Q1.

a. Imports iostream and string files located in the standard system directories so std and string can be used.
b. Main would return the string and the sum
c. The program outputs “d + l = 17.5”

Q2.

```
#include <iostream>
#include <string>

int main(void){
    std::string name;
    std::cout << "Please enter your name: " << std::endl;
    getline(std::cin, name);
    int age;
    std::cout << "Please enter your age: " << std::endl;
    std::cin >> age;
    std::string DOB;
    std::cout << "Please enter your date of birth in DD/MM/YYYY format: " <<
std::endl;
    std::cin >> DOB;

    std::cout << "Your details are: \n Name: " << name << "\n Age: " << age <<
"\n DOB: " << DOB << std::endl;

    return EXIT_SUCCESS;
}
```

Q3.

```
#include <iostream>
#include <string>

int main(void){

    std::string output = "";

    //A
    for(int i = 0; i < 7; i++){
        for(int j = 0; j < i; j++){
            output += "* ";
        }
        output += "\n";
```

```
    }

    //B
    for(int y = 0; y < 7; y++)
    {
                for(int s = 0; s<7-y; s++)
                        output += "  ";

            for(int x = 1; x <= y; x++)
        {
            output += "* ";
        }
        output += "\n";
    }

    //C
    for(int i = 1, k = 0; i <= 7; ++i, k = 0)
    {
        for(int j = 1; j <= 7-i; j++)
        {
            output += "  ";
        }

        while(k != 2*i-1)
        {
            output += "* ";
            k++;
        }
        output += "\n";
    }

    //D
    int space = 6;
    for (int k=1; k<=7; k++) {
        for(int c=1; c<=space; c++) {
            output += " ";
        }
        space--;
        for(int c=1; c<=(2*k-1); c++) {
            output += "*";
```

```
        }
        output += "\n";
    }

    space=1;
    for(int k=1; k<=6; k++) {
        for(int c=1; c<=space; c++) {
            output += " ";
        }
        space++;
        for(int c=1 ; c<=(2*(7-k)-1); c++) {
            output += "*" ;
        }
        output += "\n";
    }

    std::cout << output << std::endl;
    return EXIT_SUCCESS;
}
```

Q4.

```
#include <iostream>
#include <string>
#include <math.h>


int main(void){
    double areaCalc(double radius);
    double radius;
    std::cout << "Please enter a radius for a circle: " << std::endl;
    std::cin >> radius;

    std::cout << "The area of the circle of radius " << radius << " is: " <<
areaCalc(radius) << std::endl;

    return EXIT_SUCCESS;
}

double areaCalc(double radius){
    return (M_PI * pow(radius,2.0));
```

```
}
```

Q5.

```
#include <iostream>
#include <string>

int main(void){

    std::cout << "Please enter a card number: " << std::endl;
    int selection;
    std::cin >> selection;
    std::string color = "";
    int number;
    bool valid = true;

    number = (selection % 7) + 1;

    if(selection >= 0 && selection <= 6){
        color += "Red ";
    }else if(selection >= 7 && selection <= 13){
        color += "Orange ";
    }else if(selection >= 14 && selection <= 20){
        color += "Yellow ";
    }else if(selection >= 21 && selection <= 27){
        color += "Green ";
    }else if(selection >= 28 && selection <= 34){
        color += "Blue ";
    }else if(selection >= 35 && selection <= 41){
        color += "Indigo ";
    }else if(selection >= 42 && selection <= 48){
        color += "Violet ";
    }else{ valid = false;}

    if(valid){
        std::cout << "The card you have selected is: " << color << number <<
std::endl;
    }else{
        std::cout << "ERROR: Invalid card number entered" << std::endl;
    }
    return EXIT_SUCCESS;
}
```

Q6.

```cpp
#include <iostream>

int main(void){

    std::cout << "Please enter 10 integers: " << std::endl;
    int numbers[10];
    for(int i = 0; i < 10; i++){
        std::cin >> numbers[i];
    }

    int sum = 0;
    for(int i = 0; i < 10; i++){
        sum += numbers[i];
    }

    std::cout << "The sum of all numbers entered is: " << sum << std::endl;

    return EXIT_SUCCESS;
}
```

Q7.
???

Q8.
The program will output all elements of Array A, as well as all elements of Array B after with some empty spaces as the length of Array B was doubled.

The program did output all elements of Array A, as well as all elements of Array B, but the extra spots of Array B printed out 0, then 0 - 8.