

How to Easily Connect Data Points in an Excel Scatter Plot

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The ability to accurately visualize complex datasets is paramount in modern data analysis. While scatter plots are generally employed to illustrate the relationship or correlation between two numerical variables, often users require a visual cue to indicate sequence or progression, particularly when dealing with time series data or longitudinal measurements. By default, Microsoft Excel generates scatter plots showing only markers, emphasizing the distribution rather than the flow. This guide provides a comprehensive, step-by-step procedure for modifying a standard scatter plot to connect its constituent points with lines, thereby transforming it into a powerful tool for sequential data visualization.

Connecting data points within a scatter plot is a common requirement when the order of the points holds analytical significance. Unlike a dedicated line chart, which assumes equally spaced categories along the X-axis, the scatter plot allows the X-axis to represent continuous numerical values, making the connection of points an essential feature for tracking movement, growth, or decline across measured, non-uniform intervals.

Frequently, analysts must visually represent the transition between data points in a scatter plot within Excel to highlight trends or sequences over time or another variable.

Fortunately, this enhancement is straightforward to implement, requiring only minor adjustments within the chart formatting options. The detailed, step-by-step example below will demonstrate the precise methodology for achieving this crucial visualization modification.

Step 1: Preparing and Entering the Dataset

The foundation of any effective visualization is clean and properly structured source data. Before proceeding to chart creation, ensure your data is organized into contiguous columns, where the first column typically represents the independent variable (X-values) and the second column represents the dependent variable (Y-values). For sequential tracking, the order in which the rows are input will dictate the order in which the lines connect the points on the resulting chart.

For the purpose of this demonstration, let us structure and enter the following example dataset into an Excel spreadsheet, starting in cell A1. This dataset represents sequential measurements taken across specific, numerical intervals:

	A	B	C	D	E	F
1	x	y				
2	1	3				
3	2	3				
4	4	5				
5	6	5				
6	7	6				
7	8	8				
8	10	9				
9	12	8				
10	14	9				
11	16	13				
12	17	15				
13	19	19				
14	20	17				
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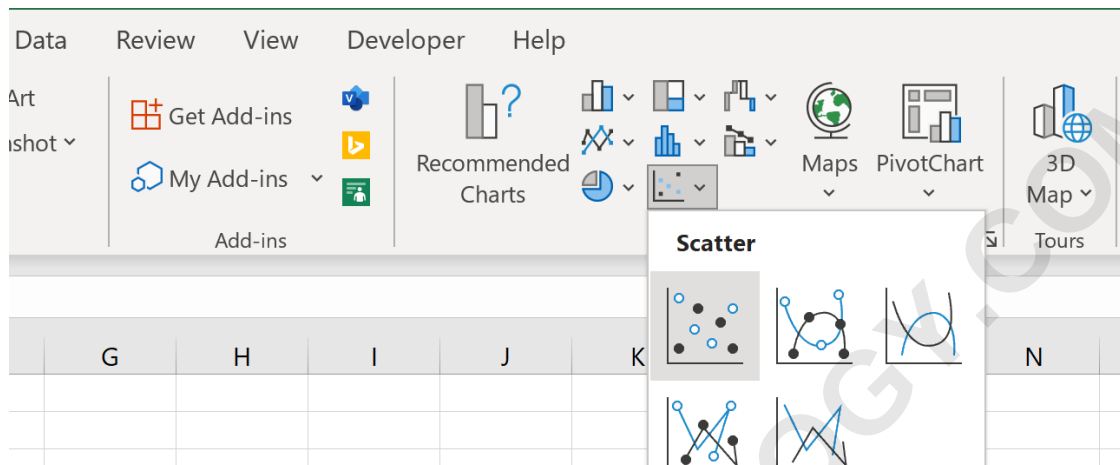
It is vital that the data columns are correctly labeled for clarity, although these labels are not explicitly included in the initial data selection range (A2:B14) when creating the chart. Pay close attention to the numerical values, as the scatter plot will scale the axes according to the magnitude of these numbers, unlike category-based charts.

The proper organization of the data structure ensures that the subsequent chart generation process is smooth and that the initial scatter plot accurately reflects the intended X and Y relationships. Verify that no cells within the intended data range contain extraneous text or missing values, as these anomalies can disrupt the charting process or cause unexpected visual gaps.

