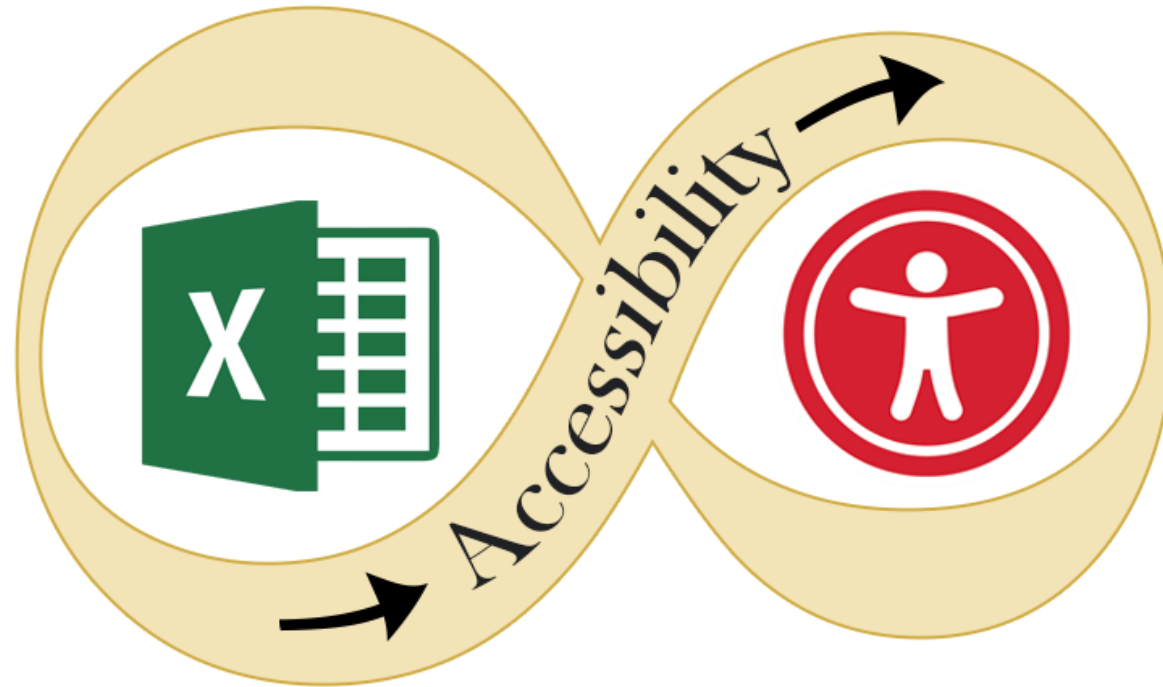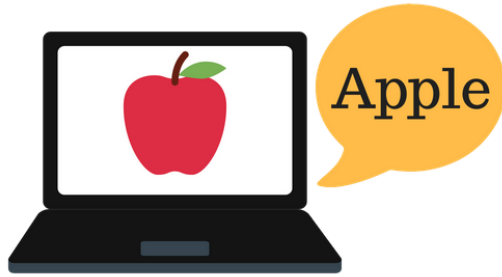# Excel Accessibility

A11y

Windows

What is Assistive Technology?

Assistive Technology (AT) are "products, equipment, and systems that enhance learning, working, and daily living for persons with disabilities."

Screen Readers
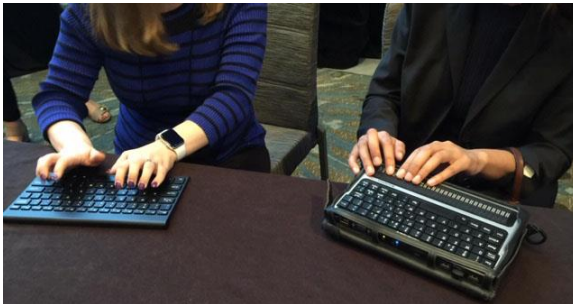

Magnification Software
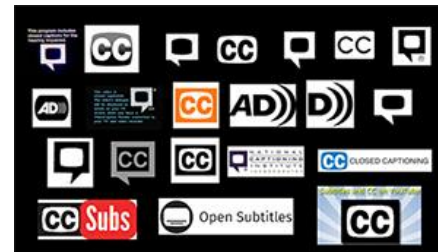

Speech Recognition

Trackball Mouse

Keyboard

Zoom Text

Braille Computer Keyboard

Captions/Subtitles

Captioned Telephone

Video Relay Services

What are Screen Readers

Screen readers are a form of assistive technology (AT) software that *enables access* to a computer, and all the things a computer does, by attempting to identify and interpret what is being displayed on the computer screen using ***text-to-speech***. Screen readers can only access and process **live text** (fully editable or selectable text).

- **Provides access** to someone who is visually impaired, mobility or has a learning disability to access text on the screen.

- Offers same level of **independence** and privacy as anyone else.

Types of screen readers

JAWS — Job Access With Speech

NV Access — Empowering lives through non-visual access to technology

VoiceOver (Apple)

TalkBack Screen Reader — Android

ZoomText

Screen reader program for Microsoft Windows that allows blind and visually impaired users to read the screen either with a text-to-speech output or by a refreshable Braille display. **NVDA screen reader** can be **downloaded free of charge** by anyone.

Provides auditory descriptions of each onscreen element using gestures, a keyboard, or a braille display.

Adds spoken, audible, and vibration feedback to your device.

Screen magnifier for Microsoft Windows that allows you to see and hear everything on the computer.

