STUDENT WALKTHROUGH · SPRING 2026

Three tabs. One Excel file.

Major Assignment 1 (MA1) is the first of seven major assignments in MAT-144 and the only one that lives entirely inside Excel. Three tabs, 100 points, due at the end of Topic 2. This walkthrough shows you the *shape* of every formula you'll need — function names, structure, where to put what — without giving you the literal answers. The math is yours to do.

COMPONENTS	POINTS	BUILDS ON
3	**100**	**T1 + T2**
tabs in one workbook	23 + 46 + 31	lessons + DQs

The MA1 Excel template lives next to this walkthrough on the course site. Download both, open the .xlsx in the desktop version of Excel for Microsoft 365 (not the browser version, not Sheets), and work tab by tab. Submit the completed .xlsx to Halo — not a screenshot.

WHAT'S IN THIS WALKTHROUGH

THE TEMPLATE'S COLOR LEGEND

Every cell in the workbook is color-coded. **Blue** = enter text (your name, unit labels, currency codes). **Green** = enter a number (exchange rates, dates). **Gold** = enter an Excel formula (anything that should auto-calculate). **Any other color** = leave alone, the grader is using it. Get the colors right and you've already eliminated most of the easy point losses.

Major Assignment 1

Topic 2 — Income Analysis, Unit Conversions, Currency Conversion

01 — TAB 1 · INCOME ANALYSIS · 23 PTS

This tab is the Excel version of Topic 1 Lessons 4–5 (slope, intercept, linear modeling) and the exact same workflow as T1 DQ 2. If you already did that DQ, this tab is one new function name (**`=INTERCEPT()`**) and a slightly different chart task. Otherwise, the moves are: find slope, find intercept, predict incomes, build the scatter, extend the trendline.

1 **Enter your name in cell B1.**

The BLS data in columns A–B is randomized off the length of your name, so this *has to be done first*. Use your full first and last name. If the cells in column B still say "Enter your name in B1", the data hasn't generated yet.

2 **Compute slope and intercept with Excel functions.**

`=SLOPE(your-Y-range, your-X-range)` and **`=INTERCEPT(your-Y-range, your-X-range)`**. *Y first, X second* in both — Excel reads "Y over X". Y is Average Weekly Income (column B). X is Years of Education (column A). Format both result cells as Number with 0 decimals.

3 **Predict the incomes for years 8 through 24.**

Column D has the X-values 8 through 24 already listed. Your job is column E. The formula is the line equation: **`= m × X + b`** — but *m* is your slope cell and *b* is your intercept cell and *X* is the D-cell on the same row. So the pattern is **`=$slope$ * D-cell + $intercept$`**. Lock the slope and intercept with dollar signs so the formula copies down cleanly. Format column E as Currency with the $ symbol and 0 decimals.

4 **Insert the scatter plot — BLS data only.**

Highlight the BLS data table (columns A and B, just the data rows). Insert → Chart → XY Scatter. Don't chart the predicted incomes — that's a separate table. After the chart appears, click it, then Chart Design → Add Chart Element to add a title and axis labels.

5 **Add the trendline and extend it forward + backward.**

With the chart selected, Chart Design → Add Chart Element → Trendline → Linear. Right-click the trendline → Format Trendline. Set **Forward forecast** so the line reaches x = 24, and **Backward forecast** so it reaches x = 8. The trendline should now extend past your data points in both directions.

■ COMMON SLIPS — INCOME ANALYSIS

(1) SLOPE arguments reversed. Y first, X second. Backwards gives the reciprocal. **(2) Predicted-incomes formula hand-typed the slope and intercept numbers.** Use cell references with dollar signs (B28 etc.) so the formula copies down. **(3) Charted the predicted-incomes table.** Chart only the BLS data (columns A and B). **(4) Trendline doesn't reach 8 or 24.** Right-click the trendline, set Forward and Backward forecasts.