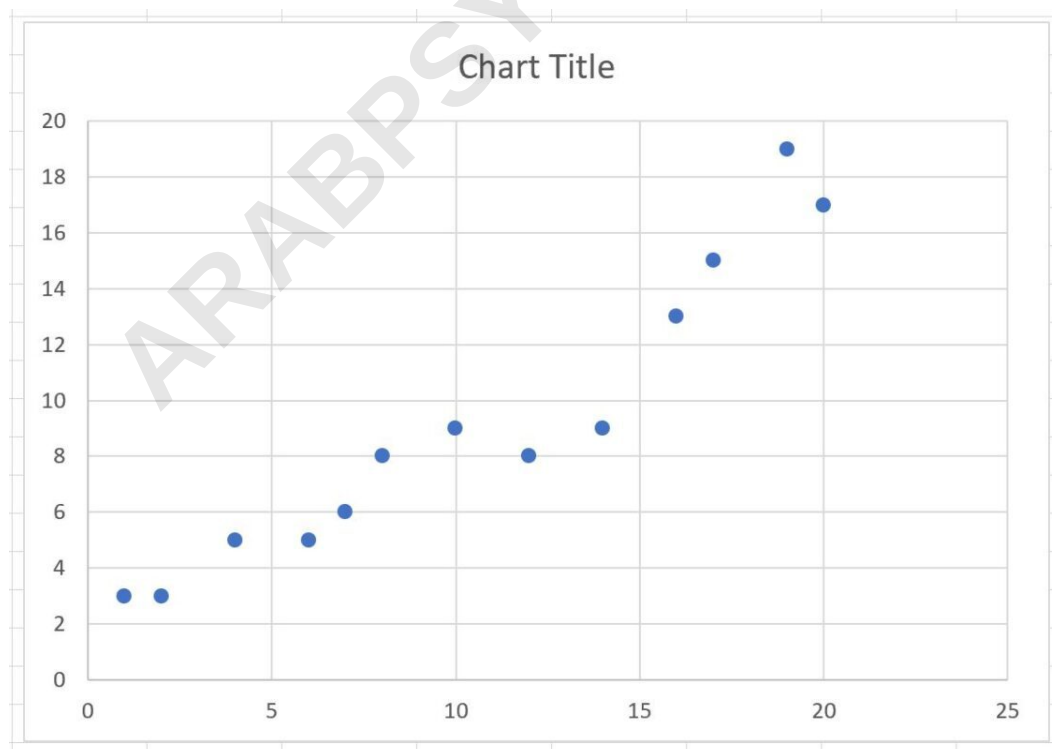
Step 2: Initial Creation of the Scatter Plot

Once the data is accurately entered and verified, the next step involves generating the base scatter plot. This initial visualization stage confirms the correct plotting of the coordinates before any sequential line modifications are applied. The standard scatter plot serves as the default representation when examining correlations or distributions without emphasizing path dependency.

To proceed, select the numerical data range that contains both your X and Y values. In this specific example, you should highlight the cells in the range **A2:B14**. After selection, navigate to the **Insert** tab located along the top ribbon interface of Excel. Within the **Charts** group, click the **Scatter** icon (which typically resembles several small dots on a coordinate plane). From the available options, select the plain Scatter type, which displays only markers.



Upon completing this action, the following scatter plot will automatically be generated and inserted into your worksheet. This chart correctly maps each pair of coordinates from the selected range, showing the distribution of the points across the numerical axes.



Crucially, observe the default output: the points in the plot, though correctly positioned, are distinctly separate. They are represented solely by markers, confirming that, by default, Excel treats the scatter plot as a correlation analysis tool rather than a progression tracker. The subsequent steps are necessary to bridge these gaps and illustrate the sequential flow of the data points based on their order in the original dataset.

Step 3: Accessing the Format Data Series Panel

The process of connecting the points begins with accessing the detailed formatting controls for the data series. The data visualization properties, including line type and markers, are managed within the specialized **Format Data Series** panel, which is Excel's central hub for customizing chart elements.