Excel Accessibility

- Title should appear in Cell A1 of the Sheet

- Content begins in cell A2

- Position data along top, left edge of sheet

- Content reads properly from top to bottom and left to right

- Content layout is logical and predictable
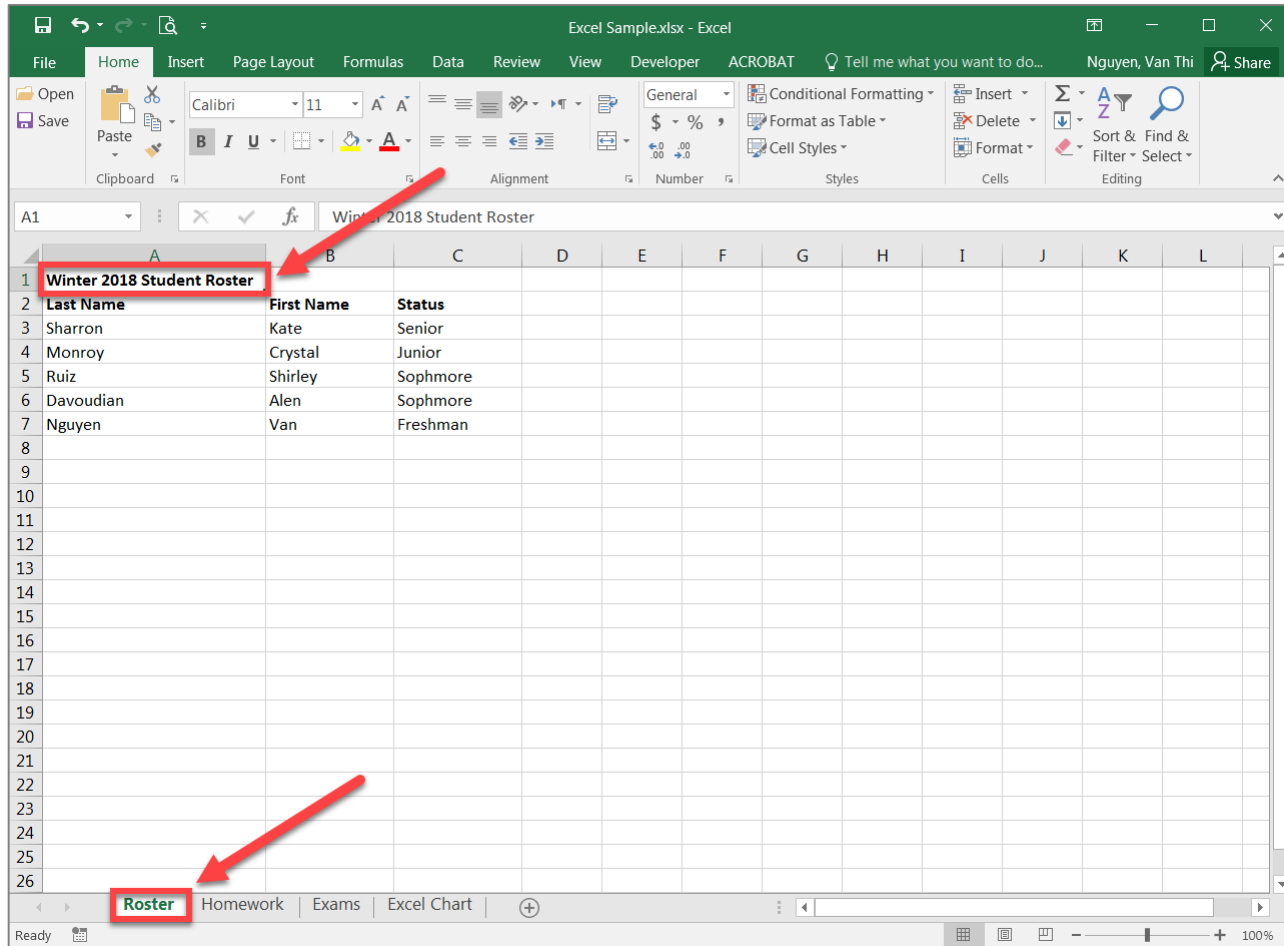
Accessibility Tips

Tips & Features

- Sans Serif Font, minimum 12 pt

- Auto-font color (black)

- Sheet Names are **brief** and **unique**

- Delete Unused Sheets

- Always Save worksheet with cursor in cell A1 of Sheet 1

Serif   Sans-Serif

Abc   Abc

Cell A1 of Sheet 1

A screen reader user will usually **_start with the first cell (A1),_** provide an overview or information about the worksheet.

