

Cochise College Center for Lifelong Learning

Excel: with AI

Using Google Gemini

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Introduction

Welcome to Excel with AI! In the Excel Basic class you learned how to navigate a spreadsheet, write formulas, and work with data. In this class, you will discover how to use an AI assistant to do those same things faster, more powerfully, and without memorizing complex formula syntax.

Today's AI tool is **Google Gemini**, a free conversational AI you can use in any web browser. You will describe what you want in plain English, and Gemini will suggest formulas, answer questions about your data, and help you find problems you might otherwise miss.

Learning Goals

By the end of this class, you will:

- Understand what AI can and cannot reliably do with spreadsheet data
- Use Gemini to generate Excel formulas from plain English descriptions
- Ask Gemini to analyze a dataset and interpret the answers
- Use Gemini to identify data quality problems in a messy file
- Apply the verify-and-iterate habit that every AI user needs

What You Need

- Computer with Microsoft Excel and a web browser
- USB drive with Student Files (provided by instructor)
- A free Google account for Gemini access

Module 1: AI and Excel: Setting the Stage

Before we start asking AI to help with spreadsheets, let's understand what it is good at, where it falls short, and how our workflow will look today.

What AI Does Well in Excel

- **Writing formulas** — describe what you want to calculate and it writes the formula
- **Explaining formulas** — paste any formula and it will explain it in plain

English

- **Analyzing data** — paste a table of data and ask questions about it
- **Finding data problems** — identifying inconsistent values, duplicates, and formatting errors
- **Recommending charts** — suggest the right chart type for your data

Where AI Falls Short

- **It can be confidently wrong.** AI can write a formula that looks correct and runs without errors but produces the wrong answer. You must always verify the output.
- **It lacks your business context.** It does not know your fiscal year, your company's definitions, or any special rules your organization uses.
- **It needs clean data.** Merged cells, blank rows, and inconsistent spellings confuse AI just as they confuse Excel.
- **It cannot see your screen.** With Gemini, you must describe your data or paste it into the chat. It cannot open your Excel file directly.

The Verify-and-Iterate Habit

Every time you use AI output in your spreadsheet, follow these three steps:

1. **Verify** — does the result look right? Check a few values by hand.
 2. **Iterate** — if something is wrong, describe the problem back to the AI and ask it to correct the formula.
 3. **Apply** — once verified, use AutoFill or copy the formula across the data.
- Treat AI like a knowledgeable colleague who sometimes makes mistakes. Trust but verify.

Activity 1.1: Set Up the Workspace

⚙️ Open the Dataset and Gemini

1. Open `monthly_sales.xlsx` from the Student Files folder

2. Save a working copy as `sales-ai`
3. Review the column headers: *Month, Category, Units_Sold, Unit_Price, Total_Revenue, Returns, Net_Revenue*
4. Note that columns E (Total_Revenue) and G (Net_Revenue) are blank — you will fill these with AI-generated formulas
5. Open your web browser and go to <https://gemini.google.com>
6. Sign in with your Google account
7. You should see a chat interface with a text box at the bottom — this is where you will type your questions

Module 1 Checklist

1. Name three things AI does well with spreadsheet data
2. Explain why you must always verify AI-generated formulas
3. Open Gemini in a web browser and locate the chat text box

Module 2: Generating Formulas

The most immediately useful thing AI can do in Excel is write formulas for you. Instead of looking up syntax, you describe what you want to calculate in plain English and Gemini writes the formula.

Activity 2.1: Ask Gemini for a Formula

🗨️ Describe Your Data and Ask for Help

You do not need to paste the entire spreadsheet. Just describe the column structure.

1. Click in the Gemini chat box
2. Type the following prompt and press **[Enter]**:

I have an Excel spreadsheet with these columns: A=Month, B=Category, C=Units_Sold, D=Unit_Price, E=Total_Revenue (blank), F>Returns, G=Net_Revenue (blank). The data starts in row 2. What formula should I put in cell E2 to calculate Total Revenue, which is Units Sold multiplied by Unit Price?

1. Read Gemini's response carefully. It should give you a formula like `=C2*D2`.

2. Switch to Excel and click cell E2
3. Type the formula Gemini suggested and press **[Enter]**
4. If necessary, double-click between the header for columns E and F to auto-fit the column to the content.
5. Click back on E2 and look at the Formula Bar to confirm the formula
6. Verify the result: row 2 is January Jewelry with 18 units at \$42.00. The result should be **\$756.00**
7. If the result is correct, double-click the AutoFill handle to fill the formula down the column

How to Write a Good Prompt

Getting useful answers from AI depends on how you ask. For Excel formulas, always include:

- Which columns contain which data (e.g., "A=Month, B=Category")
- Which cell you want the formula in (e.g., "cell E2")
- A plain English description of the calculation you need

If the first answer is not quite right, add more detail and ask again. This is the **iterate** step.

Activity 2.2: A Two-Step Formula

Net Revenue Requires More Detail

Net Revenue is not just a simple multiplication. It requires explaining the business logic.

