
# Excel (spreadsheets) for Practical Uses

ICL Fall 2024  Class 3

Read Gilgen

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# Excel #3

- Questions
- Review (Formatting/Sorting)
- Course website:  gilgens.org/icl/excel/

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# Today's Topics

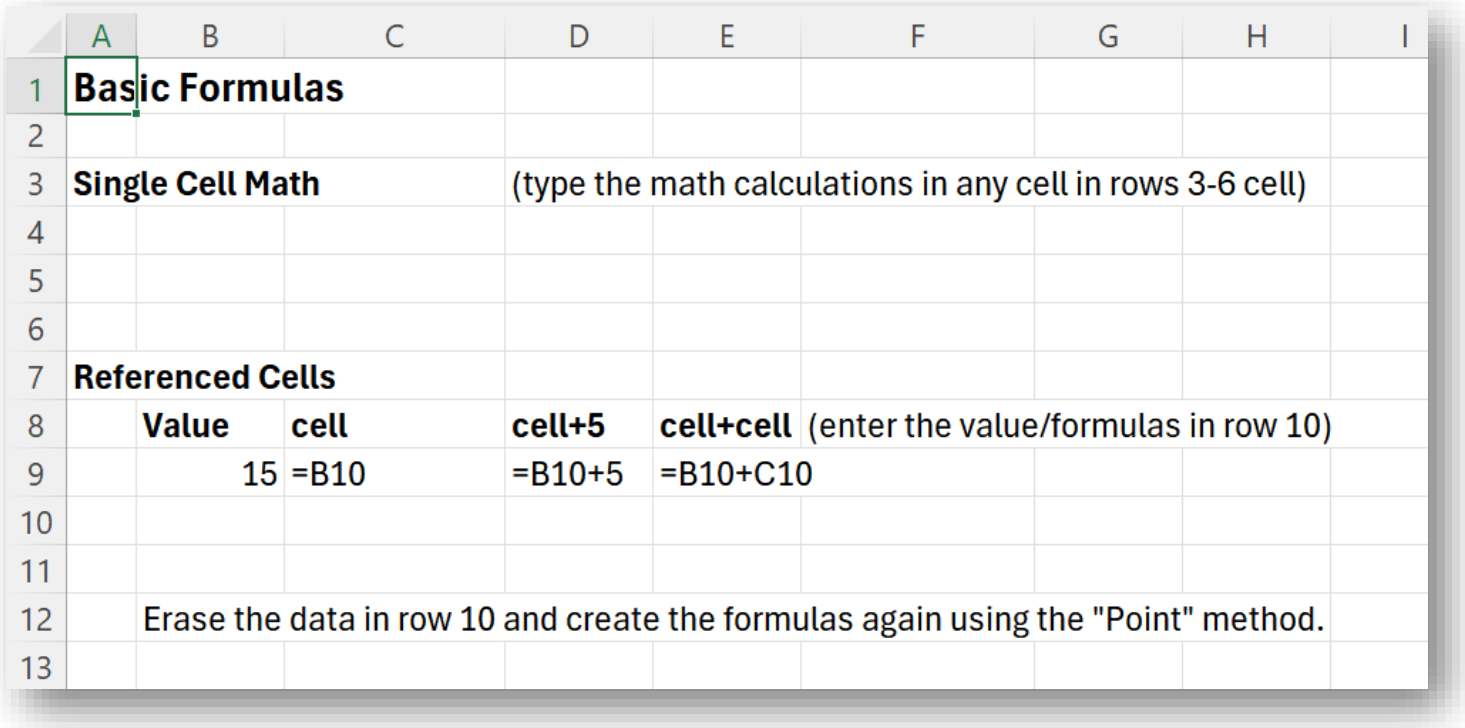
- Basic Formulas
- Calculation Order
- Relative/Absolute Cell References

# Basic Formulas

- The power of calculations
  - Addition/subtraction/multiplication
  - Sums
  - Averages

# Let's Do This!

- Open XL3-Ex1
- Add, edit, delete as directed
- Ask questions if you have them



| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | **Basic Formulas** | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | **Single Cell Math** | | | (type the math calculations in any cell in rows 3-6 cell) | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | **Referenced Cells** | | | | | | | | |
| 8 | | **Value** | **cell** | **cell+5** | **cell+cell** | (enter the value/formulas in row 10) | | | |
| 9 | | 15 | =B10 | =B10+5 | =B10+C10 | | | | |
| 10 | | | | | | | | | |
| 11 | | | | | | | | | |
| 12 | | Erase the data in row 10 and create the formulas again using the "Point" method. | | | | | | | |
| 13 | | | | | | | | | |

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# Basic Single Cell Formulas

- Formula cells always begin with “=”
  - Typing 1+2 results in “1+2” (as text)
  - Typing =1+2 results in “3” (as calculated value)
- Math notations:
  - \+ (plus)
  - \- (minus
  - * (multiply)
  - / (divide)

# Single Cell Calculation Order

- Excel may calculate a string of numbers differently than intended
- For example:

  =1+2+3*2  (9)

- Use ( ) to specify groups to be calculated.