When using Excel keep in mind that a user of assistive technology is going to be navigating by cell, therefore it's important to ensure your sheet begins using the A1 cell so that they can immediately begin accessing the content. This is a great spot to provide an overview or information about the worksheet.
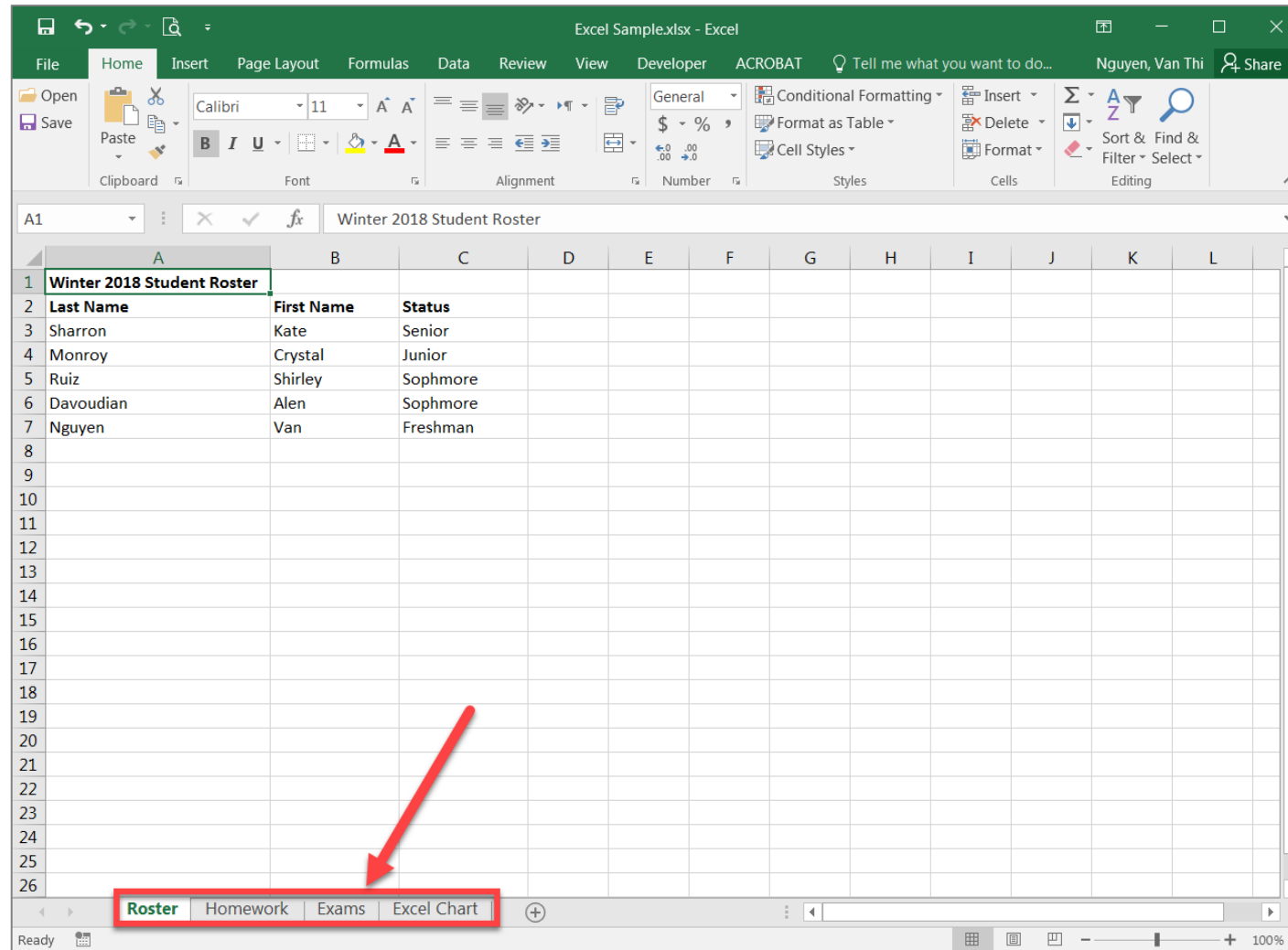
Headings Structure
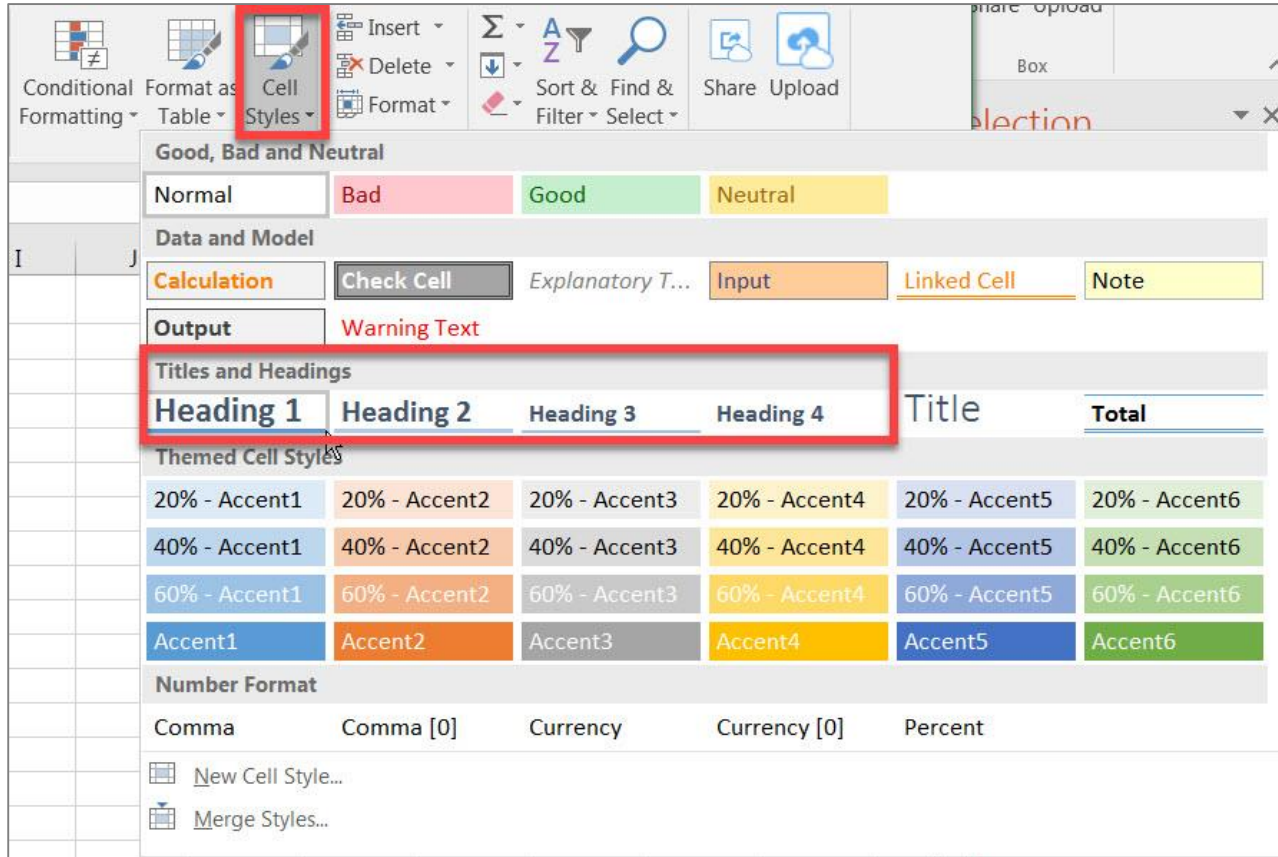
Use the Style pane in the home ribbon to define the cell styles and input headings.

1. Select the cell with the section title A1

2. Home | Styles pane | click on Cell Styles

3. Select the appropriate heading level

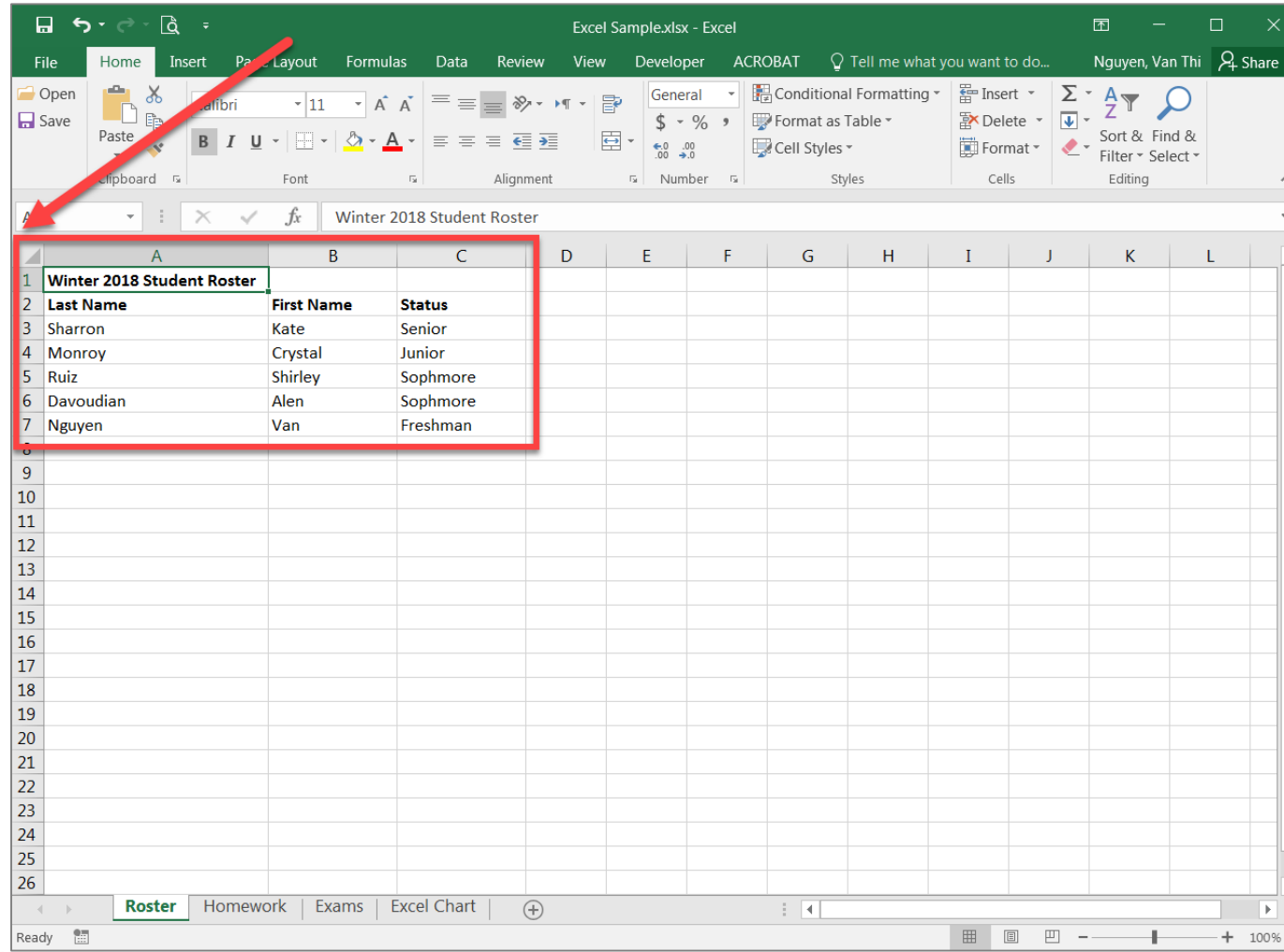# Sheet Names – Right click, Rename or Delete

