

Exploring MS Excel Data Analysis Tool pack

1. To generate the results of the simulation:

- a. Open a new Excel spreadsheet.
- b. Enter a heading at the top of a column, if desired.
- c. Under “Tools” click on “Data Analysis.”
- d. Find “Random Number Generation,” and double-click on it or highlight it and click OK.

2. Implement ANY TWO following simulations:

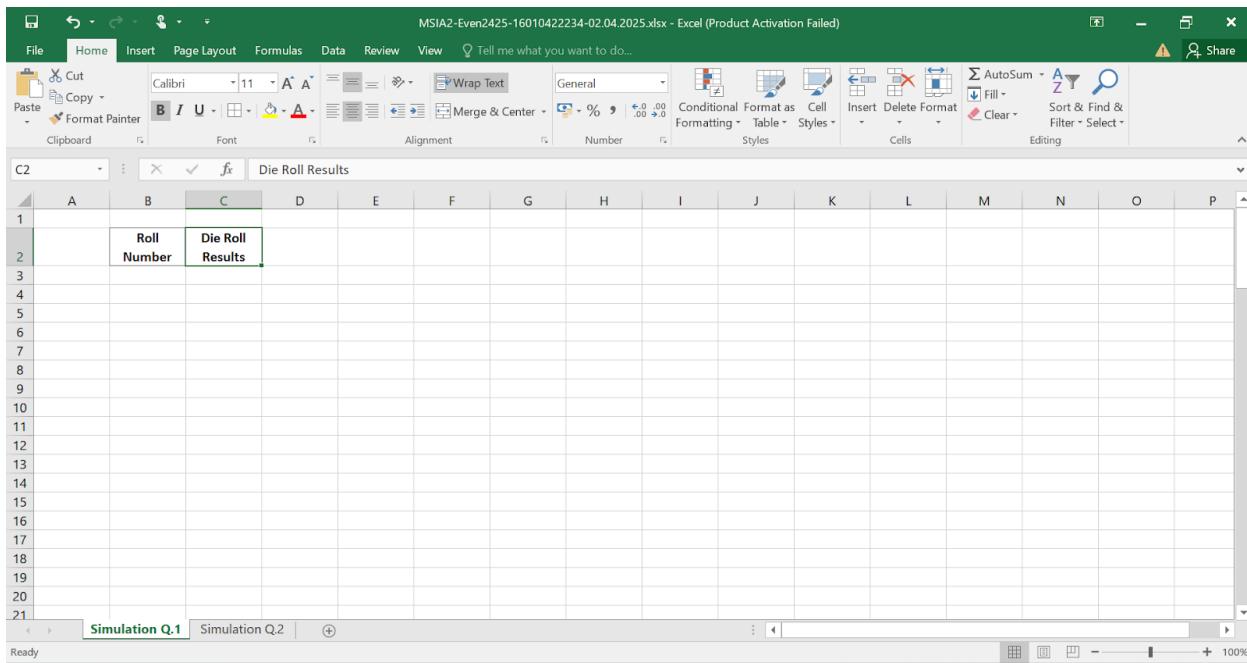
- a. **To simulate rolling a six-sided die 100 times.**
- b. To simulate 500 at-bats for a baseball player with a 0.320 batting average.
A result of 1 means a hit, 0 means an out.
- c. To simulate a basketball player with a 70% free-throw average shooting ten free throws, 1000 times.
The result in each row is the number of made free throws (0 – 10) out of 10 attempts.
- d. To simulate rolling two six-sided dice and recording the sum 250 times.**

