Lab 16 Solutions

1) Provide the output of the given line in the blanks below.

```cpp
#include <iostream>

using namespace std;

int fun1(int n) {
    return n*n;
}

int fun2(int x, int y) {
    if (x > y) return x;
    return y;
}

int fun3(int a, int b, int c) {
    return (a*b) + c;
}

int main() {
    int x = 4, y = 7;

    cout << fun1(x) << endl; //(1) 16
    cout << fun1(x+y) << endl; //(2) 121
    cout << fun1(y+6) << endl; //(3) 169

    cout << fun2(x,y) << endl; //(4) 7
    cout << fun2(5,-4) << endl; //(5) 5
    cout << fun2(y, 8) << endl; //(6) 8

    cout << fun3(1,5,2) << endl; //(7) 7
    cout << fun3(x,y,x) << endl; //(8) 32
    cout << fun3(y,4,-4) << endl; //(9) 24

    return 0;
}
```

2) Write a function called `cube` which takes an integer parameter by reference, and cubes the parameter:

```cpp
void cube(int& n) {
    n = n * n * n;
}
```
3) (from p.114 in Schaum's Programming with C++) Write and test computeCircle() function that returns the area a and the circumference c of a circle with given radius r:

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

void computeCircle(double& area, double& circumference, double r);

int main() {

double a, c, r;
cout << "Enter the radius: ";
cin >> r;
computeCircle(a, c, r);
cout << "Area of a circle of radius " << r << " is " << a
   << "\nand its circumference is " << c << endl;

    return 0;
}

void computeCircle(double& area, double& circumference, double r) {
    const double PI=3.141592653589793;
    area = PI * r * r;
    circumference = 2 * PI * r;
}
```

Answer to question 4:

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

void fun1(int n) {
    for (int r=1; r <= n; r++) {
        for (int c=1; c <= n; c++)
            if (r <= c) cout << "X";
            else cout << "O";
        cout << endl;
    }
}

int main() {
    int n = 0;
cout << "Please enter a positive integer n < 10: ";
cin >> n;

    while (n < 1 || n > 9) {
        cout << "Try again. Please enter a positive integer n < 10: ";
cin >> n;
    }

    fun1(n);

    return 0;
}
```