One Item per Sheet

- Place each item (dataset, table, graphic) on its **own** sheet

- Divide complex (datasets, tables) into smaller, more manageable units on separate sheets

- Avoid nested datasets and tables

Data against top, left of Sheet

Row and Column Headers

- Designate Headers for Datasets and Tables
- **Avoid** merged cells for headers
- Use Define Name for Rows and Columns

  - Datasets:
    - If column and row headers are present, Name = Title
    - If only row headers are present, Name = RowTitle
    - If only column headers are present, Name = ColumnTitle

  - Tables:
    - Select option: My table has Header rows

Dataset: Header Row – Define Name

Dataset: Enter Name and Scope
(leave Comment blank)

About Dataset: Enter Name and Scope

New Name
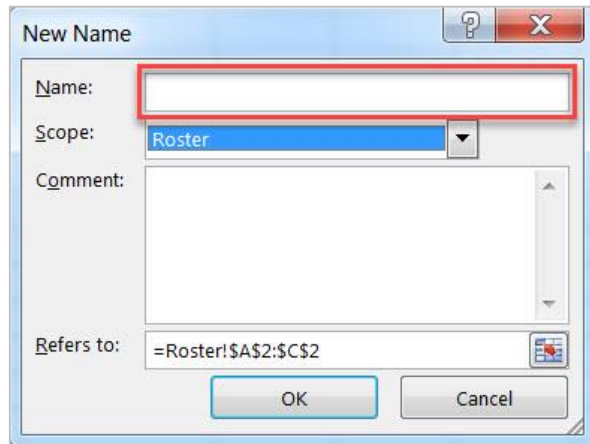
Name:

Scope: Roster

Comment:

Refers to: =Roster!$A$2:$C$2

OK   Cancel

Dataset option

If the table has column and row headers, enter Title

If the table has row headers only, enter RowTitle

If the table has column headers only, enter ColumnTitle

Dataset containing formula(s):
Select Dataset, Home – Format as Table

Table Headers

- Screen readers keep track of their location in a table by counting table cells.

- Screen readers also use header information to identify rows and columns.

- If a table is nested within another table or if a cell is merged or split, the screen reader loses count and can't provide helpful information about the table after that point.

- When using tables, remember to keep their layout simple, **don't merge** cells or nest tables inside other tables.

- Be careful with ***empty rows and columns (blank cells).*** While they may sometimes be necessary to visually separate data, ***they can cause a screen reader user to think the sheet has ended,*** even when it has not.

Format Cell Data

- Format cells so all text is visible (i.e. no hastags ###)

- Avoid merged or split cells

- Avoid text boxes

- Avoid blank rows and columns

- Avoid blank cells

  - Use other means (i.e. n/a, minus sign, 0, no data, empty cell, etc.)

Avoid Blank Cells – use other means
(ex: n/a)

	A	B	C	D	E	F
1	**Winter 2018 Grades**					
2	**Last Name** ▾	**HW 1** ▾	**HW 2** ▾	**HW 3** ▾		
3	Sharron	90	100	95		
4	Monroy	95	85	100		
5	Ruiz	95	75	100		
6	Davoudian	n/a	99.9	99.9		
7	Nguyen	75	75	75		
8						
9						
10						
11						

Tables Accessibility

- To ensure accessibility, format tables with headers and **avoid** merged, split, or blank cells.

- The complex a table (merging cells, nesting multiple headings under one, adding blank lines, etc.) the worse it will be for accessibility.

- Sample of Simple Tables vs. Complex Tables by Penn State.

Image Alternative or Alt Text

Screen readers and other AT announce that it's an "image" or "graphic", then read the alt text:
"Three plants going through transformation with text quote Accessibility user-friendly document for CSUN student success."

- The purpose of **Alt Text** is to allow low vision or blind users who use text-to-speech assistive technologies (AT), such as screen readers, to understand the purpose of graphic images. Sighted users usually don't see alt text unless they use AT.

- Screen readers and other AT **can't** convert images into texts. So, when writing alt text, consider the following for images:

  o Describe the content and the purpose of the image clearly and concisely, in a phrase or a sentence or two. Keep alt text short 200 characters or less.

  o Image with text (for example, the CSUN wordmark) should include the words on the image.

  o "Image of…", "Photo of…" is not needed because screen readers and other AT announce that it's an "image" or "graphic".

  o When completing the alt text, use proper punctuation such as periods to indicate the end of the alt text. Without proper punctuation, some screen readers will run the alt text into the body text that follows and cause confusion to the user.

  o Don't insert hyperlinks in alt text because they are not clickable and can't create descriptive link text.

How to Describe Images?