3. To tally the results in a table and create a histogram from the table:

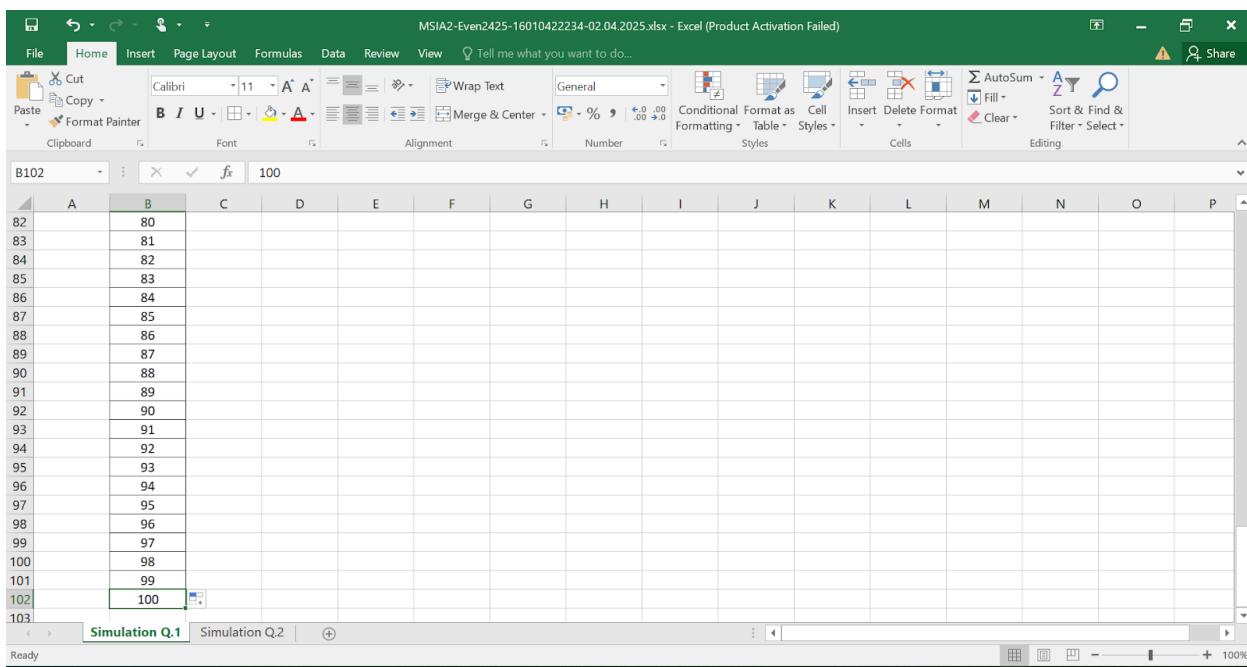
- a. Under tools click on “Data Analysis.”
 - b. Find “Histogram,” and double-click or highlight and click OK.
 - c. Leave the table created by “Histogram” highlighted and click on the Chart Wizard icon. You may simply click “Next” all the way through the wizard, unless you want to change or add something.
-

a. To simulate rolling a six-sided die 100 times.

Open Excel, Set Up the Columns (Roll Number, Die Roll Results) and Probability Distribution of the Die Roll Results.



The screenshot shows the Microsoft Excel interface with the ribbon menu at the top. The 'Home' tab is active. Below the ribbon, there is a toolbar with various icons for cutting, copying, pasting, and formatting. The main workspace shows a table structure with two columns: 'Roll Number' and 'Die Roll Results'. The 'Die Roll Results' column contains no data, while the 'Roll Number' column has values from 1 to 21 listed vertically. The status bar at the bottom indicates 'Ready'.



The screenshot shows the Microsoft Excel interface with the ribbon menu at the top. The 'Home' tab is active. Below the ribbon, there is a toolbar with various icons for cutting, copying, pasting, and formatting. The main workspace shows a table structure with two columns: 'Roll Number' and 'Die Roll Results'. The 'Die Roll Results' column now contains 100 random integers between 1 and 6, representing the simulated die rolls. The last cell, B100, is highlighted with a green border. The status bar at the bottom indicates 'Ready'.

MSIA2-Even2425-16010422234-02.04.2025.xlsx - Excel (Product Activation Failed)

File Home Insert Page Layout Formulas Data Review View Tell me what you want to do... Share

Cut Copy Format Painter AutoSum Σ Fill Sort & Find & Filter Select

Font Alignment Number Styles Cells Editing

F8 : fx =1/6

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1						Probability Distribution of the Die Results										
2		Roll Number	Die Roll Results			1 0.16666667										
3		1				2 0.16666667										
4		2				3 0.16666667										
5		3				4 0.16666667										
6		4				5 0.16666667										
7		5				6 0.16666667										
8		6														
9		7														
10		8														
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21		19														

Simulation Q.1 Simulation Q.2 4

Click on Data Analysis and select Random Number Generation.

The screenshot shows a Microsoft Excel spreadsheet titled "MSIA-2-Even2425-16010422234-02.04.2025.xlsx". The ribbon menu is visible at the top, with the "Data" tab selected. The main worksheet displays a table titled "Probability Distribution of the Die Results" with six rows of data, each showing a roll number from 1 to 6 and its corresponding probability of 0.16666667. A formula bar at the top shows "=1/6". A "Data Analysis" dialog box is open in the foreground, listing various statistical tools. The "Random Number Generation" option is highlighted with a blue selection bar.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1																
2		Roll Number	Die Roll Results													
3		1					1	0.16666667								
4		2					2	0.16666667								
5		3					3	0.16666667								
6		4					4	0.16666667								
7		5					5	0.16666667								
8		6					6	0.16666667								
9		7														
10		8														
11		9														
12		10														
13		11														
14		12														
15		13														
16		14														
17		15														
18		16														
19		17														
20		18														
21		19														

Simulation Q.1 Simulation Q.2 +

Ready

In the Random Number Generation window:

Set Number of Variables to 1 (for one die roll).

Set Number of Random Numbers to 100 (for 100 die rolls).

Set Distribution to Discrete.

Select the Value and Probability Input Range.

Select an Output Range.

The screenshot shows the 'Random Number Generation' dialog box open in Microsoft Excel. The dialog box has the following settings:

- Number of Variables: 1
- Number of Random Numbers: 100
- Distribution: Discrete
- Value and Probability Input Range: \$E\$3:\$F\$8
- Output options:
 - Output Range: \$C\$3
 - New Worksheet Ply: (unchecked)
 - New Workbook: (unchecked)

The background worksheet, titled 'Simulation Q.1', contains two tables. The first table has columns 'Roll Number' and 'Die Roll Results'. The second table is titled 'Probability Distribution of the Die Results' and lists values from 1 to 6 with their corresponding probabilities.

The screenshot shows the Microsoft Excel interface with the 'Home' tab selected in the ribbon. The worksheet 'Simulation Q.1' is active, displaying the same data as the previous screenshot. The status bar at the bottom shows: Average: 3.56 Count: 100 Sum: 356.

Creating Bins for the Histogram.

The screenshot shows a Microsoft Excel spreadsheet titled "MSIA2-Even2425-16010422234-02.04.2025.xlsx". The data is organized into several columns:

- Column A:** Roll Number (1 to 19).
- Column B:** Die Roll Results (5, 5, 4, 3, 5, 1, 5, 4, 6, 5, 3, 2, 2, 2, 6, 6, 3, 3, 2).
- Column C:** Blank.
- Column D:** Blank.
- Column E:** Blank.
- Column F:** Probability Distribution of the Die Results (0.16666667 for each value in Column B).
- Column G:** Blank.
- Column H:** Blank.
- Column I:** Blank.
- Column J:** Blank.
- Column K:** Blank.
- Column L:** Blank.
- Column M:** Blank.
- Column N:** Blank.
- Column O:** Blank.
- Column P:** Blank.

A new column labeled "Bins" has been added to the right of the results, containing the values 1, 2, 3, 4, 5, and 6, which represent the bins for the histogram.

Click on Data Analysis and Open the Histogram Tool.

The screenshot shows the Microsoft Excel ribbon with the "Data" tab selected. A "Data Analysis" dialog box is open over the spreadsheet, listing various analysis tools. The "Histogram" option is highlighted in blue.

The spreadsheet contains the same data as the previous screenshot, including the "Probability Distribution of the Die Results" and the "Bins" column.

Configure the Histogram Settings:

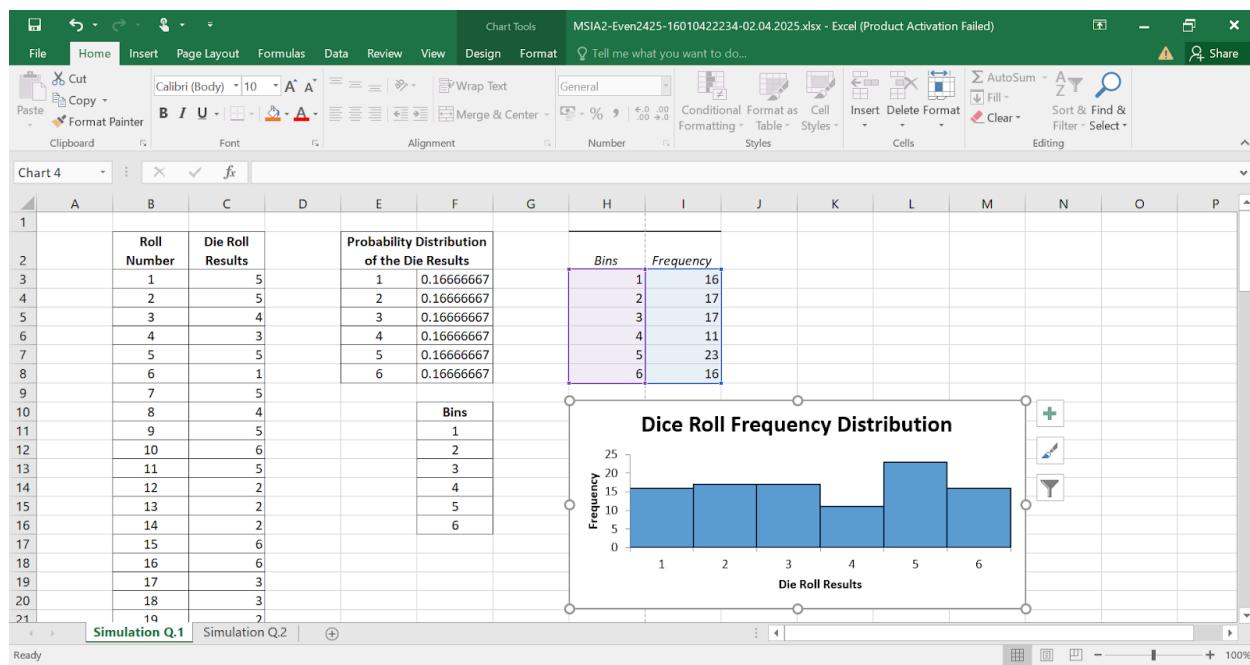
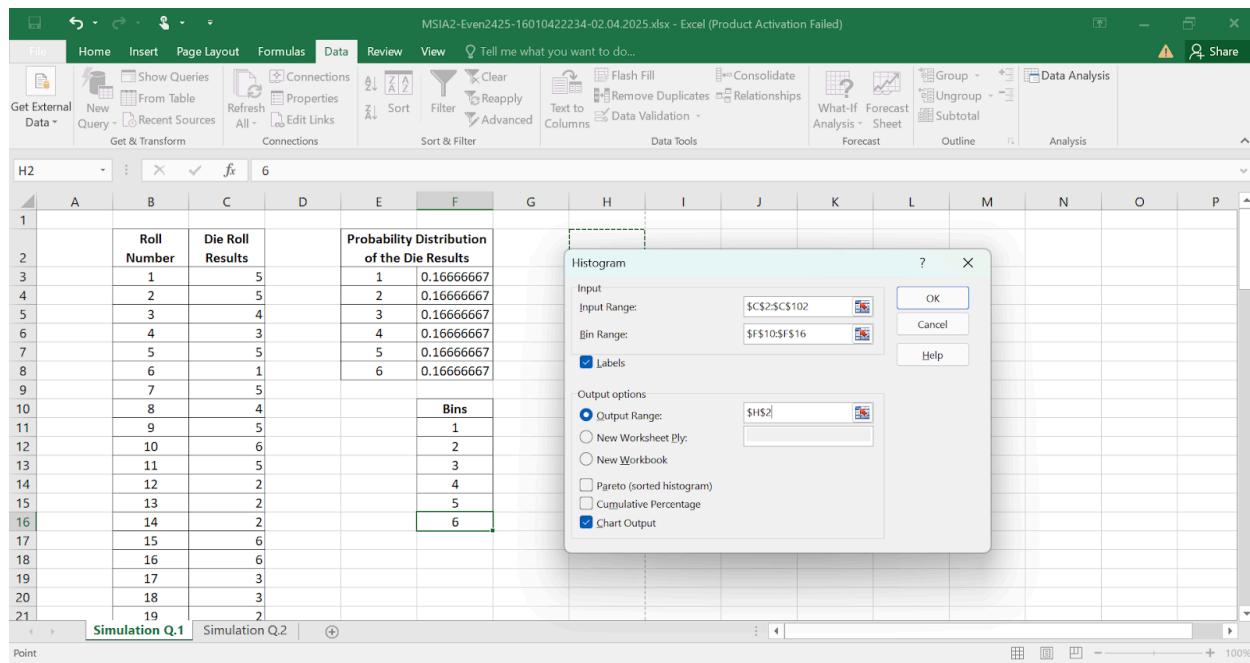
Input Range: Select the column with the die rolls.

