1. const can be defined in the run phase, constxpr must be defined in the compilation phase, #define must be defined in precompile, constxpr can be defined in the precompile phase, etc., constxpr can be defined in the function stage, etc., #difine is simply replaced.

2. Pass by value:it cost memory,and modify the parameter doesn't inflect the the actual parameter

Pass by address:it will cost memory,and modify the parameter will change the actual parameter

Pass by reference:it will not cost memory,and modify the parameter will change the actual parameter

3.

```
#include<iostream>
#include<string>
using namespace std;

int f1(int x = 0, int y)
{
    return x * y;
}

int* f2(int a,int b = 1)
{
    int t = a * b;
    return &t;
}

int main()
{
    const int r=10;
    const int& a = r;
    int* p;
    const char* pc1 = "john";
    string s1 = "john";
    string* const pc2 = &s1;
    char const* pc3 = "john";
    const char const* pc4 = "dukang";
    pc2[2] = 't';
    cout << f1(0,3);
    cout << f2(2, 3);
    return 0;
}
```

4.(1)

1000

2000

500
1000

(2)
200
20
100
300

(3)
3 4 1 8 9 2 7
s=34

5.

```
#include<iostream>
using namespace std;
#include<string>

void printtitle()
{
    string s1;
    s1.assign(26, '*');
    cout << s1 << endl;
    cout << "Family Convenience Store" << endl;
    cout << s1 << endl;
}

void mune()
{
    pair<string, string> p1("[Bread]", "1.00");
    pair<string, string> p2("[Cocacola]", "2.50");
    pair<string, string> p3("[Beer]", "10.0");
    pair<string, string> p4("[Chocalate]", "2.50");

    cout << "(1)    " << p1.first.substr(1,5)<<"    " << p1.second << endl;
    cout << "(2)    " << p2.first.substr(1,8)<<"    " << p2.second << endl;
    cout << "(3)    " << p3.first.substr(1,4)<< "       " << p3.second << endl;
    cout << "(4)    " << p4.first.substr(1,9)<< "   " << p4.second << endl;
    cout << "(0)    "  << "EXIT"  << endl;

    string s2;
    s2.assign(26, '-');
    cout << s2 << endl;
```

```
    cout << "PLEASE SELECT A NUMBER:" << endl;
    int n;
    cin >> n;

    switch (n)
    {
        case 0:
            break;
        case 1:
            cout << "THANK YOU!" << endl << "YOU HAVE SELECTED:     "  << p1.first << "
" << p1.second << endl;
            break;
        case 2:
            cout << "THANK YOU!" << endl << "YOU HAVE SELECTED:     " << p2.first << " "
<< p2.second << endl;
            break;
        case 3:
            cout << "THANK YOU!" << endl << "YOU HAVE SELECTED:     "  << p3.first << "
" << p3.second << endl;
            break;
        case 4:
            cout << "THANK YOU!" << endl << "YOU HAVE SELECTED:     " << p4.first << " "
<< p4.second << endl;
            break;
    }

    cout << s2.substr(1, 17)<<endl;

    cout << "GOOD BYE!" << endl << "[PRESS ENTER TO EXIT...]" << endl;

}

int main()
{
    printtitle();

    mune();

    return 0;
}
```