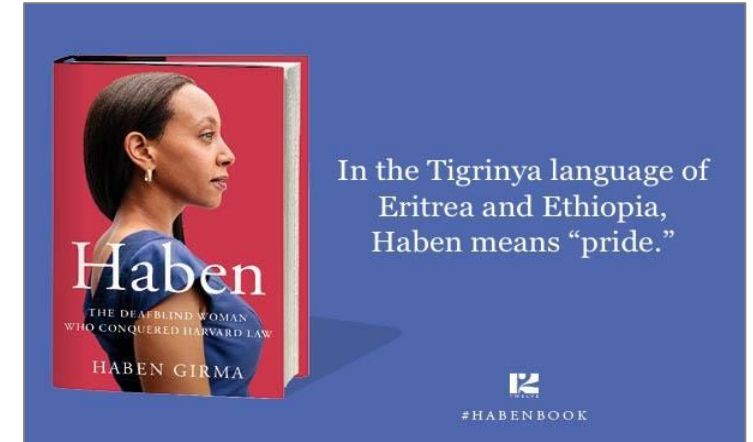A stair chase leading up to an entryway is painted yellow with bold black text that reads museums are now.

A hand reaches out of a computer screen giving the hand gesture for stop. The screen reads 'access denied!'


On the left is the book cover for Haben The Deafblind Woman Who Conquered Harvard Law, and on the right is the quote: "In the Tigrinya language of Eritrea and Ethiopia, Haben means 'pride.'"

Michelle Obama claps and Barack waves.

Student holds a diploma hardcover up in the air during CSUN commencement. Caption text "and together, as Matadors, we will move mountains."

More examples of How to Describe Images

- [Document Learning Tools: Describing images](#)

- [How to Describe Images](#)(Art, Chemistry, Diagrams, Flow Charts, Formatting & Layout, Graphs, Maps, Mathematics, Page Layout, Tables, Text-only images)

- [Periodic Table of the Elements](#)

- [UDC Best Practices for Describing Images](#)

Add Alt Text to images

Add alt text to images, Smart Art graphics, shapes, charts so that screen readers can read the text to describe the image to users who can't see the image.
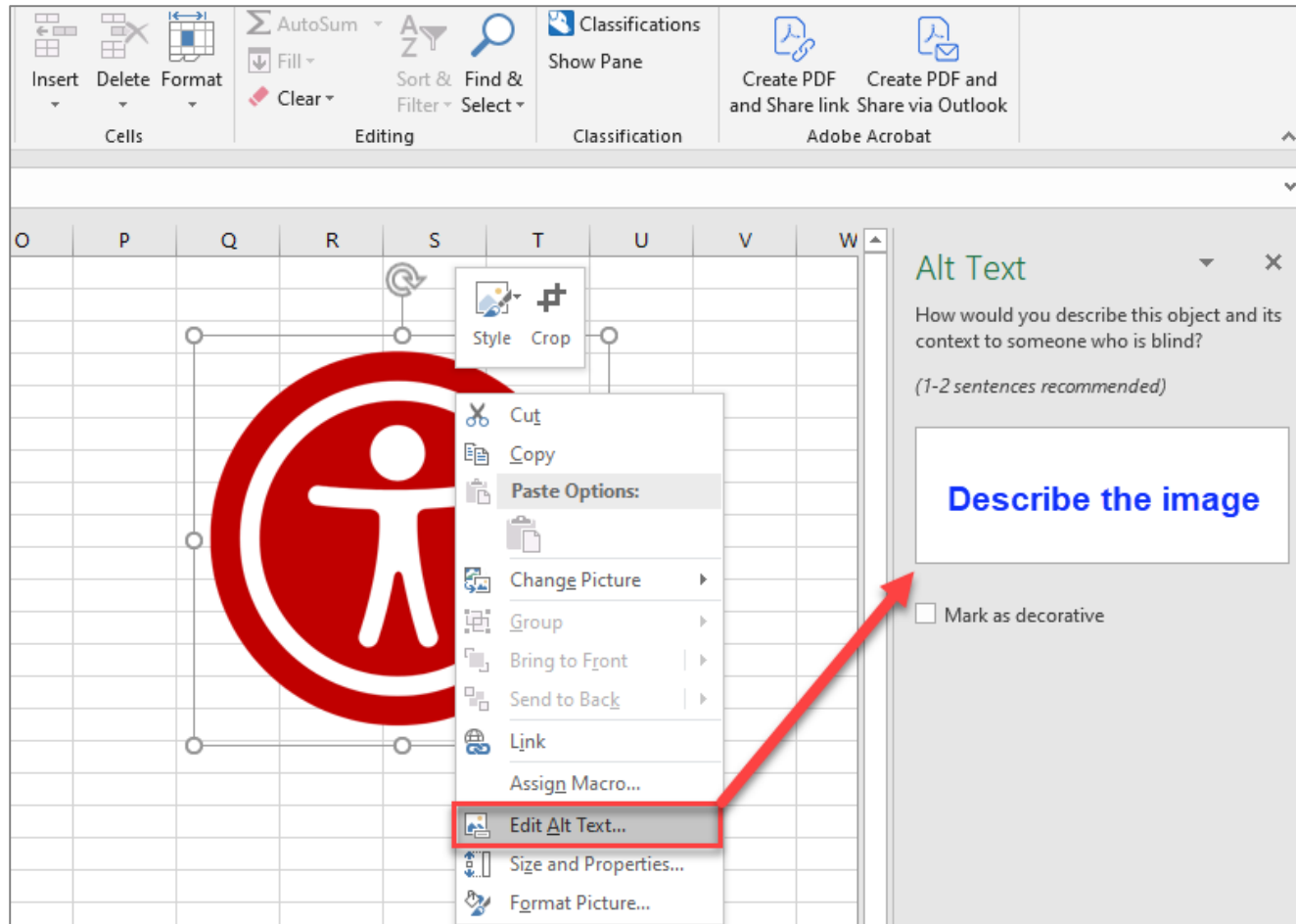
Select the image and right-click to select "**Edit Alt Text**"

Image Captions

- Captions are universal and accessible for everyone.

- Captions are read and visible to all users whether they use assistive technologies (AT) or not.

- Captions and alt text have different purposes
  - **Captions** convey what's visible in the image.
  - **Alt text** describes the visual aspect of the image and should be brief.

- If captions and alt text are similar in their descriptions, alt text can be "**Mark as decorative**" to be ignored by the screen readers.

