**Problem Statement: The Doomed Dice Challenge**

**PART A:**

1. How many total combinations are possible? Show the math along with the code!

Answer: *The total combinations of die throw possible is by counting the face of one die with all other faces of the other dice. Since a Die have 6 faces and there are 2 such Dice in the given problem the total possible Combinations of the throws will be 36. This can be achieved by counting each face of the die A with every other face of die B.*

2. Calculate and display the distribution of all possible combinations that can be obtained when rolling both Die A and Die B together. Show the math along with

the code! Hint: A 6 x 6 Matrix.

Answer: *The possible combinations when rolling 2 dice together are 36. This is obtained by counting each face of a die with every other face of another die. so, the possible outcomes are*

*(1,1) (1,2) (1,3) (1,4) (1,5) (1,6)*

*(2,1) (2,2) (2,3) (2,4) (2,5) (2,6)*

*(3,1) (3,2) (3,3) (3,4) (3,5) (3,6)*

*(4,1) (4,2) (4,3) (4,4) (4,5) (4,6)*

*(5,1) (5,2) (5,3) (5,4) (5,5) (5,6)*

*(6,1) (6,2) (6,3) (6,4) (6,5) (6,6)*

3. Calculate the Probability of all Possible Sums occurring among the number of combinations from (2).

Example: P(Sum = 2) = 1/X as there is only one combination possible to obtain Sum = 2. Die A = Die B = 1.

Answer: *Probability of Sums:*

*P(Sum = 2) = 0.05555555555555555*

*P(Sum = 3) = 0.08333333333333333*

*P(Sum = 4) = 0.1111111111111111*

*P(Sum = 5) = 0.1388888888888889*

*P(Sum = 6) = 0.16666666666666666*

*P(Sum = 7) = 0.1388888888888889*

*P(Sum = 8) = 0.1111111111111111*

*P(Sum = 9) = 0.08333333333333333*

*P(Sum = 10) = 0.05555555555555555*

*P(Sum = 11) = 0.027777777777777776*

*P(Sum = 12) = 0.0*

*Si the probability of the sums*

**PART B:**

As mentioned in the Problem statement Loki has erased the spots and sticking to conditions said

● Die A cannot have more than 4 Spots on a face.

● Die A may have multiple faces with the same number of spots.

● Die B can have as many spots on a face as necessary i.e. even more than 6

*Replacing spots above 4 in Dice A and copying it on to Dice B we get the spot as follows*

*New Die A: [1, 2, 3, 4, 4, 4]*

*New Die B: [1, 2, 3, 4, 4, 4]*

*which stills hold the same probability i.e. P(Sum=2) = 1/x*