  =(1+2+3)*2  (12)

- When in doubt, use parentheses to make calculation order clear

# Calculation Order using ( )

- Parentheses must always be “paired”
- Values and math processes can be “nested”
- Exercise:

  13 times 14 minus 5 plus 6 divided by 4

  =13*14-5+6/4 result is 178.5

  Add parentheses to get a result of 42.75 (edit in formula bar)

  =((13*14)-(5+6))/4

- *When in doubt, use parentheses to make calculation order clear*

# Cell References in Formulas

- Formulas can contain references to other cells
- Value of referenced cell becomes part of formula
- Always start the formula where you want to see the result

# Cell References in Formulas

- Examples in XL3-Ex1
  - Value of B10 is 15: (cell reference)
    =B10+5 result is 20 (cell reference plus 5)
    =B10+C10 result is 30 (cell reference plus cell reference)

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 7 | **Referenced Cells** | | | | | | | |
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| 9 | | 15 | =B10 | =B10+5 | =B10+C10 | | | |
| 10 | | 15 | 15 | 20 | 30 | | | |

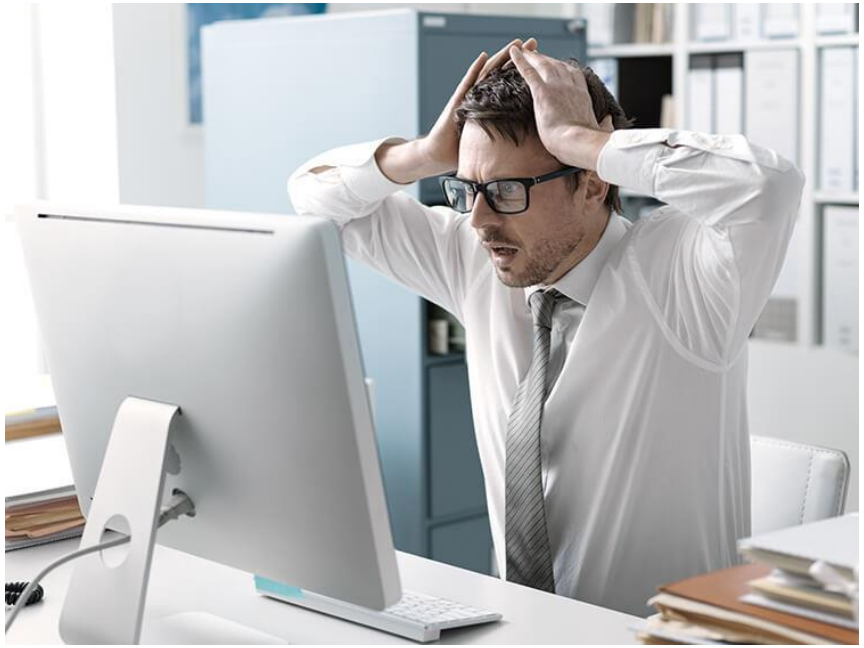
# Cell References in Formulas

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 7 | **Referenced Cells** | | | | | |
| 8 | | **Value** | **cell** | **cell+5** | **cell+cell** | (enter the value/formulas in row 10) |
| 9 | | 15 | =B10 | =B10+5 | =B10+C10 | |
| 10 | | 15 | 15 | | =B10+C10 | |
| 11 | | | | | | |
| 12 | | Erase the data in row 10 and create the formulas again using the "Point" method. | | | | |

# Cell References in Formulas

- Always “eyeball” the results
  - Do the results make sense?
  - If not, recheck your formulas!

# Spreadsheet Errors



The much-quoted statistic is that 80% of spreadsheets contain errors.

- Logic errors –
  - caused by the individual not fully understanding the situation and therefore choosing the wrong formula or solution
- Omission errors –
  - caused by cells and ranges accidentally excluded from formulas
- Mechanical errors –
  - caused by data inaccuracy or input/typing errors

