Casino Night Statistics

Tetrahedral Dice

What are all the possibilities when rolling 2 tetra-dice

1	**2**	**3**	**4**
1+1	2+1	3+1	4+1
1+2	2+2	3+2	4+2
1+3	2+3	3+3	4+3
1+4	2+4	3+4	4+4

There are 16 possibilities.

Each roll on the first die can be partnered with 4 possible rolls on the second die. $4 \times 4 = 4_2$

What are all the possible sums when rolling 2 tetra-dice.

Possible Sums	**Possible rolls**				**Probability**	**Probability (simplified)**	**Probability Percentage**
2	1+1				1/16	1/16	6.25%
3	1+2	2+1			2/16	1/8	12.5%
4	1+3	2+2	3+1		3/16	3/16	18.75%
5	1+4	2+3	3+2	4+1	4/16	1/4	**25.0%**
6		2+4	3+3	4+2	3/16	3/16	18.75%
7			3+4	4+3	2/16	1/8	12.5%
8				4+4	1/16	1/16	6.25%

What are all the possibilities when rolling 3 tetra-dice.

1+1+1	1+2+1	1+3+1	1+4+1	2+1+1	2+2+1	2+3+1	2+4+1	3+1+1	3+2+1	3+3+1	3+4+1	4+1+1	4+2+1	4+3+1	4+4+1
1+1+2	1+2+2	1+3+2	1+4+2	2+1+2	2+2+2	2+3+2	2+4+2	3+1+2	3+2+2	3+3+2	3+4+2	4+1+2	4+2+2	4+3+2	4+4+2
1+1+3	1+2+3	1+3+3	1+4+3	2+1+3	2+2+3	2+3+3	2+4+3	3+1+3	3+2+3	3+3+3	3+4+3	4+1+3	4+2+3	4+3+3	4+4+3
1+1+4	1+2+4	1+3+4	1+4+4	2+1+4	2+2+4	2+3+4	2+4+4	3+1+4	3+2+4	3+3+4	3+4+4	4+1+4	4+2+4	4+3+4	4+4+4

There are 64 possibilities.

Each roll on the first die can be partnered with 4 possible rolls on the second die. $4 \times 4 \times 4 = 4_3 = 64$

What are all the possible sums when rolling 3 tetra-dice.

Possible Sums	**Possible rolls**												**approx. Prob.**
3	1+1+1												1.6%
4	1+1+2	1+2+1	2+1+1										4.7%
5	1+1+3	1+2+2	1+3+1	2+1+2	2+2+1	3+1+1							9.4%
6	1+1+4	1+2+3	1+3+2	1+4+1	2+1+3	2+2+2	2+3+1	3+1+2	3+2+1				14.1%
7	1+2+4	1+3+3	1+4+2	2+1+4	2+2+3	2+3+2	2+4+1	3+1+3	3+2+2	3+3+1	4+1+2	4+2+1	**18.8%**
8	1+3+4	1+4+3	2+2+4	2+3+3	2+4+2	3+1+4	3+2+3	3+3+2	3+4+1	4+1+3	4+2+2	4+3+1	**18.8%**
9	1+4+4	4+1+4	4+4+1	2+3+4	3+4+2	4+2+3	2+4+3	3+2+4	3+3+3				14.1%
10	2+4+4	4+2+4	4+4+2	3+3+4	3+4+3	4+3+3							9.4%
11	3+4+4	4+3+4	4+4+3										4.7%
12	4+4+4												1.6%

What are all the possibilities when rolling 2 hexa-dice (6-sided dice).
Figure out the pattern and fill in the missing boxes.

6	1+6	2+6	3+6			6+6
5	1+5		3+5			
4						6+4
3						6+3
2				4+2		
1	1+1			4+1		
	1	**2**	**3**	**4**	**5**	**6**

There are 36 possibilities.
Each roll on the first die can be partnered with 6 possible rolls on the second die. $6 \times 6 = 6^2$

What are all the possible sums when rolling 2 hexa-dice?
Fill in the missing boxes under the heading, "Possible rolls," in the table below. Also fill in the missing "Probability Percentages." Then add up all the fractions in the "Probability column" and put the total in the box at the bottom of that column. Also add up the "Probability Percentage" column.

Possible Sums	**Possible rolls**						**Probability**	**Simplified fraction**	**Probability Percentage**
2	1+1						1/36	1/36	~2.78%
3	1+2						2/36	1/18	~
4	1+3		3+1				3/36	1/12	~8.33%
5	1+4	2+3	3+2	4+1			4/36	1/9	~
6	1+5						5/36	5/36	~
7	1+6	2+5					6/36	1/6	~
8		2+6	3+5				5/36	5/36	~13.89%
9			3+6		5+4		4/36	1/9	~11.11%
10							3/36	1/12	~
11					5+6	6+5	2/36	1/18	~5.56%
12							1/36	1/36	~
							Column Total:		Column Total: