# Object-oriented Programming in C++

## Practical Worksheet 2

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### Questions

*(Questions marked * need to be submitted to the NOW dropbox.)*

*(Make a Visual Studio solution file by creating a new Visual Studio project for the first question. Add .cpp files, etc. Add further Visual Studio projects to this solution for each question.)*

**LECTURE 2:**

14. Write and run a program that reads a positive integer `n` and then prints a triangle of asterisks in that number of rows. Use a `for` loop. For example, if `n` is 4, then the output would be:

```
*
**
***
****
```

14*. Can you modify your code from question 14 to display a diamond? E.g. for size 3 the output would be:

```
  *
 ***
*****
 ***
  *
```

16*.Write and test a **function** `void triangle(int n, char c)` to output a similar triangle to that in question 14, but passing a character to print out as a parameter instead of using an '*'.

17. Write and test a **function** that returns the area of a circle with given radius. The function should have the following prototype:

```
float area(float r)
```

19. Write and test a **function** that returns the area `a` and circumference `c` of a circle with given radius `r`. The function should have the prototype:

```
void computeCircle(float& a, float& c, float r)
```

23*.Write and test the following **function** that attempts to remove all occurrences of an item from an array:

```
int remove(int a[], int& n, int x)
```

The function searches the first `n` elements of the array `a` for the item `x`. If an `x` is found, it is removed, all the elements above that position are shifted down, the

array size `n` is decremented. This is repeated until *all* occurrences of `x` in the array are removed and then the total number of elements removed is returned. If `x` is not found, the array is left unchanged and 0 is returned.

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