Major Assignment 1

Topic 2 — Income Analysis, Unit Conversions, Currency Conversion

02 — TAB 2 · UNIT CONVERSIONS · 42 PTS

This tab is the largest in the assignment and the same shape as Topic 2 DQ 1 (dimensional analysis) — just expanded from 11 conversion factors to 15, and from 4 problems to 4 different problems. The recipe is identical: build ratios that cancel units, reference the conversion table (rows 9–23) instead of hand-typing the numbers, and let the units check your work.

1 **Read the conversion factor table (rows 9–23).**

Don't fill it in — it's reference data. Each row gives one equivalence: *1 kg = 2.20462 lb*, *1 m = 3.28084 ft*, etc. Your formulas will reference these cells (e.g., **`=L9/I9`** is the kg→lb ratio).

2 **Look at the worked example in row 25.**

ALEKS gives you one full conversion as a model: fluid ounces per kilogram → milliliters per pound. The cells F25, I25, and O25 are already filled in. *Read the formulas in those cells* — they're your template for the four problems below.

3 **Solve problems A through D in rows 26–29.**

Each row gives you a starting quantity and asks for a final quantity in different units. The gold cells need formulas; the blue cells need unit labels (text). The four problems: **A)** mg/mL → mcg/tsp · **B)** L/h → gal/d · **C)** lb/in² → kg/cm² · **D)** mi/yr → ft/h. Each chain needs 2 or 3 ratios.

■ WATCH PROBLEM C — SQUARED UNITS

Problem C converts **lb/in²** to **kg/cm²**. The hint in the prompt: *"one conversion factor is applied twice."* That's because in² = in × in, so the in→cm factor has to show up twice in a row inside your formula. The chain looks like: lb/in² × (kg/lb) × (in/cm) × (in/cm) = kg/cm². If your answer is off by exactly the in/cm factor (about 2.54), you only applied it once.

■ COMMON SLIPS — UNIT CONVERSIONS

(1) Inverted a ratio. Off by a factor of k^2? You flipped a ratio. The unit you want to *cancel* goes on the opposite side of the next ratio. **(2) Used the wrong table row.** g↔mg looks a lot like mg↔mcg in the table; double-check which one your problem needs. **(3) Hand-typed the conversion number.** Wrote 2.2046 in the formula instead of **`=L9/I9`**. The grader checks for cell references. **(4) Forgot to square the factor on Problem C.** Apply the in→cm factor twice for the in² → cm² move.

Major Assignment 1

Topic 2 — Income Analysis, Unit Conversions, Currency Conversion

02 (CONTINUED) — TEMPERATURE · 4 PTS

Two cells at the bottom of the Unit Conversions tab: one converts a Fahrenheit value to Celsius, the other converts Celsius to Fahrenheit. The values you're converting are randomized off your name (the cells above them already pull the right number). Just type the formulas with cell references.

The two formulas you need:

`=(5/9) * (F_cell − 32)`	→ Celsius from Fahrenheit
`=(9/5) * C_cell + 32`	→ Fahrenheit from Celsius

Use cell references for the input temperatures — click the F-cell or C-cell rather than typing the number. The cell already has the right value (it's pulled from your name).

■ THE ONE BIG TEMPERATURE PITFALL

Don't use =CONVERT(). Excel has a built-in CONVERT function that handles Fahrenheit↔Celsius (`=CONVERT(F_cell, "F", "C")`). It works perfectly. The assignment *explicitly forbids* it for these two cells. The grader is checking whether you can write the formula directly. Use the (5/9) and (9/5) formulas above with cell references for the temperature inputs.

Why these formulas? Fahrenheit and Celsius can't convert by a simple multiplication because their zero points are different — 0°C and 0°F aren't the same temperature. The –32 and +32 in the formulas shift between the two scales' starting points. The 9/5 (or 5/9) handles the difference in degree size. Topic 2 Lesson 5 walks through why the standard “multiply by 1 in disguise” trick breaks for temperature.

03 — TAB 3 · CURRENCY CONVERSION · 31 PTS

Pick four countries based on the letters in your name, look up today's exchange rate for each, convert a randomized trip budget into that country's currency, and convert a different foreign amount back into USD. The math is Topic 2 Lesson 5's currency section, applied to real rates from xe.com.

