**Securin assessment:**

**PART A:**

**1.**

class combination

{

public static void main(String[] args)

{

int die\_A[] = new int[] {1,2,3,4,5,6};

int die\_B[] = new int[] {1,2,3,4,5,6};

int A=die\_A.length;

int B=die\_B.length;

System.out.println("Total Number of combinations: " + A\*B);

}

}

The total combinations of two six-sided dice can be calculated using permutations, where each die has six faces, and the product of the number of outcomes for each die when rolled together.

Mathematically:

Total combinations = Number of outcomes for Die A \* Number of outcomes for Die B = 6 \* 6 = 36

**2.**

class distribution

{

public static void main(String[] args)

{

int die\_A[] = new int[] {1,2,3,4,5,6};

int die\_B[] = new int[] {1,2,3,4,5,6};

int A=die\_A.length;

int B=die\_B.length;

int distribution[][] = new int[A][B];

System.out.println("Distribution of all possible combinations:");

for (int i = 0; i < A; i++)

{

for (int j = 0; j < B; j++)

{

distribution[i][j] = (i+1)+(j+1);

System.out.print(distribution[i][j] + "\t");

}

System.out.println();

}

}

}

To display the distribution of possible combinations of Rolling Die A and Rolling Die B, a 6x6 matrix can be created, with each cell representing the sum of values from both rolls.

**3.**

public class Probability

{

public static void main(String[] args)

{

int die\_A[] = new int[] {1,2,3,4,5,6};

int die\_B[] = new int[] {1,2,3,4,5,6};

int A=die\_A.length;

int B=die\_B.length;

int min=die\_A[0];

int max=die\_B[0];

int distribution[][] = new int[A][B];

for (int i = 0; i < A; i++)

{

for (int j = 0; j < B; j++)

{

distribution[i][j] = (i+1)+(j+1);

if (distribution[i][j]<min)

{

min=distribution[i][j];

}

if (distribution[i][j]>max)

{

max=distribution[i][j];

}

}

}

int totalCombinations = 6 \* 6;

System.out.println("Probability of all possible sums:");

for (int sum = min; sum <= max; sum++) {

int result = occurrences(distribution, sum);

System.out.println("P(Sum = " + sum + ") = " + result + "/" + totalCombinations );

}

}

public static int occurrences(int distribution[][], int sum)

{

int occur = 0;

for (int i = 0; i < 6; i++)

{

for (int j = 0; j < 6; j++)

{

if (distribution[i][j] == sum)

{

occur++;

}

}

}

return occur;

}

}