- **Don't repeat** the image's caption as the alt text. People don't need to hear the same information twice.
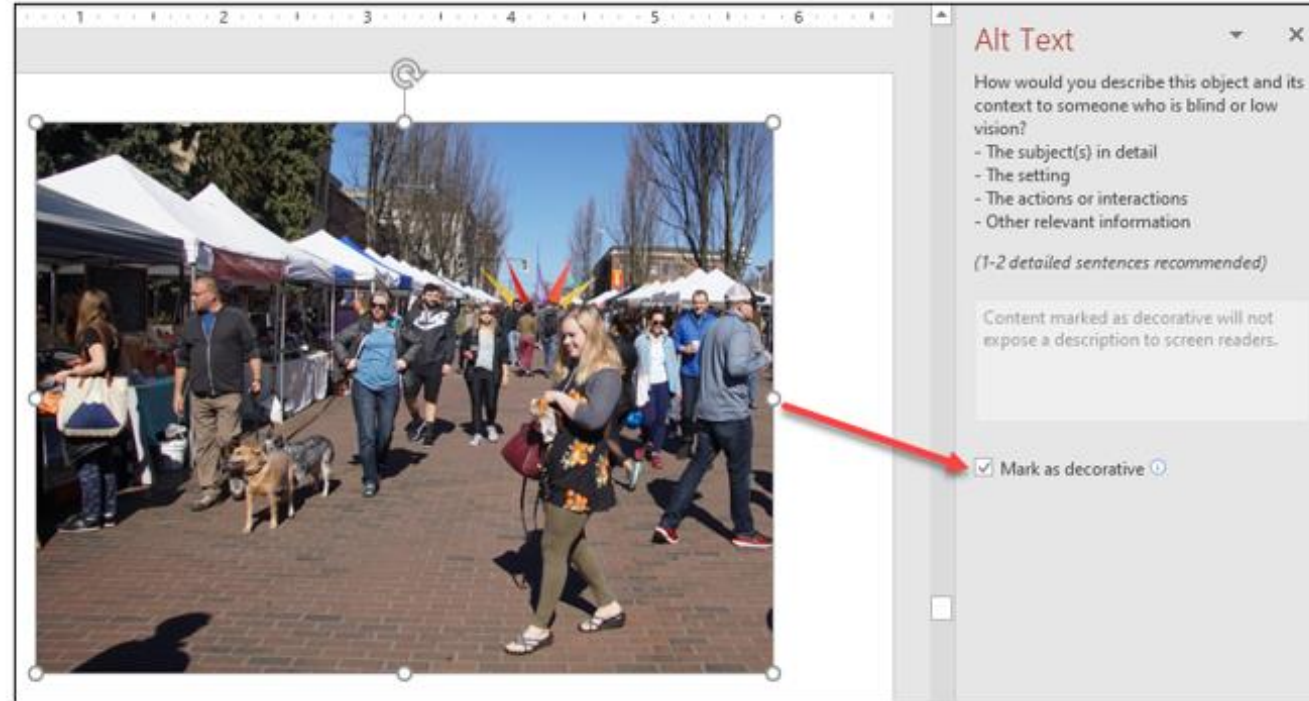
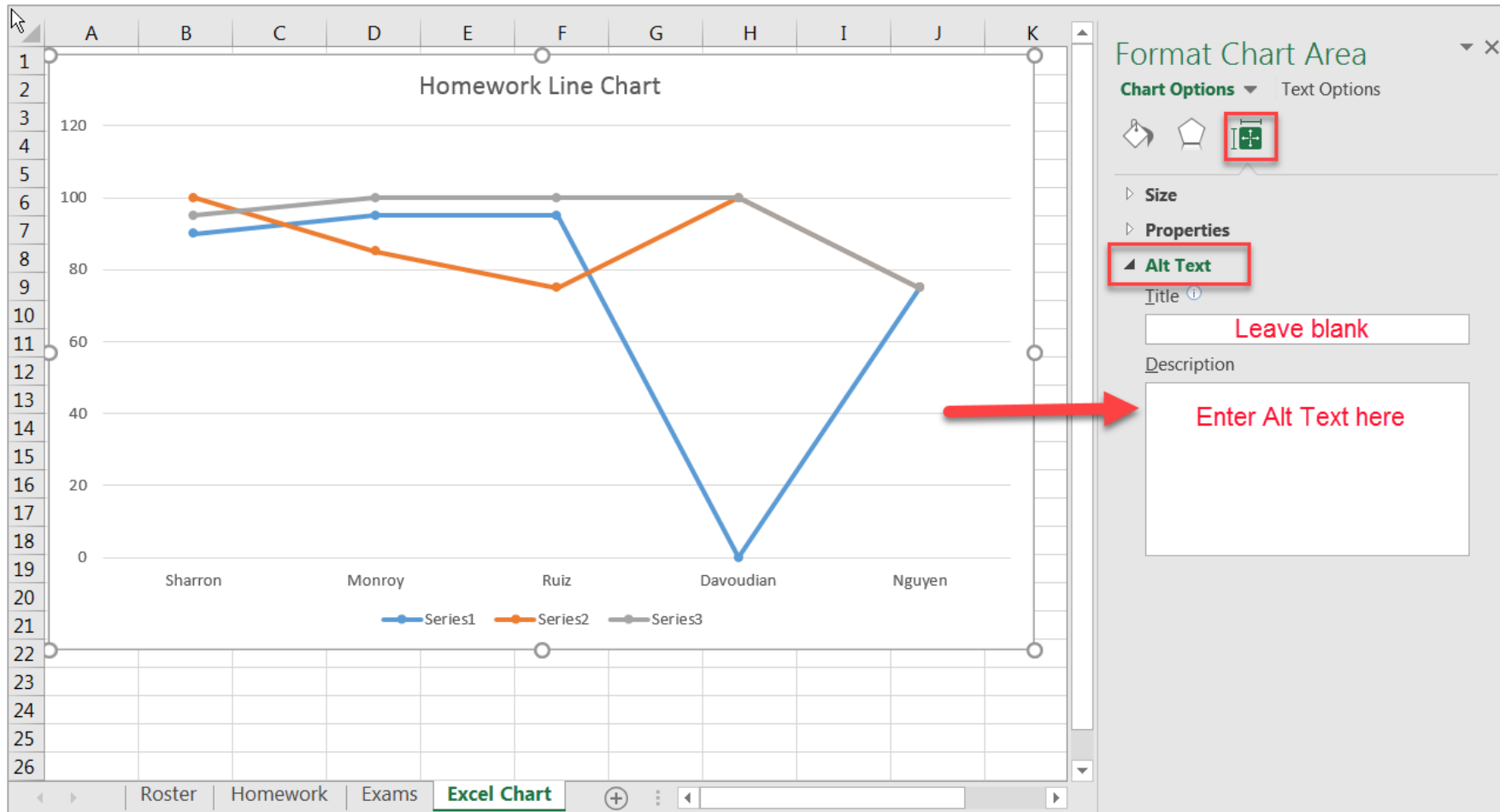A crowd of people are walking and shopping at an outdoor market.

