Question 1:


```
/*
 *
 * Author :  Ajay Panchal
 * B.TECH  CSE STUDENT
 * LOVELY PROFESSIONAL UNIVERSITY
 * BATCH : 2018-2022
 * GITHUB LINK : https://github.com/ajay-panchal-099
 * PROBLEM STATEMENT :
 */

#include<bits/stdc++.h>
using namespace std;

typedef pair<int,int>                   ii;
typedef vector<int>                     vi;
typedef vector<bool>                    vb;
typedef vector<vi>                      vvi;
typedef vector<ii>                      vp;
typedef unordered_map<int,int>          umap_ii;
typedef unordered_map<char,int>         umap_ci;
typedef unordered_map<string,int>       umap_si;
typedef unsigned long long int          ull;
typedef pair<int,int>                   ii;
```

```cpp
#define int                          long long
#define fi                           first
#define se                           second
#define INF                          0x3f3f3f3f
#define PI                           3.1415926535897932384626
#define MOD                          1000000007
#define pb                           push_back
#define uset                         unordered_set
#define pq_max                       priority_queue<int>
#define pq_min
priority_queue<int,vector<int>,greater<int>>
#define mp                           make_pair  //Better use {}
#define size5                        100010

//LOOPS
#define For(i,b)                     for(int i=0;i<b;i++)
#define FoR(i,a,b)                   for(int i=a;i>=b;i--)
#define FOR(i,a,b)                   for(int i=a;i<b;i++)
#define foreach(v, c)                for(auto v:c)
#define nested(i,a,b,j,c,d)          for(int i=a;i<b;i++){ for(int
j=c;j<d;j++)
//#define foreach(v, c)              for( auto v = (c).begin();  v !=
(c).end(); ++v)
#define min3(a,b,c)                  min(a,min(b,c))
#define min4(a,b,c,d)                min(min(a,b),min(c,d))
#define maxall(v)                    *max_element(all(v))
#define minall(v)                    *min_element(all(v))
#define all(a)                       a.begin(), a.end()
#define MS0(X)                       memset((X), 0, sizeof((X)))
#define MS1(X)                       memset((X), -1, sizeof((X)))
#define whileNE(x)                   while(!x.empty())
#define present(c,x)                 ((c).find(x) != (c).end())
#define TCase                        int ___T, case_n = 1; cin>>___T;
while (___T-- > 0)

// directions
const int fx[4][2] =                 {{0,1}, {0,-1}, {1,0}, {-1,0}};
const int fxx[8][2] =                {{0,1}, {0,-1}, {1,0}, {-1,0},
{1,1}, {1,-1}, {-1,1}, {-1,-1}};

// Some common useful functions
#define maX                          INF
#define miN                          INT_MIN
#define checkbit(n,b)                ((n >> b) & 1)
#define INDEX(arr,ind)               (lower_bound(all(arr),ind)-
arr.begin())
#define REMAX(a,b)                   (a)=max((a),(b)) // set a to the
maximum of a and b
#define REMIN(a,b)                   (a)=min((a),(b));
#define sz(a)                        (int)(a.size())
#define len(a)                       (int)(a.length())
#define UB(x,a)                      (upper_bound(all(a),x)-a.begin())
#define LB(a,x)                      (lower_bound(all(a),x)-a.begin())
#define NP(a)                        next_permutation(all(a))

#define print(x)                     cout<<x;
#define print2(x,y)                  cout<<x<<" "<<y;
#define println(x)                   cout<<x<<'\n';
#define accept_arr(N,arr)            int N; cin>>N; int arr[N]; For(i,N)
cin>>arr[i];
#define print1d(arr,length)          for(int i=0;i<length;i++)
```

```cpp
cout<<arr[i]<<" "; cout<<'\n';
#define print1D(arr,start,length)        for(int i=start;i<length;i++)
cout<<arr[i]<<" "; cout<<'\n';
#define print2d(arr,n)                    For(i,n){For(j,n){cout<<arr[i][j]<<"
";}cout<<endl;}
#define print2D(arr,m,n)                  For(i,m){For(j,n){cout<<arr[i][j]<<"
";}cout<<endl;}
#define gets(n)                           getline(cin,n); cin.ignore();
#define debug(x)                          cerr << #x << ": " << x << endl;
#define debug2(x, y)                      cerr << #x << ": " << x << " | " <<
#y << ": " << y << endl;

#define fast_io
ios_base::sync_with_stdio(false);cin.tie(NULL);
#define sublimeProblem                    freopen("input.txt", "r", stdin);
freopen("output.txt", "w", stdout);
const int Max = 1e5;
vector<int> sieve(int n){
    bool prime[n];