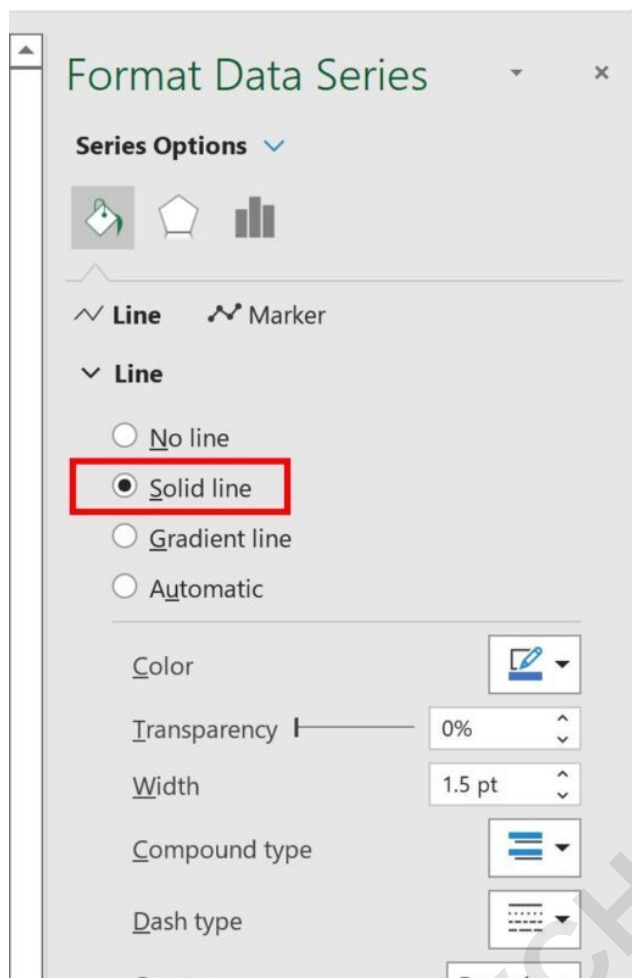
To initiate the modification, perform a double-click action on any individual data point within the newly created scatter plot. This action immediately triggers the display of the **Format Data Series** panel, which usually appears as a task pane docked on the right side of the Excel window. This panel provides granular control over the visual characteristics of the selected data series, separating options for fills, borders, effects, and series specific options.

Within the **Format Data Series** task pane, you will notice several icons representing different categories of formatting options. Look for the icon that resembles a paint bucket, often labeled **Fill & Line**. Clicking this icon expands the options related to how the series is drawn, including its internal coloring (Fill) and its borders or connecting paths (Line). This is the critical juncture where the line property, which is currently set to 'No Line' by default for scatter plots, must be changed.

Step 4: Enabling the Solid Line Connection

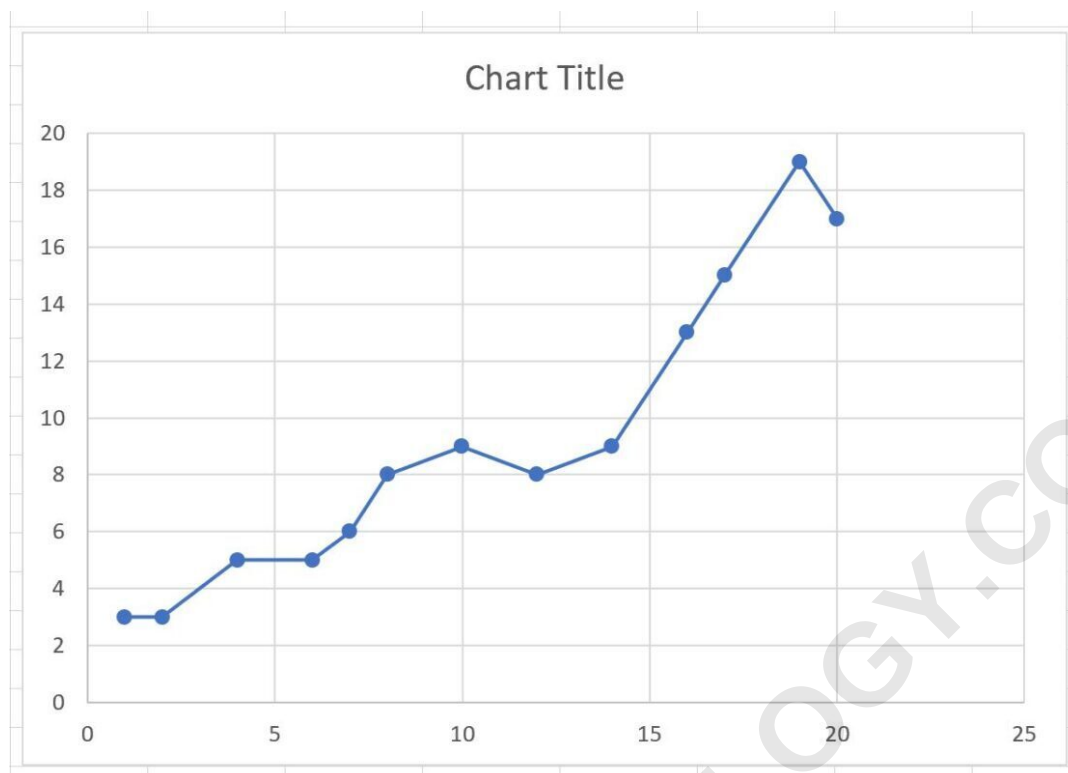
Within the **Fill & Line** options, two main groups are visible: **Fill** and **Line**. Since we aim to connect the existing points, our focus must be exclusively on the **Line** group. By default, when a scatter plot is generated, the line option for the data series is set to **No Line**, which is why only the markers are visible.