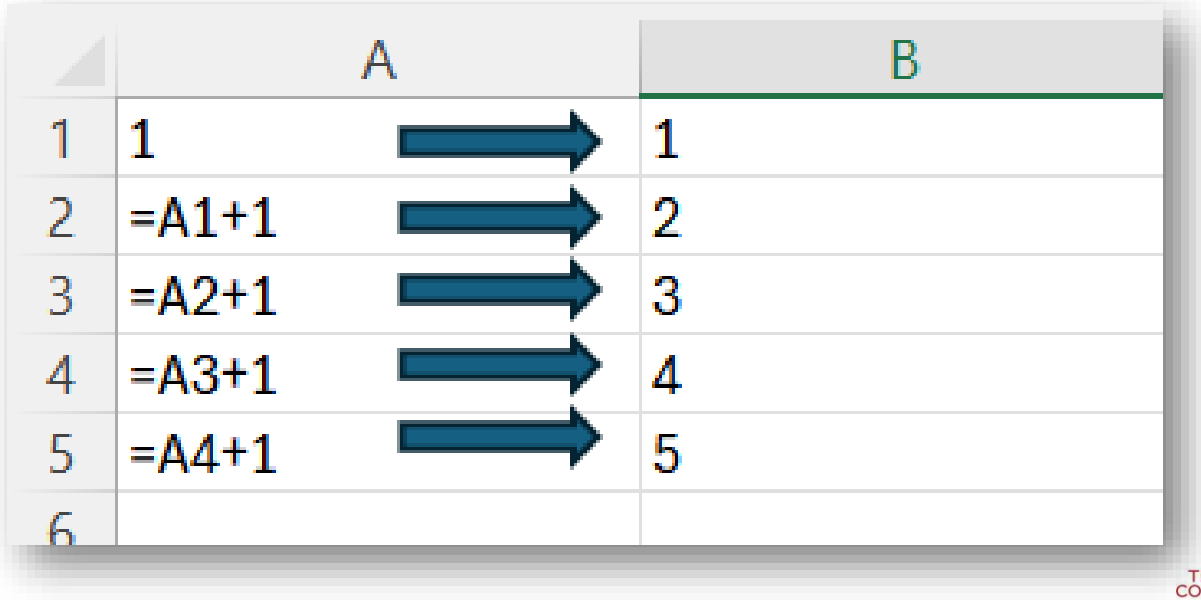
# Let's Do This!

- Use XL3-Ex2 to create formulas for "Invoice"
  - (Follow instructor directions)
- Try changing the data to see "what if"
- Be careful to change only data, not formulas

- Ask questions if you have them

# Copying/Moving Formulas

- Cut/Copy & Paste cells with formulas
- New location usually changes cell references automatically
  - Useful example: a number series

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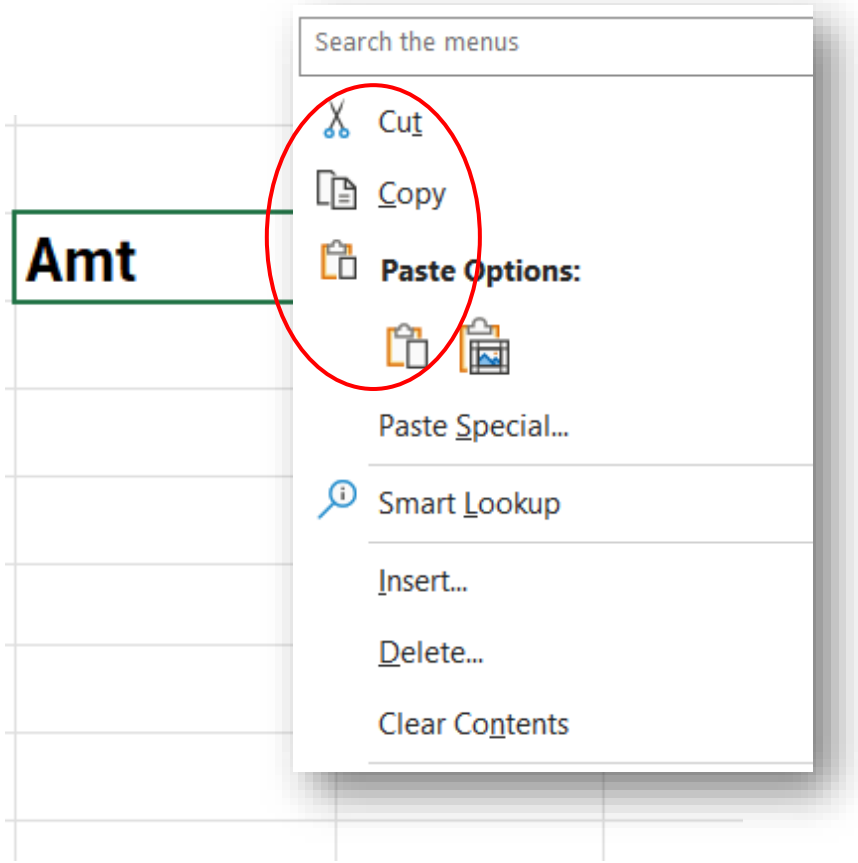
# Copying/Moving Formulas

- Cut/Copy & Paste cells with text or values only
  - Right click on selected cell(s)
  - Use the Context menu

