Project 7 – Probability

Part 1 of 5
(Multi-Match)

Show all work for each response. Answers should not be given without reasoning as to how the answers came about. Use the Multi-Match rules to answer the following questions: Do all work on separate paper.

1) If a player matches 3 numbers on each line, what are the player's winnings?

2) If a player matches all 18 numbers (6 on each line), what are the player's winnings?

3) Give an example of a ticket that would win $3004.

4) If the Lottery results in a game were: 15 7 8 9 42 32

If your ticket read:	8	9	13	12	42	32
	16	14	33	32	7	42
	9	8	42	26	24	15

What are the player's winnings?

5) How many different selections can be chosen by the lottery?

6) Give the number of possible outcomes on a single ticket.

7) Give the probability that the Lottery will select all two-digit numbers.

8) Give the probability that the Lottery will select only odd-digit numbers.

9) Give the probability that a player would get no matches.

10) Is there any logic to picking repeated numbers? Why or why not?

Project 7 – Probability

Part 2 of 5
(Bonus Match 5)

For Problems (1-2)

Given the Lottery selects the numbers	15	8	36	9	14	22(B)
1) Give the winnings for the following ticket:	22	9	31	8	17	38
2) Give the winnings for the following ticket:	8	36	30	15	9	22

3) Give a ticket that wins $400.

4) How many boards (maximum) can be played if a player spends $100?

(1 -- $1, 3-- $2, 4 -- $3, 6-- $4, 7-- $5, 9 -- $6)

5) If a player has the option of allowing the computer to randomly choose the numbers played, is there any advantage from the player's standpoint? Why or why not?

6) Find the probability of winning $50,000.

7) How many different selections can be chosen by the Lottery?

8) Find the expected value of winning (Assume you pay $1 for a game).

Project 7 – Probability

Part 3 of 5
(Mega-Millions)

For numbers (1-2)

If the numbers selected by the Lottery were: 50 51 53 9 7 <u>22</u>(G)

1) If a player's ticket is 51 50 37 42 35 <u>21</u>(G), what are the player's winnings?

2) If a player's ticket is 42 32 26 8 7 <u>16</u>(G), what are the player's winnings?

3) Give a ticket that wins $10,000.

4) Give the probability of getting 4 balls with the Gold Mega Ball.

5) Give the probability of getting 4 balls without the Gold Mega Ball.

6) What is the difference in probabilities?

7) Find the probability of selecting only the Gold Ball.

8) If the only winnings were the jackpot, find the expected winnings.

9) Find the probability of winning the jackpot.

10) Give the probability that the Gold Mega Ball is the same as one of the five white balls.

Project 7 – Probability

Part 4 of 5
(Keno)

1) Find the two unusual winnings made on the site.

2) What makes these winnings unusual?

3) If you play the 6-Spot and match 3 numbers, what are your winnings?

4) Give a game card where you would win $500.

5) Suppose the Keno Game Board reveals the following numbers:

9 15 80 31 22 46 25 14 7 62

49 16 19 72 63 24 33 29 64 17

If you play 7-Spot and you chose the numbers 14 19 33 26 41 72 80

What are your winnings if you paid for a bonus and the multiplier was 5?

6) Find the probability of winning $100,000.

7) What are the odds of winning $100,000?

8) If you play 1 spot, what is the probability that you will win?

9) A player won $1200. How did this happen?

10) Suppose another player paid $60 to play. A player played 9-spot and matched 8 balls. The player also bought the bonus with a multiplier of 3. What are the player's winnings?

Project 7 – Probability

Part 5 of 5
(Pick 3/Pick 4)

1) A player plays Pick 3 for $0.50 front pair (16) and the Lottery reveals 168. What are the player's winnings?

2) A player pays Pick 4 for $1 for 24-Way Box and plays 6287. Write all possible winning numbers. What is the payoff?

3) A player pays $1 for Pick 4(straight) and wins with the number 6128. What are the player's winnings?

4) What is the difference between 6-way Combination and 6-Way Box?

5) If there was a bet called "Middle Number" where you could choose the middle number and the other numbers could be any number, what are the odds of winning?

6) Would the winning be more or less than the bet front pair (or back pair)? Why or why not?

7) Would the payout for front pair be similar to a bet called "first-last" (Ex. 4x5, where you select 4 and 5 and the middle digit can be any digit from 0 to 9)?

8) A player decides to use the same number and select every bet (assumes he pays the minimum). A) What would this cost the player?

9) Is this an effective betting technique? Why or why not?

10) If you play Big 3 every day of the year, you play 6-way Box each time, find the expected value if you win ten times.

b) Complete the same exercise for playing Big 4 straight.