1 Use the Fermat's method to find the factors of 127

```
class Main
{

    static void FermatFactors(int n)
    {

        if(n <= 0)
        {
            System.out.print("["+ n + "]");
            return;
        }

        if((n & 1) == 0)
        {
            System.out.print("[" + n / 2.0 + "," + 2 + "]");
            return;
        }

        int a = (int)Math.ceil(Math.sqrt(n)) ;
        int count=0;
        if(a * a == n)
        {
            System.out.print("[" + a + "," + a + "]");
            return;
```

```
        }
        int b;
        while(true)
        {
           count += 1;
                int b1 = a * a - n ;
                b = (int)(Math.sqrt(b1)) ;

                if(b * b == b1)
                        break;
                else
                        a += 1;
        }
        System.out.println("NO OF ITERATIONS "+count);
        System.out.print("Factors are : "+ (a - b) +" and " + (a + b) );
        return;
    }

    public static void main (String[] args)
    {
        FermatFactors(127);
    }
}
```

OUTPUT

```
NO OF ITERATIONS 53
Factors are : 1 and 127
```