1 **Pick four countries using the letter rule.**

Use the **first two letters of your first name** and the **first two letters of your last name**. For each letter, find a country in the list below the table that starts with that letter. If your first or last name is only one letter, use **M** as the second letter. If no country starts with your assigned letter (or you've already used all of them), roll forward to the next available letter. Example: “Sarah Lee” → S, A, L, E → Singapore, Argentina, Laos, Egypt.

2 **Look up each rate at xe.com/currencyconverter.**

For each country, find the three-letter currency code (e.g., JPY, EUR, MXN) and the current exchange rate from $1 USD into that currency. Three significant digits minimum; more is fine. Record the date you looked the rate up — the date must be within 2 weeks of the assignment's due date.

3 **Convert the trip budget INTO each foreign currency.**

`=trip_budget_cell × rate_cell`. The trip budget is at the top of the tab (in USD); the rate cell is the one you just filled in for that country. Use cell references — don't type the numbers. Format the result as Currency with the three-letter country code as the symbol (right-click → Format Cells → Currency → Symbol dropdown).

4 **Convert a foreign currency amount BACK to USD.**

`=foreign_amount_cell ÷ rate_cell`. The foreign amount is given to you (also at the top of the tab, randomized off your name). You divide by the exchange rate because the rate is “foreign units per USD,” and you want to undo it. Format as Currency with the $ symbol and 2 decimal places.

■ COMMON SLIPS — CURRENCY CONVERSION

(1) Hand-typed the rate instead of using a cell reference. Same issue as the unit-conversion tab. **(2) Multiplied instead of divided** when going back to USD — if your answer is way bigger than the trip budget, that's the symptom. **(3) Currency symbol is $** instead of the country's three-letter code. Right-click → Format Cells → Currency → Symbol dropdown. **(4) Lookup date older than 2 weeks.** Rates move daily; the rubric checks this. **(5) Letter rule slipped** — used your middle name, or skipped letters, or didn't roll forward when a letter had no available country.

Major Assignment 1

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04 — BEFORE YOU SUBMIT

Click through each tab and check this list. Most point losses on MA1 are not math errors — they're formatting slips or cells where a student hand-typed a number instead of referencing the cell. Catch them here.

- Tab 1: Name in cell B1, full first + last ✓
- Tab 1: Slope and intercept use =SLOPE() and =INTERCEPT() ✓
- Tab 1: Predicted incomes use cell references (not numbers) ✓
- Tab 1: Scatter plot of BLS data only, trendline 8→24 ✓
- Tab 2: All ratio formulas reference the table cells ✓
- Tab 2: Problem C uses the in/cm factor TWICE ✓
- Tab 2: Temperature formulas typed (not =CONVERT) ✓
- Tab 3: Currency cells use the country code as symbol ✓
- Tab 3: Rate lookup date within 2 weeks of due date ✓
- Saved as .xlsx in desktop Excel — uploaded to Halo ✓

If all ten check, you're at 100%.

05 — A FEW LAST THINGS

Use Excel for Microsoft 365 (desktop), not the browser version. The template has auto-grading logic that can corrupt in Sheets, Numbers, or the web Excel. GCU students get the desktop version free — see the IT Service Center if you need help installing.

Don't paste cells from another file into the template. Copy-pasting from a different workbook can carry over formatting or named ranges that break the grading checks. If you need to start over, download a fresh copy of the template.

Submit the .xlsx file to Halo, not a screenshot. The grader needs to see your formulas in the cells, not just the final computed numbers. A screenshot can't show whether you used `=SLOPE()` or hand-typed the answer.

Major Assignment 1

Topic 2 — Income Analysis, Unit Conversions, Currency Conversion

STUCK? OPEN THE LIVE PAGE ON MAT144.COM

Every component on this PDF has a corresponding page at **MAT144.com/topics/2/ma** with the same hints plus deep links into the relevant lessons and DQs. The interactive Cancellation Sandbox tool (linked from Tab 2) lets you drag conversion factors into slots and see units pair off in real time — useful if Problem C's squared units feel slippery.