

}

for(int i=z;;i++)

{

if(i%a==0 && i%b==0 && i%c==0)

{

System.out.print(i);

break;

}

}

}

}

**Question 2:**

Report

**Marks: +10-0**

**Description:**

Write a Program to Print first 'n' Numbers by taking input of 1st term(a), common Ratio(r) and No of terms(n) in the geometric progression series ?

**Constraints:**

Input          :- First Line of Input Consists of One Integer Value (1st Term (a)).

                     Second Line of Input Consists of One Integer Value (Common Ratio (r)).

                     Third Line of Input Consists of One Integer Value (No of Terms (n)).

Output        :- Print the Geometric Progression Values.

Constraints  :-

                     'a' Value is an any Integer Value.

                     'r' Value is an any Integer Value.

                     'n' Value is Must be Greater than zero or else Print "**Invalid Input**".

**Example:**

Input 1  :    2

                  4

                  8

Output 1:    2, 8, 32, 128, 512, 2048, 8192, 32768.

Input 2  :   -11

                 -2

                 11

Output 2:   -11, 22, -44, 88, -176, 352, -704, 1408, -2816, 5632, -11264.

Input 3  :    5

                  9

                  -2

Output 3:    Invalid Input.

**Explanation:**

NA

**Your Code: java**

import java.util.Scanner;

class Main

{

public static void main(String[]args)

{

Scanner sc=new Scanner(System.in);

int a=sc.nextInt();

int r=sc.nextInt();

int n=sc.nextInt();

if(n<=0)

{

System.out.println("Invalid Input.");

}

else{

for(int i=0;i<n;i++)

{

int term=a\*(int)Math.pow(r,i);

System.out.print(term);

if(i!=n-1)

{

System.out.print(", ");

}else{

System.out.print(".");

}

}

}

}

}

**Question 3:**

Report

**Marks: +10-0**

**Description:**

Write a Program to Print sum of the first 'n' terms by taking input of 1st term(a), common difference(d) and No of terms(n) in the Arithmetic progression series?

**Constraints:**

Input          :- First Line of Input Consists of One Integer Value (1st Term (a)).

                     Second Line of Input Consists of One Integer Value (Common Difference (d)).

                     Third Line of Input Consists of One Integer Value (No of Terms (n)).

Output        :- Print Sum of the Arithmetic Progression Values.

Constraints  :-

                     'a' Value is an any Integer Value.

                     'd' Value is an any Integer Value.

                     'n' Value is Must be Greater than zero or else Print "**Invalid input**".

**Example:**

Input 1  :    2

                  4

                  8

Output 1:    2 + 6 + 10 + 14 + 18 + 22 + 26 + 30 = 128.

Input 2  :   -11

                 6

                 11

Output 2:   -11 + -5 + 1 + 7 + 13 + 19 + 25 + 31 + 37 + 43 + 49 = 209.

Input 3  :    5

                  9

                  -2

Output 3:    Invalid input.

**Explanation:**

NA

**Your Code: java**

import java.util.Scanner;

class Sum

{

public static void main(String[] args)

{

Scanner sc=new Scanner(System.in);

int a=sc.nextInt();

int d=sc.nextInt();

int n=sc.nextInt();

int s=0;

if(n<=0)

{

System.out.print("Invalid input.");

}

else

{

for(int i=0;i<n;i++)

{

int term=(a+i\*d);

s=s+term;

if(i==0)

{

System.out.print(term);

}

else{

System.out.print(" + "+term);

}

}

System.out.print(" = "+s+".");

}

}

}

**Question 4:**

Report

**Marks: +10-0**

**Description:**

Write a Program to Print sum of the first 'n' terms by taking input of 1st term(a), common ratio(r) and No of terms(n) in the Geometric progression series?

**Constraints:**

Input          :- First Line of Input Consists of One Integer Value (1st Term (a)).

                     Second Line of Input Consists of One Integer Value (Common Ratio (r)).

                     Third Line of Input Consists of One Integer Value (No of Terms (n)).

Output        :- Print Sum of the Geometric Progression Values.

Constraints  :-

                     'a' Value is an any Integer Value.

                     'r' Value is an any Integer Value.

                     'n' Value is Must be Greater than zero or else Print "**Invalid Input**".