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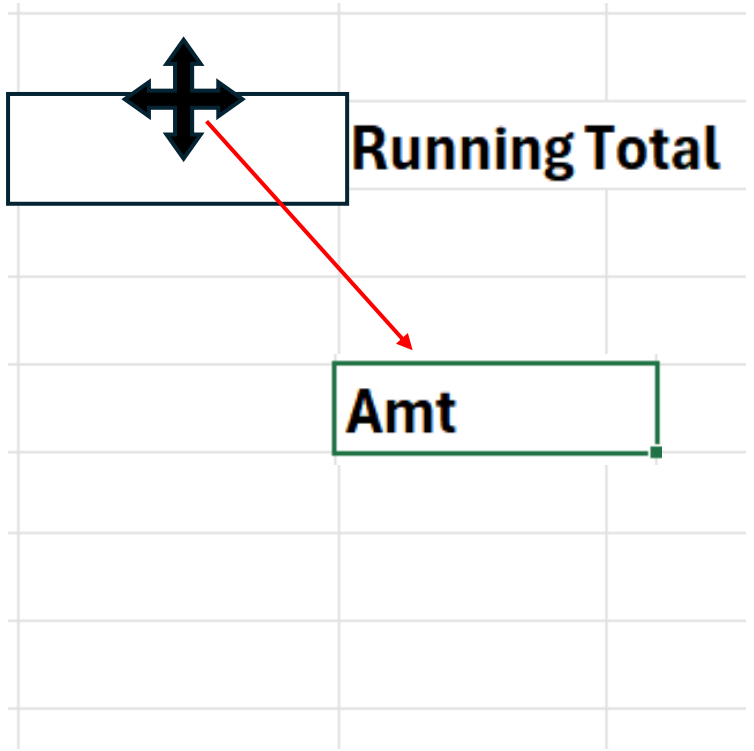
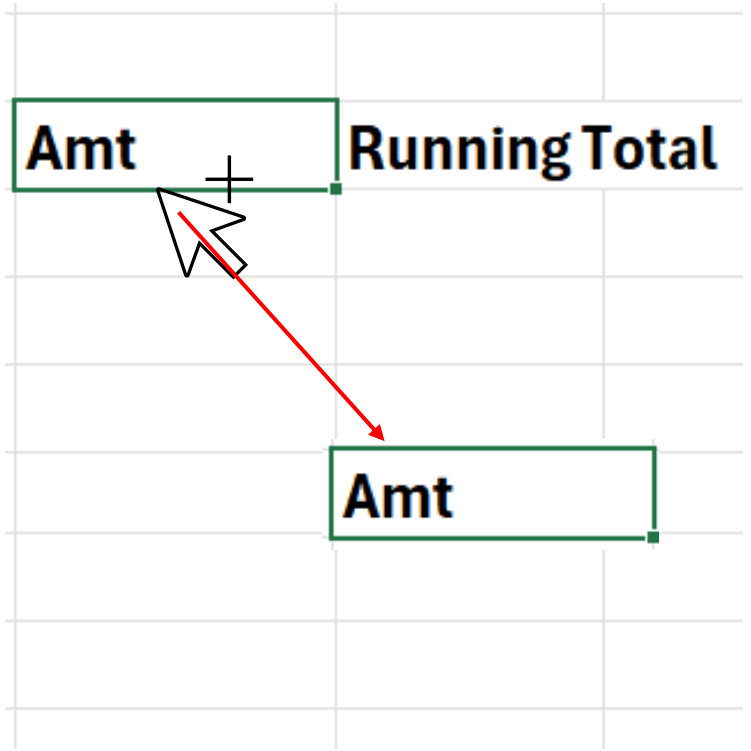
# Copying/Moving Formulas

- Cut/Copy & Paste cells with text or values only
  - Context menu
  - Drag cell to move (cut & paste)



