C++ Challenge Sheet # 3

Needed Knowledge

1) Using the ctime and cstdlib
2) You should know to use if, else if and else statements
3) You should know how to nest these logic statements
4) You should know how to use a switch statement
5) Logic operators such as AND, NOT and OR.

Questions

1) *Point in a Circle*

   Write a program that prompts the user to enter a point (x, y) and checks whether the point is within the circle centered at (0, 0) with radius 10

   Test for circle: (4, 5) in the circle and (9, 9) outside the circle

2) *Pick a Card*

   Write a program that simulates picking a card from a deck of 52 cards. Your program should display the rank (Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen, King) and suit (Clubs, Diamonds, Hearts, Spades) of the card.

   Output: The card you picked is <rank> of <suit>

3) *Two Circles*

   Write a program that prompts the user to enter the center coordinates and radii of two circles and determines whether the second circle is inside the first or overlaps the first.
   Hint: *circle2* is inside *circle1* if the distance between the two centers <= |r1 – r2| and *circle2* overlaps *circle1* if the distance between the two centers <= r1 + r2. Test your program to cover all cases.

   Test Values:

Circle 1 center: (0.5, 5.1)	**Circle 1 center: (3.4, 5.7)**	**Circle 1 center: (3.4, 5.5)**
Circle 1 radius: 13	**Circle 1 radius: 5.5**	**Circle 1 radius: 1**
Circle 2 center: (1, 1.7)	**Circle 2 center: (6.7, 3.5)**	**Circle 2 center: (5.5, 7.2)**
Circle 2 radius: 4.5	**Circle 2 radius: 3**	**Circle 2 radius: 1**
Circle 2 is inside Circle 1	***Circle 2 overlaps Circle 1***	***Circle 2 does not overlap Circle 1***