**Example:**

Input 1  :    2

                  4

                  8

Output 1:    43690

Input 2  :   -11

                 -2

                 11

Output 2:   -7513

Input 3  :    5

                  9

                  -2

Output 3:    Invalid Input

**Explanation:**

NA

**Your Code: java**

import java.util.Scanner;

class Main

{

public static void main(String[]args)

{

Scanner sc=new Scanner(System.in);

int a=sc.nextInt();

int r=sc.nextInt();

int n=sc.nextInt();

if(n<=0)

{

System.out.println("Invalid Input");

}

else{

int s=0;

for(int i=0;i<n;i++)

{

s=s+(a\*(int)Math.pow(r,i));

} System.out.print(s);

}

}

}

**Question 5:**

Report

**Marks: +10-0**

**Description:**

Write a program to print the **LCM** of given two numbers

**Constraints:**

Input          :- First Line of Input Consists of One Integer Value (n1).

                     Second Line of Input Consists of One Integer Value (n2).

Output        :- Print the **LCM** of given two values.

Constraints  :-

                     Both the values 'n1' & 'n2' must be Greater than zero or else Print "**Invalid Inputs.**".

                     'n1' Value is Must be Greater than zero or else Print "**Invalid First Input**".

                     'n2' Value is Must be Greater than zero or else Print "**InValid Second Input**".

**Example:**

Input 1  :    2

                  4

Output 1:    4

Input 2  :   12

                 -2

Output 2:  Invalid Second Input

**Explanation:**

NA

**Your Code: java**

import java.util.Scanner;

class Main

{

public static void main(String[] args)

{

Scanner sc=new Scanner(System.in);

int a=sc.nextInt();

int b=sc.nextInt();

if(a<=0 && b<=0)

{

System.out.println("Invalid Inputs.");

}

else if(a<=0)

{

System.out.println("Invalid First Input");

}

else if(b<=0)

{

System.out.println("InValid Second Input");

}

else

{

for( int i=a; ;i=i+a)

{

if(i%a==0 && i%b==0)

{

System.out.println(i);

break;

}

}

}

}

}

**Question 6:**

Report

**Marks: +10-0**

**Description:**

Write a Program to Print first 'n' Numbers by taking input of 1st term(a), common difference(d) and no of terms(n) in the Arithmetic progression series?

**Constraints:**

Input          :- First Line of Input Consists of One Integer Value (1st Term (a)).

                     Second Line of Input Consists of One Integer Value (Common Difference (d)).

                     Third Line of Input Consists of One Integer Value (No of Terms (n)).

Output        :- Print the Arithmetic Progression Values.

Constraints  :-

                     'a' Value is an any Integer Value.

                     'd' Value is an any Integer Value.

                     'n' Value is Must be Greater than zero or else Print "**Invalid Input**".

**Example:**

Input 1  :    2

                  4

                  8

Output 1:    2, 6, 10, 14, 18, 22, 26, 30.

Input 2  :   -11

                 6

                 11

Output 2:   -11, -5, 1, 7, 13, 19, 25, 31, 37, 43, 49.

Input 3  :    5

                  9

                  -2

Output 3:    Invalid Input.

**Explanation:**

Arithmetic progression ->  a, a+d, a+2d, a+3d, ................., a+(n-1)d.

**Your Code: java**

import java.util.Scanner;

class Main

{

public static void main(String[]args)

{

Scanner sc=new Scanner(System.in);

int a=sc.nextInt();

int d=sc.nextInt();

int n=sc.nextInt();

int s=0;

int e=0;

if(n<=0)

{

System.out.print("Invalid Input.");

}

else{

for(int i=0;i<n;i++)

{

int term=a+i\*d;

if(i==0)

{

System.out.print(term);

}

else

{

System.out.print(","+" "+term);

}

}

System.out.print(".");

}

}

}

**Question 7:**

Report

**Marks: +10-0**

**Description:**

Find the nth term value in the Harmonic progression series by taking input of 1st term(a), common difference(d) and nth term ?

**Constraints:**

Input          :- First Line of Input Consists of One Integer Value (1st Term (a)).

                     Second Line of Input Consists of One Integer Value (Common Difference (d)).

                     Third Line of Input Consists of One Integer Value (No of Terms (n)).

Output        :- Print the nth term value of Harmonic Progression Values.

Constraints  :-

                     'a' Value is an any Integer Value.