Alt text: Mark as decorative
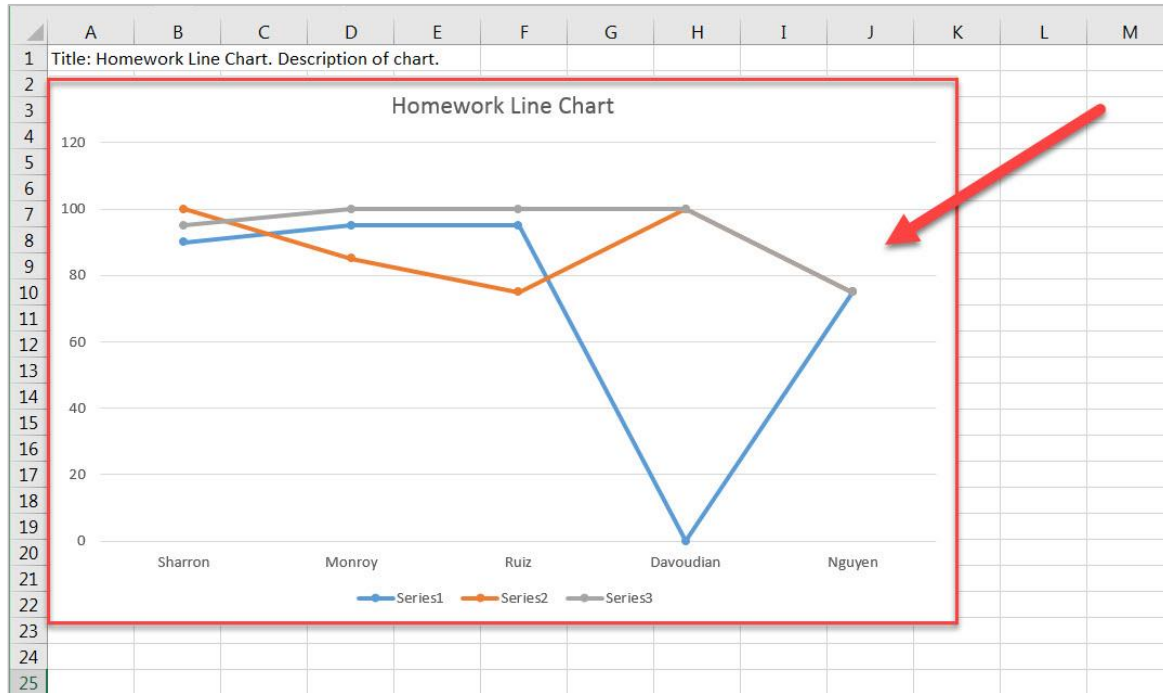
Format Menu – Format Chart Area
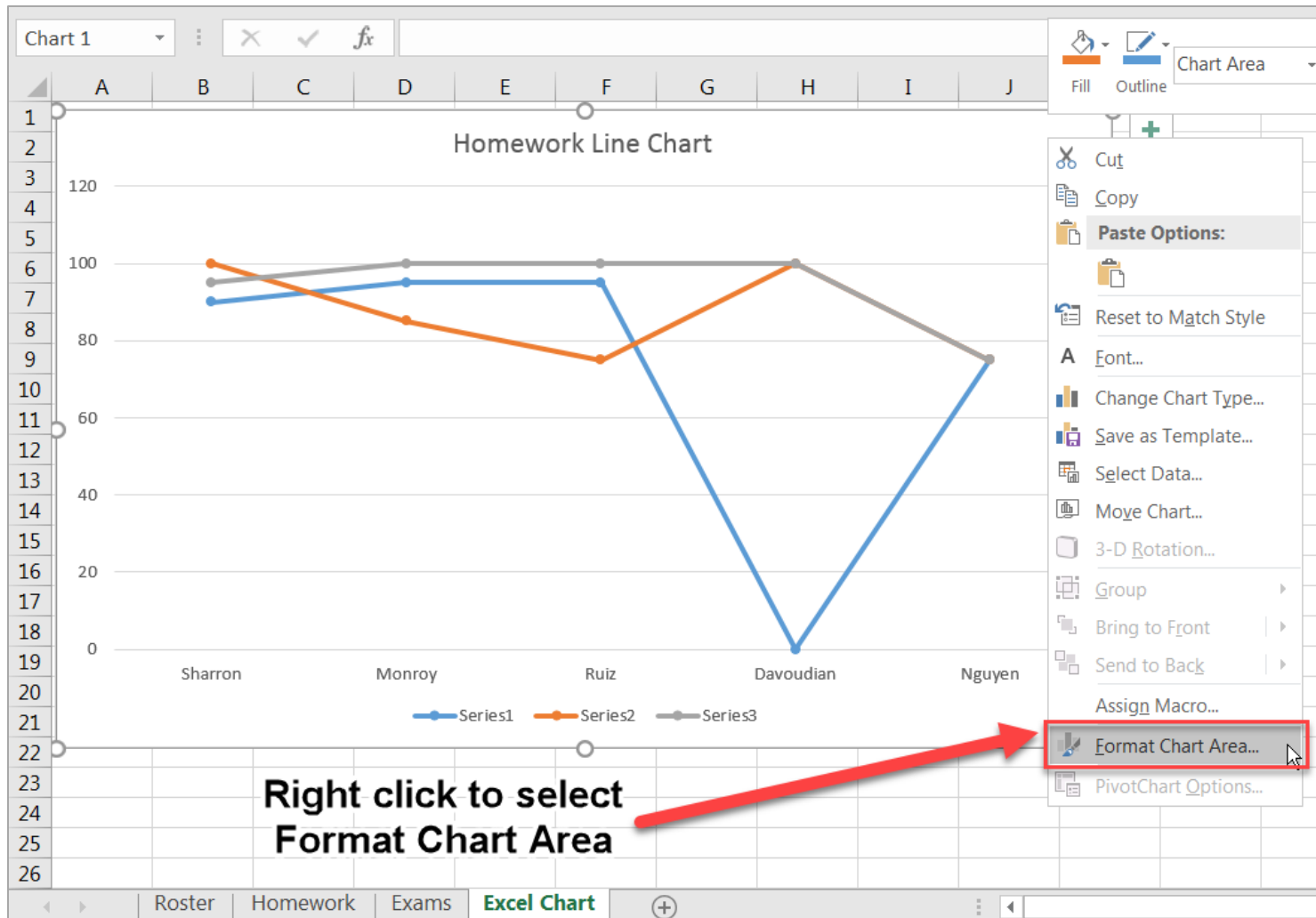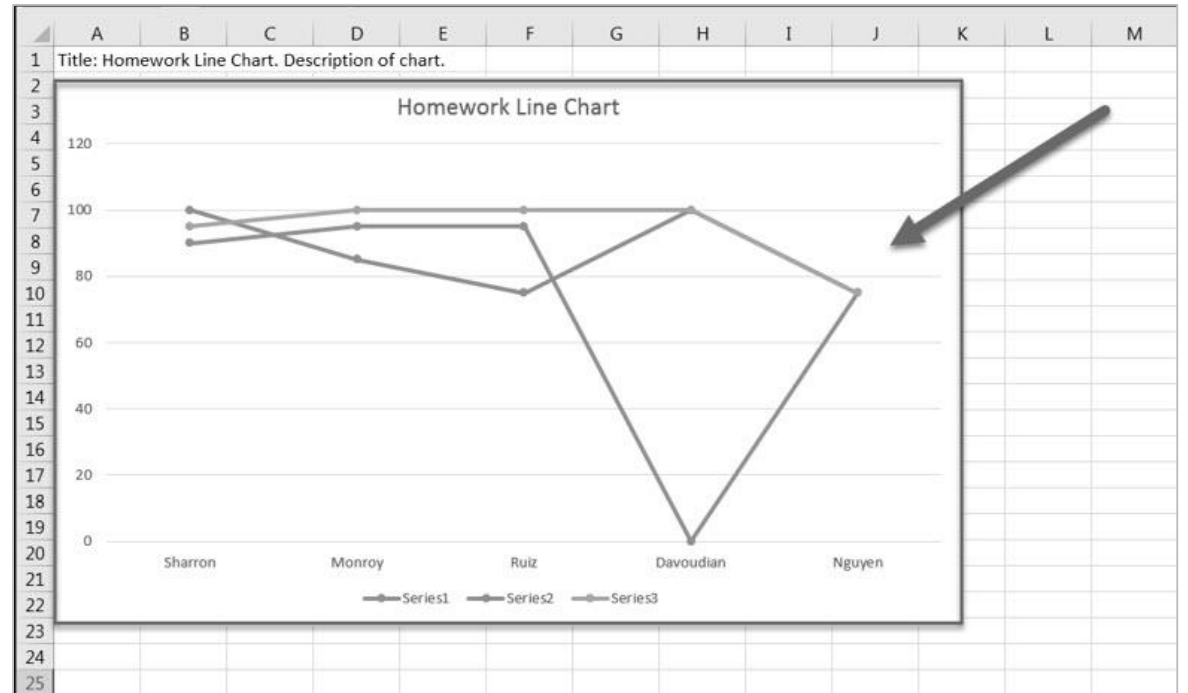
Format Chart Area – Size & Properties
Alt Text (Description)