Bin Range: Select the bins created.

Check Labels if your selection includes column headers.

Choose Output Range and select an empty area in the current sheet.

Check Chart Output to create a histogram chart automatically.



d. To simulate rolling two six-sided dice and recording the sum 250 times.

Open Excel, Set Up the Columns (Roll Number, Die Roll Results) and Probability Distribution of the Die Roll Results.

The screenshot shows a Microsoft Excel spreadsheet titled "MSIA2-Even2425-16010422234-02.04.2025.xlsx". The data is organized into several columns:

- Column A: Roll Number (1 to 21).
- Column B: Record Number.
- Columns C and D: Die 1 Roll and Die 2 Roll respectively.
- Column E: Sum of Two Dice.
- Column F: Probability Distribution of the Sum of Two Dice. The values are all 0.166667.

The "Home" tab is selected in the ribbon. The formula bar shows "E249". The status bar at the bottom right indicates "100%".

Click on Data Analysis and select Random Number Generation.

The screenshot shows the same Excel spreadsheet with the "Data" tab selected in the ribbon. A "Data Analysis" dialog box is open over the spreadsheet, listing various analysis tools. The "Random Number Generation" option is highlighted with a blue selection bar.

The "Data Analysis" dialog box includes the following buttons:

- OK
- Cancel
- Help

The status bar at the bottom right indicates "100%".

In the Random Number Generation window:

Set Number of Variables to 2 (for two die rolls).

Set Number of Random Numbers to 250 (for 250 dice sums).

Set Distribution to Discrete.

Select the Value and Probability Input Range.

Select an Output Range.