1. In Gemini, type the following prompt and press **[Enter]**:

Using the same spreadsheet (A=Month, B=Category, C=Units_Sold, D=Unit_Price, E=Total_Revenue, F>Returns, G=Net_Revenue), I need a formula for cell G2. Net Revenue equals Total Revenue minus the value of the returned items. A return means one unit at the unit price. Returns are counted in column F.

1. Read the response. The formula should be something like `=E2-(F2*D2)`.
2. Switch to Excel, click G2, enter the formula, and press **[Enter]**

3. Verify: January Jewelry had 18 units, \$42.00 price, and 2 returns. Total Revenue = \$756.00. Net Revenue should be \$756.00 minus (2 × \$42.00) = **\$672.00**
4. If correct, use AutoFill to fill G2 down the column
5. Save the workbook

Activity 2.3: When AI Gets It Wrong

⚠️ A Demonstration of the Verify Step

This activity demonstrates why verification matters.

1. In Gemini, type this deliberately vague prompt:

I have sales data with units and price. How do I calculate revenue?

1. Notice that Gemini may give a formula with placeholder cell references like `=A2*B2` that would be wrong for your actual spreadsheet
2. This illustrates why your prompt must include the actual column letters and cell address
3. Ask a follow-up: *My units are in column C and price is in column D. The formula goes in cell E2.*
4. Gemini should now give the correct formula `=C2*D2`

Formula Explanation

You can also use Gemini to explain any formula you encounter. If you open a workbook and find a formula you do not understand, paste it into Gemini and ask: *"Can you explain what this formula does in plain English: `=SUMIF(B2:B61, "Jewelry", G2:G61)`"* — and Gemini will explain it clearly.

Module 2 Checklist

1. Write a prompt that includes column letters, cell addresses, and a plain English description
2. Use Gemini to generate a formula and enter it correctly in Excel
3. Verify a formula result by checking it against a known value

4. Explain why a vague prompt produces an unreliable answer

Module 3: Analyzing Data

Gemini can do more than write formulas. When you paste your data into the chat, you can ask it questions in plain English and get answers that would otherwise require complex formulas, filters, or PivotTables.

Activity 3.1: Copy Data Into Gemini

Prepare the Data for Pasting

1. In Excel, press **[Ctrl] + [Home]** to go to cell A1 — *Note: be sure the cursor is in cell A1*
2. Press **[Ctrl] + [Shift] + [End]** to select all the data
3. Press **[Ctrl] + [C]** to copy
4. Switch to Gemini and click in the chat box
5. Type the following, then press **[Shift] + [Enter]** to start a new line without sending:

Here is sales data from a small gift shop. Please review it and then answer my questions.

1. Press **[Ctrl] + [V]** to paste the data below your message
2. Press **[Enter]** to send
3. Wait for Gemini to confirm it has read the data before continuing

Activity 3.2: Ask Simple Questions

Get Answers Without Writing a Single Formula

1. Ask Gemini each of the following questions, one at a time, and note the answers:
 - *Which product category had the highest total Net Revenue?*
 - *What was the total Net Revenue for the Jewelry category?*
 - *Which month had the highest total Units Sold across all categories?*
 - *What was the average Units Sold per row?*

- Which category had the most returns overall?
2. After each answer, consider: does the result make sense? Could you verify it with a quick mental estimate?

Activity 3.3: Ask for a Summary

Get a Category-by-Category Breakdown

1. Ask Gemini:

Can you show me a summary table with total Net Revenue and total Units Sold for each product category, sorted from highest to lowest Net Revenue?

1. Review the table Gemini produces — this is the kind of summary a PivotTable normally provides, delivered through a conversation
2. Ask a follow-up question based on what you see, for example:

Jewelry had the highest revenue. Is that mainly because of higher unit price, or does it also sell the most units?
1. This kind of follow-up conversation is what makes AI analysis different from traditional formulas — you can keep asking until you understand the data

Activity 3.4: Get a Chart Recommendation

Let AI Guide Your Visualization

1. Ask Gemini:

I want to create a chart in Excel that shows how total Net Revenue varies by month, combining all categories. What type of chart do you recommend, and which columns should I select?

1. Gemini will recommend a chart type (likely a column or line chart) and describe how to select the data
2. Switch to Excel and follow its recommendation to create the chart
3. Ask Gemini a follow-up question about the chart if anything is unclear

4. Once you have finished with the chart, delete it
5. Save the workbook

The Limits of Pasted Data Analysis

When you paste data into Gemini, keep these limits in mind:

- Gemini reads your data but cannot modify your spreadsheet directly
- Very large datasets may be partially cut off — paste a representative sample if needed
- Gemini's answers are estimates based on the text it sees, not live calculations. Verify important numbers in Excel.

Module 3 Checklist

1. Copy spreadsheet data and paste it into a Gemini prompt
2. Ask plain English questions and interpret the answers
3. Request a summary table and recognize it as an AI-generated alternative to a PivotTable
4. Use Gemini to recommend a chart type and then build it in Excel
5. Ask follow-up questions to deepen your understanding of the data

Module 4: Cleaning Data

Data cleaning is one of the strongest use cases for AI. Finding every inconsistent spelling, duplicate row, and formatting error by eye is tedious and error-prone. Gemini can scan a dataset in seconds and report problems you would likely miss.