                     'd' Value is an any Integer Value.

                     'n' Value is Must be Greater than zero or else Print "**InvaliD InPut**".

**Example:**

Input 1 :   1

                1

                6

Output 1 : 0.17

Input 2 :   6

                -1

                6

Output 2 : 1.00

Input 3 :   7

                2

                -5

Output 3 : InvaliD InPut

**Explanation:**

NA

**Your Code: java**

import java.util.Scanner;

class Main

{

public static void main(String[]args)

{

Scanner sc=new Scanner(System.in);

int a=sc.nextInt();

int d=sc.nextInt();

int n=sc.nextInt();

if(n<=0)

{

System.out.println("InvaliD InPut");

}else{

System.out.printf("%.2f",(float)1/(a+(n-1)\*d));

}

}

}

**Question 8:**

Report

**Marks: +10-0**

**Description:**

Write a Program to Print first 'n' Numbers by taking input of 1st term(a), common difference(d) and no of terms(n) in the Harmonic progression series?

**Constraints:**

Input          :- First Line of Input Consists of One Integer Value (1st Term (a)).

                     Second Line of Input Consists of One Integer Value (Common Difference (d)).

                     Third Line of Input Consists of One Integer Value (No of Terms (n)).

Output        :- Print the Harmonic Progression Values.

Constraints  :-

                     'a' Value is an any Integer Value.

                     'd' Value is an any Integer Value.

                     'n' Value is Must be Greater than zero or else Print "**Invalid Input**".

**Example:**

Input 1 :   1

                1

                6

Output 1 : 1.00, 0.50, 0.33, 0.25, 0.20, 0.17

Input 2 :   6

                -1

                6

Output 2 : 0.16, 0.20, 0.25, 0.33, 0.50, 1.00

Input 3 :   7

                2

                -5

Output 3 : Invalid Input

**Explanation:**

Harmonic series is inverse of a arithmetic progression.

In general, the terms in a harmonic progression can be denoted as 1/a, 1/(a + d), 1/(a + 2d), 1/(a + 3d) …. 1/(a + nd).  
As Nth term of AP is given as ( a + (n – 1)d).

Hence, Nth term of harmonic progression is reciprocal of Nth term of AP, which is 1/(a + (n – 1)d), where “a” is the 1st term of AP and “d” is a common difference.

**Your Code: java**

import java.util.Scanner;

class Main

{

public static void main(String[]args)

{

Scanner sc=new Scanner(System.in);

int a=sc.nextInt();

int d=sc.nextInt();

int n=sc.nextInt();

if(n<=0)

{

System.out.println("Invalid Input");

}

else

{

for(int i=0;i<n;i++)

{

double term=1.0/(a+i\*d);

if(i==0)

{

System.out.printf("%.2f",term);

}

else

{

System.out.printf(", %.2f",term);

}

}

}

}

}

**Question 9:**

Report

**Marks: +10-0**

**Description:**

Find and Print the nth term value in the Arithmetic progression series by taking input of 1st term(a), common difference(d) and nth term ?

**Constraints:**

Input          :- First Line of Input Consists of One Integer Value (1st Term (a)).

                     Second Line of Input Consists of One Integer Value (Common Difference (d)).

                     Third Line of Input Consists of One Integer Value (No of Terms (n)).

Output        :- Print the nth term value of Arithmetic Progression Values.

Constraints  :-

                     'a' Value is an any Integer Value.

                     'd' Value is an any Integer Value.

                     'n' Value is Must be Greater than zero or else Print "**InValid Input**".

**Example:**

Input 1  :    2

                  4

                  8

Output 1:    Last term value is : 30.

Input 2  :   -11

                 6

                 11

Output 2:  Last term value is : 49.

Input 3  :    5

                  9

                  -2

Output 3:    InValid Input.

**Explanation:**

NA

**Your Code: java**

import java.util.Scanner;

class Main

{

public static void main(String[] args)

{

Scanner sc=new Scanner(System.in);

int a=sc.nextInt();

int d=sc.nextInt();

int n=sc.nextInt();

if(n<=0)

{

System.out.print("InValid Input");

}else

{

int term=(a+(n-1)\*d);

System.out.print("Last term value is :"+" "+term);

}

System.out.print(".");

}

}

**Question 10:**

Report

**Marks: +10-0**

**Description:**

Write a program to print the **GCD** of given two numbers?