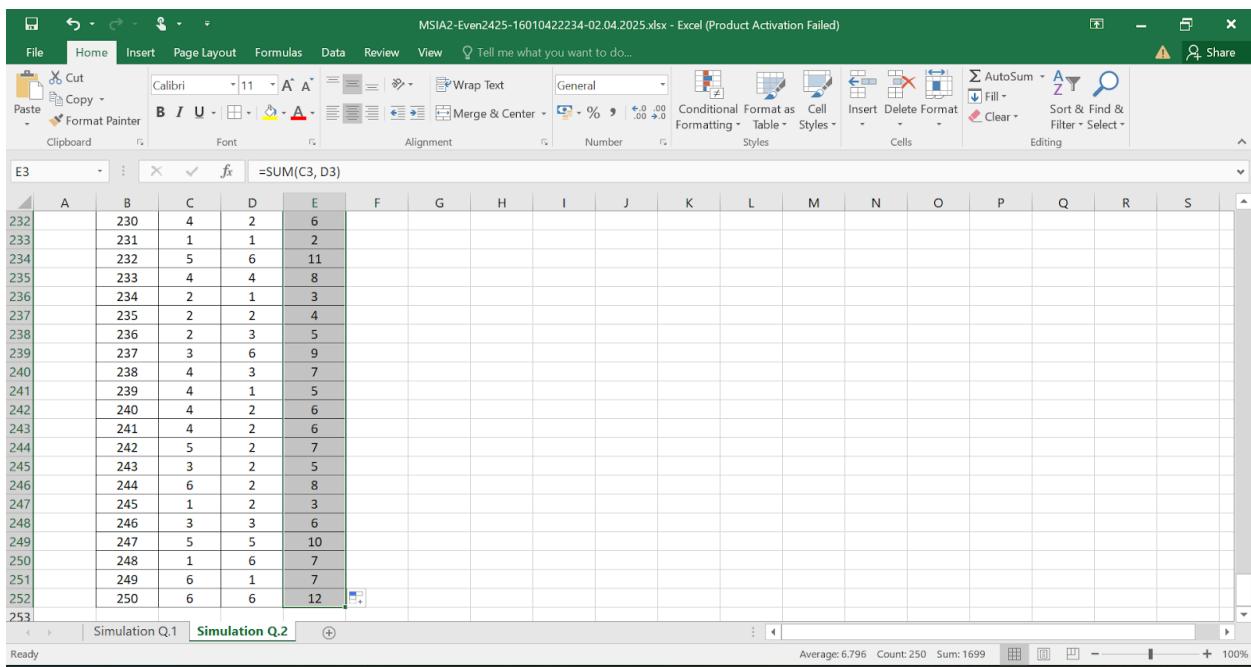
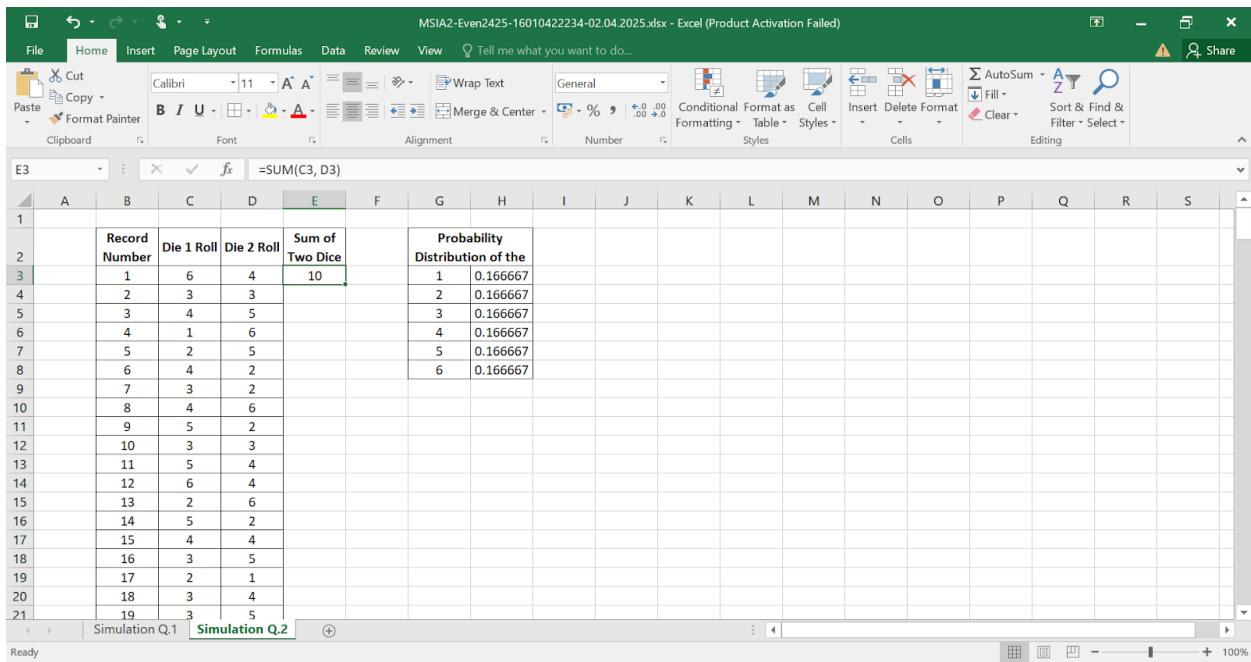
The screenshot shows a Microsoft Excel spreadsheet titled "MSIA2-Even2425-16010422234-02.04.2025.xlsx". The "Data" tab is selected in the ribbon. A "Random Number Generation" dialog box is open in the foreground. The dialog box contains the following settings:

- Number of Variables: 2
- Number of Random Numbers: 250
- Distribution: Discrete
- Value and Probability Input Range: \$G\$3:\$H\$8
- Output options:
 - Output Range: \$C\$3 (selected)
 - New Worksheet Ply: (unchecked)
 - New Workbook: (unchecked)

The main worksheet area displays a table with columns for Record Number, Die 1 Roll, Die 2 Roll, and Sum of Two Dice. The "Probability Distribution of the" column lists values from 1 to 6 with a probability of 0.166667 each. The "Sum of Two Dice" column shows the sum of the two rolls for each pair.

The screenshot shows the same Microsoft Excel spreadsheet after the random number generation process has been completed. The "Home" tab is selected in the ribbon. The "Sum of Two Dice" column now contains the calculated sum for each row, ranging from 2 to 12. The "Average" cell in the bottom right corner shows 3.398, "Count" shows 500, and "Sum" shows 1699.

Calculate the sum of the two dice rolls.



Creating Bins for the Histogram.

MSIA2-Even2425-16010422234-02.04.2025.xlsx - Excel (Product Activation Failed)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1																			
2		Record Number	Die 1 Roll	Die 2 Roll	Sum of Two Dice		Probability Distribution of the			Bins									
3		1	6	4	10		1	0.166667		2									
4		2	3	3	6		2	0.166667		3									
5		3	4	5	9		3	0.166667		4									
6		4	1	6	7		4	0.166667		5									
7		5	2	5	7		5	0.166667		6									
8		6	4	2	6		6	0.166667		7									
9		7	3	2	5					8									
10		8	4	6	10					9									
11		9	5	2	7					10									
12		10	3	3	6					11									
13		11	5	4	9					12									
14		12	6	4	10														
15		13	2	6	8														
16		14	5	2	7														
17		15	4	4	8														
18		16	3	5	8														
19		17	2	1	3														
20		18	3	4	7														
21		19	3	5	8														

Click on Data Analysis and Open the Histogram Tool.

MSIA2-Even2425-16010422234-02.04.2025.xlsx - Excel (Product Activation Failed)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1																			
2		Record Number	Die 1 Roll	Die 2 Roll	Sum of Two Dice		Probability Distribution of the			Bins									
3		1	6	4	10		1	0.166667		2									
4		2	3	3	6		2	0.166667		3									
5		3	4	5	9		3	0.166667		4									
6		4	1	6	7		4	0.166667		5									
7		5	2	5	7		5	0.166667		6									
8		6	4	2	6		6	0.166667		7									
9		7	3	2	5					8									
10		8	4	6	10					9									
11		9	5	2	7					10									
12		10	3	3	6					11									
13		11	5	4	9					12									
14		12	6	4	10														
15		13	2	6	8														
16		14	5	2	7														
17		15	4	4	8														
18		16	3	5	8														
19		17	2	1	3														
20		18	3	4	7														
21		19	3	5	8														

Data Analysis

Histogram

Configure the Histogram Settings:

Input Range: Select the column with the die rolls.

Bin Range: Select the bins created.

Check Labels if your selection includes column headers.

Choose Output Range and select an empty area in the current sheet.

Check Chart Output to create a histogram chart automatically.

The screenshot shows the Microsoft Excel ribbon with the 'Data' tab selected. A 'Histogram' dialog box is open, prompting for input ranges and output options. The 'Input Range' is set to \$E\$2:\$E\$252, covering the 'Sum of Two Dice' column. The 'Bin Range' is set to \$J\$2:\$J\$13, covering the 'Bins' column. The 'Labels' checkbox is checked. Under 'Output options', the 'Chart Output' checkbox is checked, which is why a histogram is being generated automatically. The output range is specified as \$L\$2.