To connect the points sequentially, locate and expand the **Line** group options. Within this section, click the option labeled **Solid Line**. This simple selection instructs Excel to draw a continuous line segment between every consecutive data point in the series, following the sequence defined by the row order in your original input data.



The effect of this modification is instantaneous. As soon as **Solid Line** is selected, the scatter plot updates in real-time, displaying a connecting line between all markers. This transformation effectively turns the static point distribution into a dynamic path visualization, highly useful for tracking temporal or experimental progression.

The points in the plot will automatically be connected with a line, providing immediate visual feedback regarding the sequence and direction of the measured values. This newly connected chart now functions similarly to a line chart, but maintains the integrity of the numerical X-axis scaling inherent to scatter plots, making it ideal for non-uniform intervals.



Step 5: Advanced Line and Marker Customization

Once the line connection is established, the **Format Data Series** panel offers extensive options for refining the visual appearance of both the connecting line and the individual data markers. Effective data visualization often relies on subtle styling choices to ensure clarity and professional presentation.

Within the **Format Data Series** panel, specifically under the **Line** group options, you can control several characteristics of the connecting segment. These controls allow you to tailor the line to fit the aesthetic requirements of your report or presentation, ensuring that the visual impact is maximized without cluttering the plot.

The customizable elements within the **Line** group include:

Line Color: Choose a color that contrasts effectively with the plot background and any other data series present.

Line Width: Adjust the thickness (in points, pt) of the line. Thicker lines emphasize the path, while thinner lines keep the focus primarily on the data markers.

Line Dash Type: Select from solid, dotted, dashed, or other stylized patterns, which can be useful for distinguishing between different types of sequential data paths within the same chart.

Furthermore, below the **Line** options, there is a separate section dedicated to **Marker**

customization. Since the markers represent the precise data points, their appearance is equally important. Here you can change the marker shape (circle, square, triangle, etc.), size, and even apply a different fill or border color to highlight specific measurements effectively. Feel free to modify the appearance of both the line and the markers to achieve the desired visual outcome and analytical clarity.

Step 6: Understanding Scatter vs. Line Chart Selection

A common point of confusion for Excel users is the distinction between a standard Line chart and a modified Scatter plot with connected lines. While both display data points connected sequentially, the fundamental difference lies in how they handle the X-axis. A standard Line chart treats the X-axis as categorical, assuming equal intervals between data points even if the associated labels (e.g., dates) are numerically non-uniform.

Conversely, a Scatter chart, even when lines are added, treats both axes as numerical. This means the spacing between points on the chart is proportional to the difference between their actual X-values. If your X-axis represents irregular time series data (e.g., measurements taken after 1 day, then 5 days, then 10 days), using a Scatter chart with connecting lines is the only way to accurately represent the true passage of time or variable change between measurements.

Therefore, selecting the Scatter chart type and then adding the line is the appropriate technique whenever the X-variable is continuous and numerical, and its inherent scale must be preserved in the visual representation. If the X-axis merely represents categories or labels where the spacing is arbitrary (e.g., "Quarter 1," "Quarter 2"), a traditional Line chart is sufficient and simpler to create.

Step 7: Utilizing Smoothed Lines for Trend Emphasis

For datasets that exhibit high volatility or noise, straight lines connecting discrete points can sometimes obscure the overall trend or general movement. Excel offers a powerful alternative within the **Format Data Series** panel: the option to utilize a **Smoothed Line**. This feature employs curve fitting algorithms to draw a gentle, curved path through or near the data markers, reducing the visual impact of jagged transitions.

To apply this, return to the **Format Data Series** task pane, navigate to the **Line** group, and below the dash type options, you will typically find a checkbox labeled **Smoothed Line**. Selecting this checkbox instantly replaces the sharp, straight-line segments with a continuous, curvilinear connection. This modification is highly beneficial when the goal of the data visualization is to communicate macro trends rather than emphasizing the exact coordinates of every individual measurement.

It is important to use smoothed lines judiciously. While they improve aesthetic flow and trend

visibility, they also slightly distort the immediate path between any two adjacent points, as the line may not pass precisely through the center of every marker. Analysts should weigh the benefit of improved trend communication against the potential for minor misrepresentation of interval-to-interval movement.

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