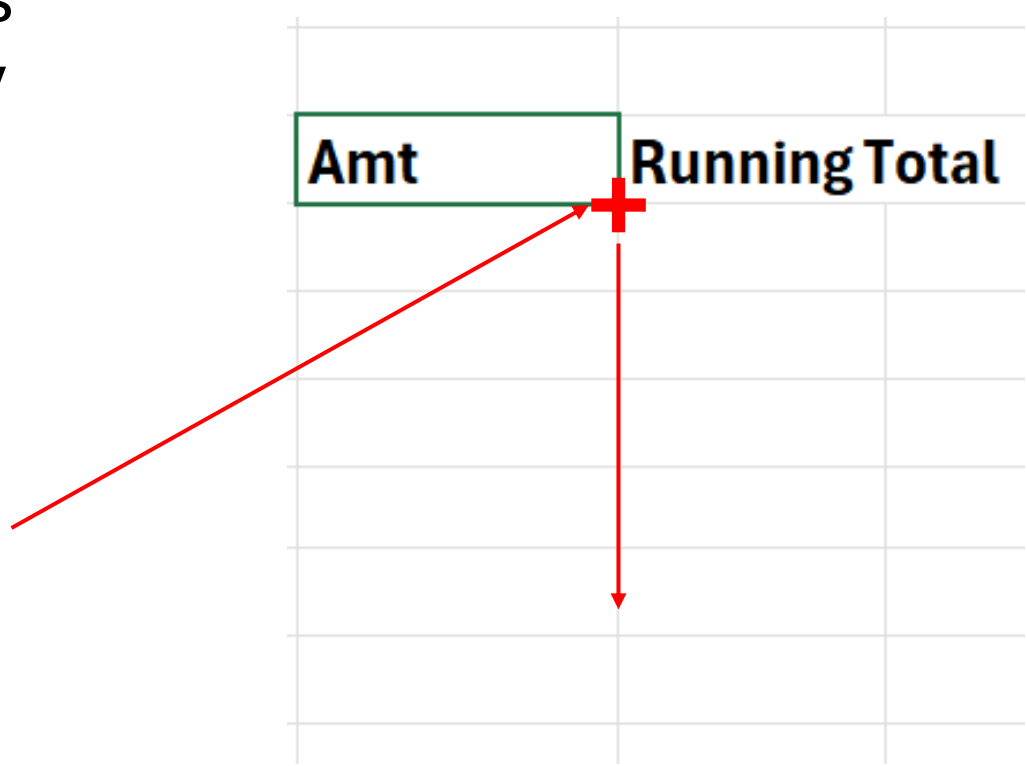
# Copying/Moving Formulas

- Cut/Copy & Paste cells with text or values only
  - Context menu
  - Drag cell to move (cut & paste)
  - Drag+Ctrl to copy



# Copying/Moving Formulas

- Cut/Copy & Paste cells with text or values only
  - Context menu
  - Drag cell to move (cut & paste)
  - Ctrl+Drag to copy (copy and paste)
  - Drag corner to copy to contiguous cells



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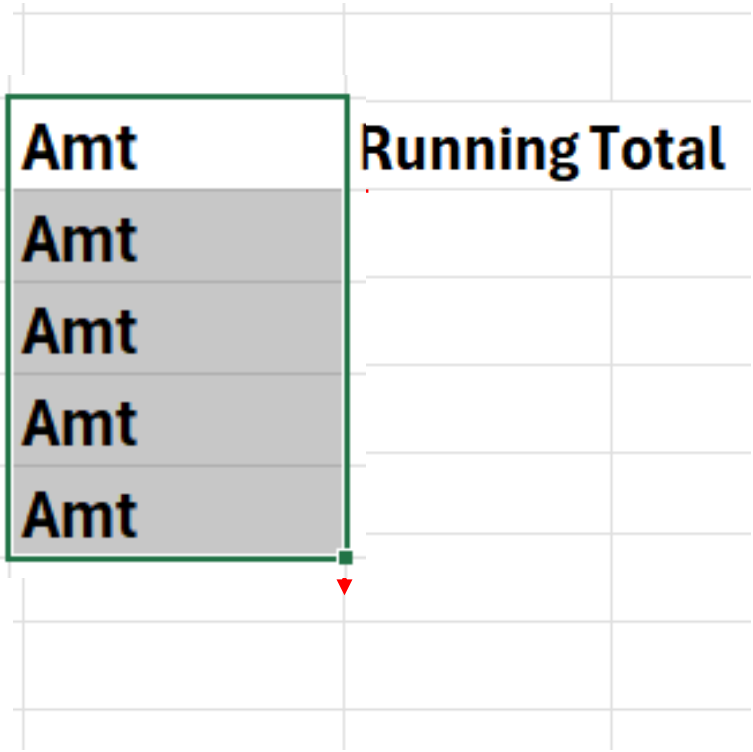


# Let's Do This!

- Continue with XL3-Ex2 to create formulas for "Invoice"
  - (Follow instructor directions)
- Try changing the data to see "what if"
- Be careful to change only data, not formulas