Activity 4.1: Open the Dirty Dataset

⚙️ Load and Review the File

1. In Excel, open `customer_log_dirty.csv` from the Student Files folder
2. Save it as `customer-log-practice.xlsx` (this converts it from CSV to an Excel file)
3. Scroll through the data without fixing anything yet — just observe what

you see

4. The columns are: *Date, Customer_Name, City, State, Category, Quantity, Price, Total*
5. Click the small triangle in the very top-left corner of the grid (above row 1, left of column A) to select the entire worksheet
6. Double-click the divider between any two column header letters to auto-fit all column widths
7. Can you spot any problems on a quick scan?

Activity 4.2: Ask Gemini to Find the Problems

Q Let AI Do the Detective Work

1. Select all the data (**[Ctrl] + [A]**) and copy it (**[Ctrl] + [C]**)
2. Switch to Gemini and send this prompt with the data pasted below it:

I am going to paste a dataset from Excel. Please review it and identify all the data quality problems you can find — things like duplicate rows, inconsistent spellings, mixed formats, numbers stored as text, blank cells, or anything else that would cause problems in analysis.

1. Paste the data and send
2. Read Gemini's response carefully. It should identify several categories of problems.
3. Note which problems it found so you can fix them in the next activity

Activity 4.3: Investigate Specific Problems

☰ Drill Down Into the Issues

Ask Gemini these targeted follow-up questions, one at a time:

1. *What are all the different values used in the State column? List each unique value.*
2. *Which rows appear to be duplicates? List their row numbers.*
3. *What are all the different spellings used for product categories in the*

Category column?

4. *Are there any rows where Price or Total appears to be stored as text rather than a number? How can I tell?*

Activity 4.4: Fix the Problems in Excel

Apply the Corrections

Use Gemini's findings to make the following corrections in Excel:

1. **Standardize State values:**

- Click Home → Editing → Find & Select → Replace ([Ctrl] + [H])
- Replace Arizona with AZ, then az with AZ, then Ariz. with AZ
- Click **Replace All** for each, then close

2. **Standardize Category values:**

- Use Find & Replace to correct each misspelling Gemini found
- Common variants: jewelry → Jewelry, Jewlery → Jewelry, Food Items variants, etc.

3. **Remove duplicate rows:**

- Click anywhere in the data
- Click Data → Data Tools → Remove Duplicates
- Ensure all columns are checked and click **OK**
- Note how many duplicates Excel removed

4. **Fix text-formatted numbers:**

- Select the Price and Total columns
- If cells show a small green triangle in the corner, click one, then click the warning icon and choose **Convert to Number**

5. **Save the workbook**

Activity 4.5: Verify the Cleaned Data

✔ Confirm the Fixes Worked

1. Select all data and copy it again
2. Paste into Gemini with this prompt:

I have cleaned the dataset based on your earlier feedback. Here is the updated data. Are there any remaining data quality problems?

1. Review Gemini's response — ideally it reports fewer or no remaining problems
2. Fix anything that was missed and save the workbook

Final Words

Congratulations on completing Excel with AI! You have used Gemini to write formulas, analyze data, and find problems in a messy dataset — tasks that used to require hours of manual work or advanced Excel knowledge. The key insight from today is not that AI replaces your skills, but that it amplifies them. The better you understand data and how Excel works, the better questions you can ask, and the better results you will get.

Questions Worth Asking

Any time you are working with data in Excel, consider asking Gemini:

- *What formula do I need to calculate [description]?*
- *Can you explain what this formula does: [paste formula]?*
- *What data quality problems do you see in this data?*
- *What type of chart would best show [description]?*
- *I got [result]. Does that seem right based on the data?*

Appendix A: More Practice: Quarterly Performance Analysis

If you finish the main activities early or want to practice at home, use Gemini to analyze the quarterly performance dataset from the Student Files folder.

Activity 4.6: Formula Practice

1. Open `quarterly_performance.xlsx` from the Student Files folder
2. Notice that the *Net_Profit* column is blank
3. Use Gemini to generate the Net Profit formula (Net Profit = Gross Profit minus Store Expenses)
4. Verify the formula result in the first row before AutoFilling down the column
5. Save the workbook as `quarterly-ai`

Activity 4.7: Data Analysis Practice

Copy the completed quarterly data into Gemini and ask:

- *Which product category was most profitable in 2025?*
- *Did any category show declining Net Profit from 2024 to 2025?*
- *What was the total Net Profit for the entire two-year period?*
- *Which quarter of 2025 had the highest total sales across all categories?*
- *Based on this data, what product category would you recommend the store invest more in? Why?*

Appendix Checklist

1. Generate a formula using Gemini with column and cell descriptions
2. Verify the formula before applying it to the full dataset
3. Paste quarterly data into Gemini and ask multi-year analysis questions
4. Ask Gemini for a recommendation and evaluate whether the reasoning makes sense