Programs using Dice:

1. **Box Cars:** roll two 6 sided Dice 1000 times, counting the number of box cars (two sixes) that occur. This program should use Die class. You should also include a block comment comparing the experimental probability with theoretical probability to getting box cars. How many time do you need to roll these dice in order for experimental probability to converge to theoretical probability?

2. **Dice Probability:** Write program to output following probabilities.

Create 5, 6 sided Dices and output the total number of times event occurs and the probability of sum of all the rolls for the following results:					
NUM ROLLS		100	1000	10000	100000
Sum of 15	Count				
	Probability				
Sum between 5-10	Count				
	Probability				
Sum of 20	Count				
	Probability				
Sum between 15-25	Count				
	Probability				

3. **Pig Game:** Design and implement a class called PairOfDice, composed of two Die objects. Using the PairOfDice class, Design and implement a game called Pig. In this game, the user competes against the computer. On each turn, the current player rolls a pair of dice and accumulates points. The goal is to reach 100 points before your opponent does. If, on any turn, the player rolls a 1, all points accumulated for that round are forfeited and control of the dice moves to the other player. If the player rolls two 1s in one turn, the player loses all points accumulated thus far in the game and loses control of the dice. The player may voluntarily turn over the dice after each roll. Therefore the player must decide to either roll again (be a pig) and risk losing points, or relinquish control of the dice, possibly allowing the other player to win. Implement the computer player such that it always relinquishes the dice after accumulating 20 or more points in any given round.

4. **Dice Graph**: In order to do this program you must use **PairOfDice** class. Prompt user to enter how many times they will like to roll a pair of 6-sided dice. Then find number of time sum of roll of pair of dice is 2, 3, … 12. Finally draw a line graph-representing the outcome of this experiment.

5. Craps: Extra Credit

6. Make your own game: Using Die class, design and implement your own version of the game of Pig. In order to do this you must decide on the following
    a. Number of Dice to be used
    b. Number of sides on each dice. All the dice used for the game must have same number of sides.
    c. Criterion for when does computer decided to stop rolling and turns over the Dice.
    d. Criterion for snake eyes / half snakes eyes / or any thing else you can come up with like: doubles or sum to be a certain number.
    e. Criterion for Winning.
    f. If possible try to predict probability of winning, Try to keep probability of user and computer winning 50-50.
    g. You need to submit a complete written description of the game. Rules on how to play game and determining a winner. Design with all the conditions and criterions completely and clearly explained.
    h. You must then implement this game using eclipse. Looking forward to play your version of Pig Game. Hope you have fun designing this game.