- Ask questions if you have them

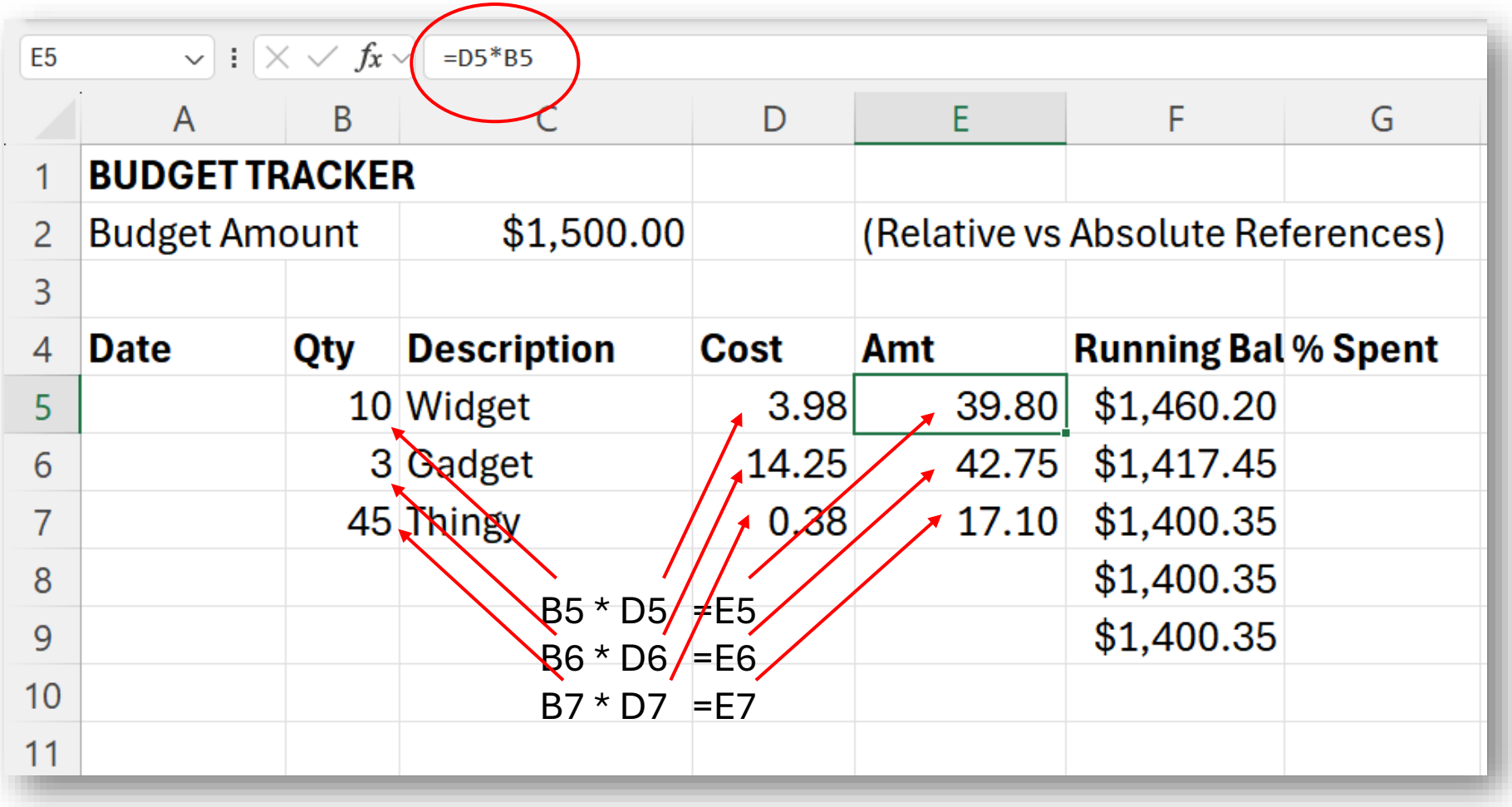
# Relative vs Absolute Reference

- **Relative** references change
  when a formula is copied to another cell.

- **Absolute** references remain constant
  no matter where they are copied.