    memset(prime, true, sizeof(prime));
    prime[0]=prime[1]=false;
    for(int i=2; i*i<=n; i++){// marking all non primes
        if(prime[i]) { for(int j= i*2; j<n; j+=i) prime[j]=false;  }
    }
    vector<int> p;

    for(int i=2;i<n;i++){ if(prime[i]) p.push_back(i);}
    return p;
}

int32_t main()
{
    fast_io;
    // IO Problem;
    vector<int> v=sieve(Max);
    int t;
    cin>>t;
    while(t--){
        int n;
        cin>>n;
        cout<<(v[n-1]*v[n-1])+1<<"\n";
    }

    return 0;
}
```

Question 2:


```
/*
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typedef unsigned long long int           ull;
typedef pair<int,int>                    ii;

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#define FOR(i,a,b)                       for(int i=a;i<b;i++)
#define foreach(v, c)                    for(auto v:c)
#define nested(i,a,b,j,c,d)              for(int i=a;i<b;i++){ for(int
j=c;j<d;j++)
//#define foreach(v, c)                  for( auto v = (c).begin();  v !=
(c).end(); ++v)
#define min3(a,b,c)                      min(a,min(b,c))
#define min4(a,b,c,d)                    min(min(a,b),min(c,d))
#define maxall(v)                        *max_element(all(v))
#define minall(v)                        *min_element(all(v))
#define all(a)                           a.begin(), a.end()
#define MS0(X)                           memset((X), 0, sizeof((X)))
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#define whileNE(x)                       while(!x.empty())
#define present(c,x)                     ((c).find(x) != (c).end())
#define TCase                            int ___T, case_n = 1; cin>>___T;
while (___T-- > 0)

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const int fx[4][2] =                     {{0,1}, {0,-1}, {1,0}, {-1,0}};
const int fxx[8][2] =                    {{0,1}, {0,-1}, {1,0}, {-1,0},
{1,1}, {1,-1}, {-1,1}, {-1,-1}};

// Some common useful functions
#define maX                              INF
#define miN                              INT_MIN
#define checkbit(n,b)                    ((n >> b) & 1)
#define INDEX(arr,ind)                   (lower_bound(all(arr),ind)-
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#define REMAX(a,b)                       (a)=max((a),(b)) // set a to the
maximum of a and b
#define REMIN(a,b)                       (a)=min((a),(b));
#define sz(a)                            (int)(a.size())
#define len(a)                           (int)(a.length())
#define UB(x,a)                          (upper_bound(all(a),x)-a.begin())
#define LB(a,x)                          (lower_bound(all(a),x)-a.begin())
#define NP(a)                            next_permutation(all(a))

#define print(x)                         cout<<x;
#define print2(x,y)                      cout<<x<<" "<<y;
```

```cpp
#define println(x)                          cout<<x<<'\n';
#define accept_arr(N,arr)                   int N; cin>>N; int arr[N]; For(i,N)
cin>>arr[i];
#define print1d(arr,length)                 for(int i=0;i<length;i++)
cout<<arr[i]<<" "; cout<<'\n';
#define print1D(arr,start,length)           for(int i=start;i<length;i++)
cout<<arr[i]<<" "; cout<<'\n';
#define print2d(arr,n)                       For(i,n){For(j,n){cout<<arr[i][j]<<"
";}cout<<endl;}
#define print2D(arr,m,n)                     For(i,m){For(j,n){cout<<arr[i][j]<<"
";}cout<<endl;}
#define gets(n)                             getline(cin,n); cin.ignore();
#define debug(x)                            cerr << #x << ": " << x << endl;
#define debug2(x, y)                        cerr << #x << ": " << x << " | " <<
#y << ": " << y << endl;

#define fast_io
ios_base::sync_with_stdio(false);cin.tie(NULL);
#define sublimeProblem                      freopen("input.txt", "r", stdin);
freopen("output.txt", "w", stdout);
const int N = 10000000;
int lp[N+1];
vector<int> pr;

void solve(){
    for (int i=2; i<=N; ++i) {
        if (lp[i] == 0) {
            lp[i] = i;
            pr.push_back (i);
        }
        for (int j=0; j<(int)pr.size() && pr[j]<=lp[i] && i*pr[j]<=N; ++j)
            lp[i * pr[j]] = pr[j];
    }
}

int32_t main()
{
    fast_io;
    // IO Problem;

    solve();

    int t;
    cin>>t;

    while(t--){
        int a, b;
        cin>>a>>b;

        int sum = a + b;


        int i = 0;
        while(pr[i] <= sum){
            i++;
        }

        cout<<pr[i]-sum<<endl;
    }
```

```
    return 0;
}
```