**Constraints:**

Input          :- First Line of Input Consists of One Integer Value (n1).

                     Second Line of Input Consists of One Integer Value (n2).

Output        :- Print the GCD of given two values.

Constraints  :-

                     Both the values 'n1' & 'n2' must be Greater than zero or else Print "**Invalid Inputs**".

                     'n1' Value is Must be Greater than zero or else Print "**Invalid First Input**".

                     'n2' Value is Must be Greater than zero or else Print "**Invalid Second Input.**".

**Example:**

Input 1  :    12

                  3

Output 1:    3

Input 2  :   12

                 16

Output 2:    4

**Explanation:**

NA

**Your Code: java**

import java.util.Scanner;

class Main

{

public static void main(String[]args)

{

Scanner sc=new Scanner(System.in);

int a=sc.nextInt();

int b=sc.nextInt();

int z=0;

if(a<=0 && b<=0)

{

System.out.print("Invalid Inputs");

}else if(a<=0)

{

System.out.print("Invalid First Input");

}

else if(b<=0)

{

System.out.print("Invalid Second Input.");

}

else{

if(a>b)

{

a=a+b-(b=a);

}

for(int i=1;i<=a;i++)

{

if(a%i==0 & b%i==0)

{

z=i;

}

}

System.out.print(z);

}

}

}

**Question 11:**

Report

**Marks: +10-0**

**Description:**

Write a Program to Print sum of the first 'n' terms by taking input of 1st term(a), common difference(d) and No of terms(n) in the Harmonic progression series?

**Constraints:**

Input          :- First Line of Input Consists of One Integer Value (1st Term (a)).

                     Second Line of Input Consists of One Integer Value (Common Difference (d)).

                     Third Line of Input Consists of One Integer Value (No of Terms (n)).

Output        :- Print the sum of the Harmonic Progression Values.

Constraints  :-

                     'a' Value is an any Integer Value.

                     'd' Value is an any Integer Value.

                     'n' Value is Must be Greater than zero or else Print "**Invalid Input.**".

**Example:**

Input 1 :   1

                1

                6

Output 1 : 2.45

Input 2 :   6

                -1

                5

Output 2 : 1.45

Input 3 :   7

                2

                -5

Output 3 : Invalid Input

**Explanation:**

First add the values and print the sum value in **".2f"** format

**Your Code: java**

import java.util.Scanner;

class Main

{

public static void main(String[]args)

{

Scanner sc=new Scanner(System.in);

int a=sc.nextInt();

int d=sc.nextInt();

int n=sc.nextInt();

double s=0.0;

if(n<=0)

{

System.out.print("Invalid Input.");

}

else

{

for(int i=0;i<n;i++)

{

double term=1.0/(a+i\*d);

s=s+term;

}

System.out.printf("%.2f",s);

}

}

}

**Question 12:**

Report

**Marks: +10-0**

**Description:**

Find the nth term value in the geometric progression series by taking input of 1st term(a), common Ratio(r) and nth term ?

**Constraints:**

Input          :- First Line of Input Consists of One Integer Value (1st Term (a)).

                     Second Line of Input Consists of One Integer Value (Common Ratio (r)).

                     Third Line of Input Consists of One Integer Value (No of Terms (n)).

Output        :- Print the nth term value of Geomentric Progression Values.

Constraints  :-

                     'a' Value is an any Integer Value.

                     'r' Value is an any Integer Value.

                     'n' Value is Must be Greater than zero or else Print "**InValid Input**".

**Example:**

Input 1  :    2

                  4

                  8

Output 1:    Last term value is : 32768.

Input 2  :   -11

                 6

                 7

Output 2:  Last term value is : -513216.

Input 3  :    5

                  9

                  -2

Output 3:    InValid Input.

**Explanation:**

NA

**Your Code: java**

import java.util.Scanner;

class Main

{

public static void main(String[]args)

{

Scanner sc=new Scanner(System.in);

int a=sc.nextInt();

int r=sc.nextInt();

int n=sc.nextInt();

int term=0;

if(n<=0)

{

System.out.println("InValid Input.");

}

else

{ System.out.print("Last term value is :");

for(int i=0;i<=n-1;i++)

{

term=(a\*(int)Math.pow(r,(n-1)));

} System.out.print(" "+term+".");

}

}

}