# Relative vs Absolute Reference

Formula is relative, and changes the Row # as it is copied downward

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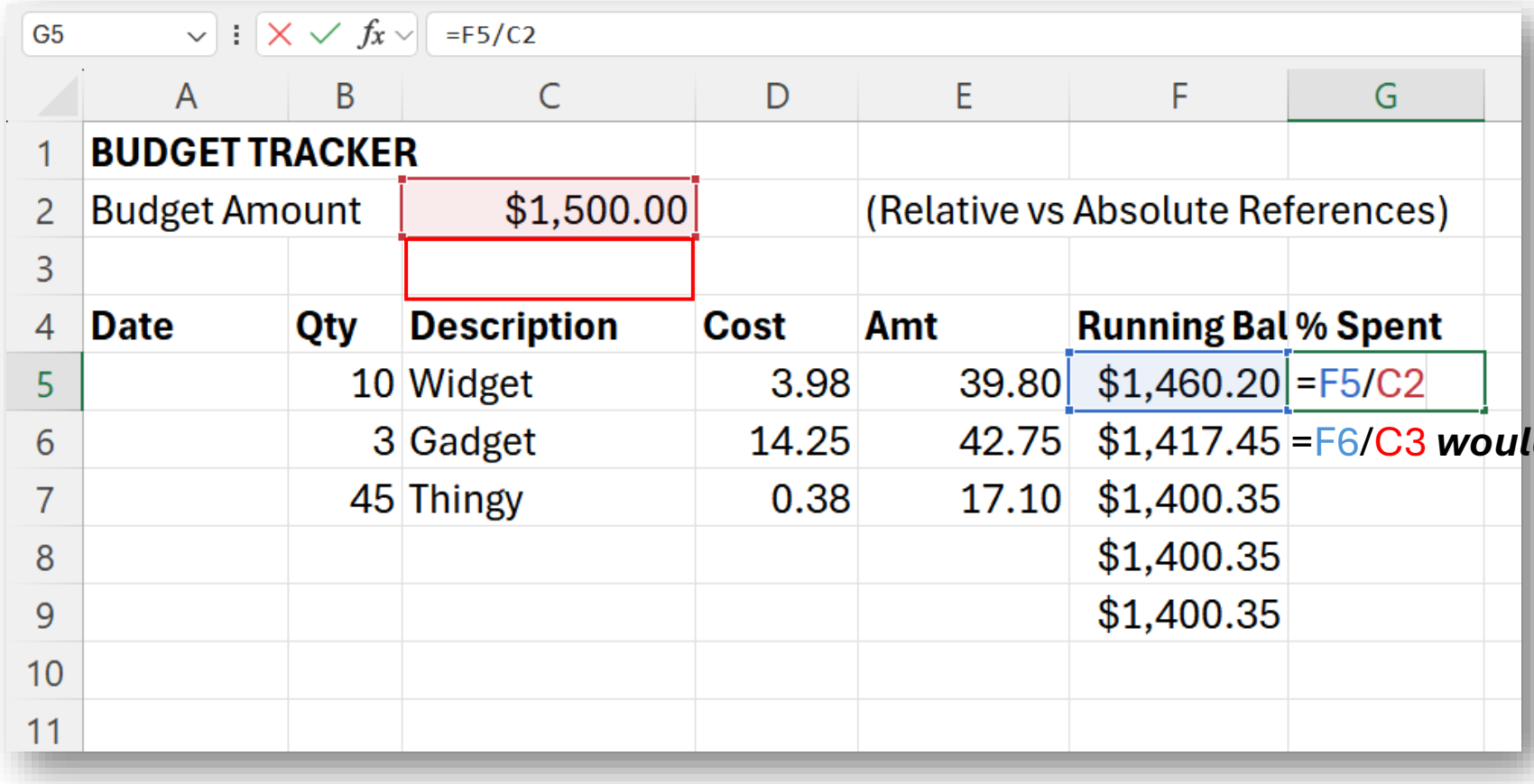
# Relative vs Absolute Reference

Formula is relative, and would change the Row # as it is copied

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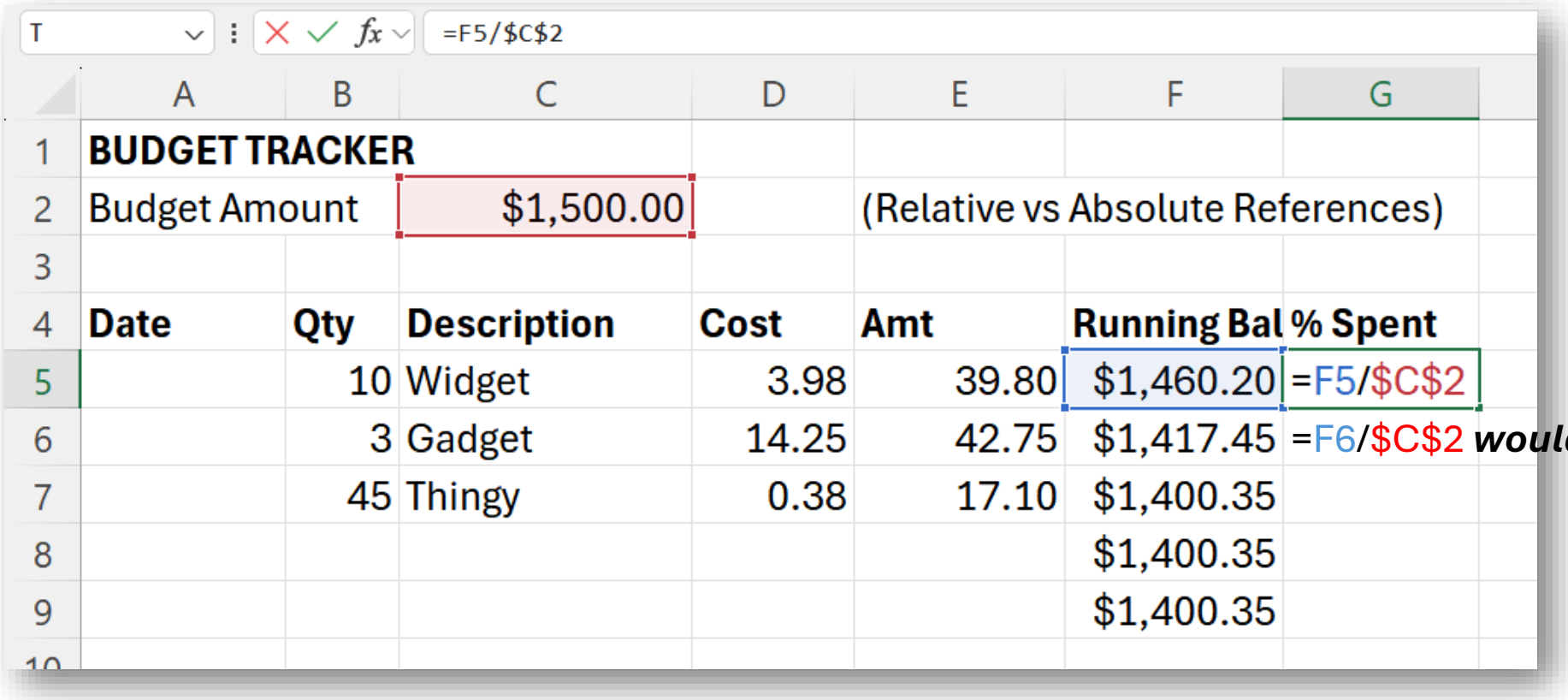
# Relative vs Absolute Reference

Formula is absolute, and ($C$2) does not change

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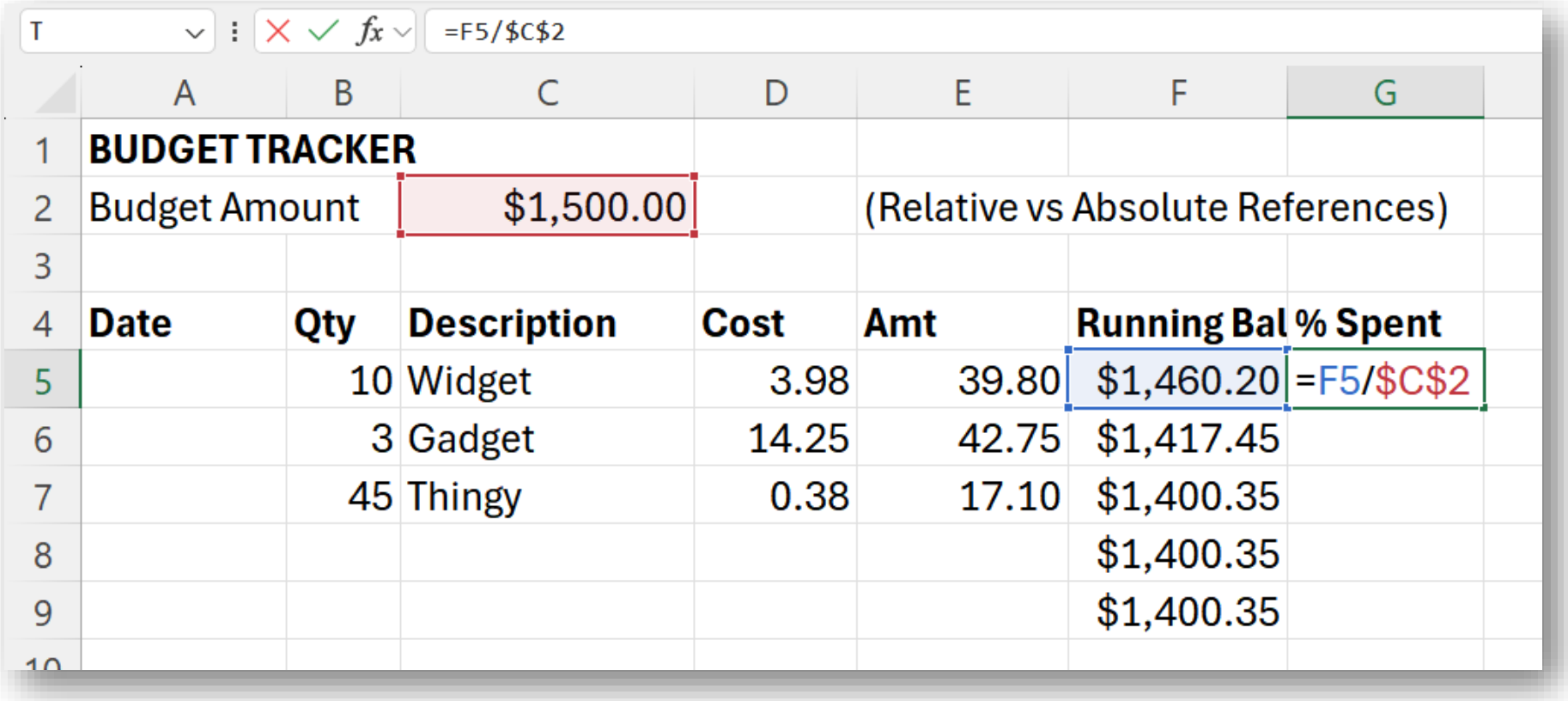
# Relative vs Absolute Reference

- Easy way to add Absolute indicator ($)
- Click on part of formula to change, and press F4 function key

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# Let's Do This!

- Use XL3-Ex3 to create formulas for "Budget Tracker"
  - (Follow instructor directions)
- Try changing the data to see "what if"
- Be careful to change only data, not formulas

- Ask questions if you have them

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# Next Time

- Sorting/Formatting Review/Practice
- Useful Excel work tools
- More useful formulas
- Advanced formatting
- Printing

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