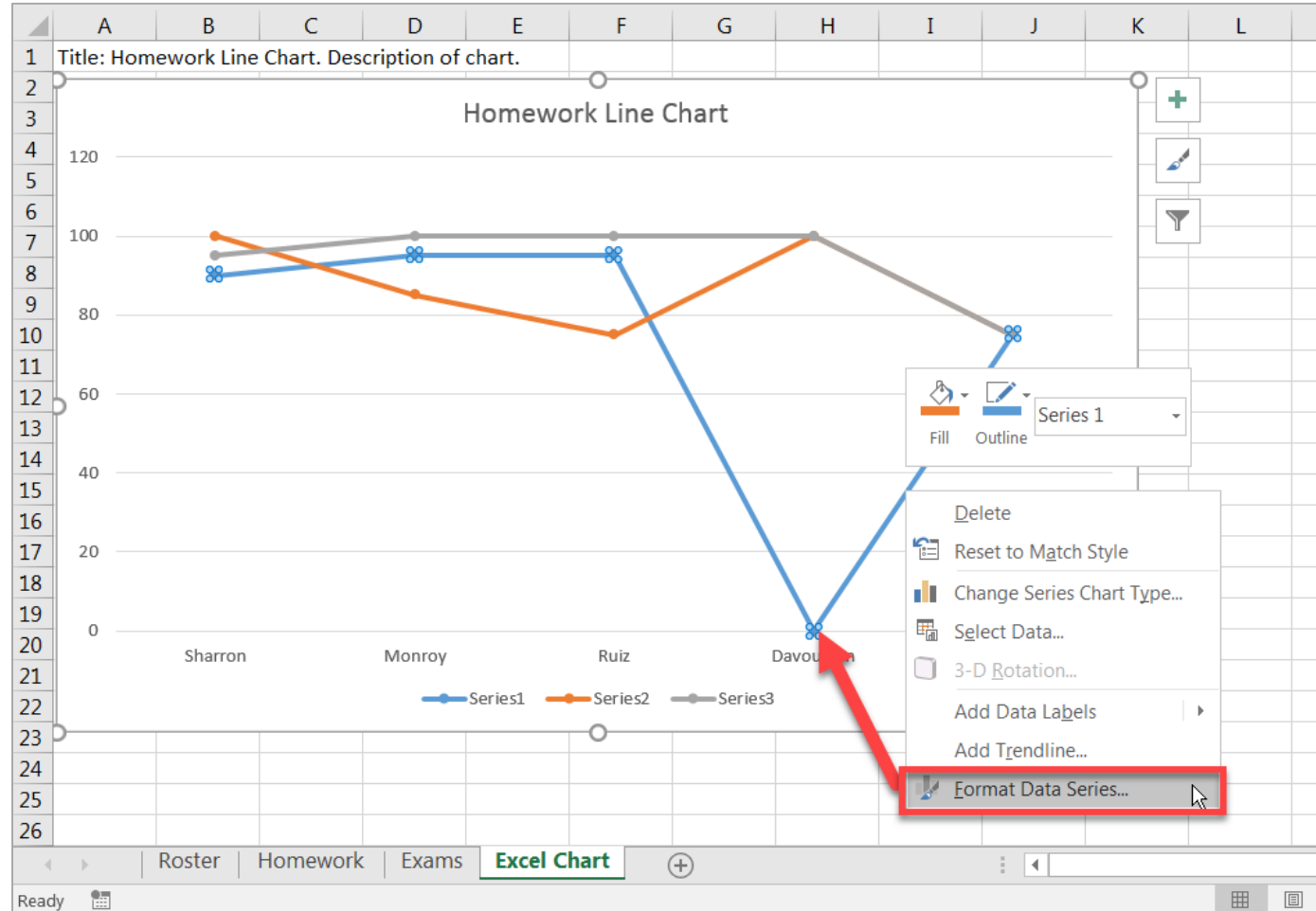# *Not* Accessible – Line Chart contains color-coding
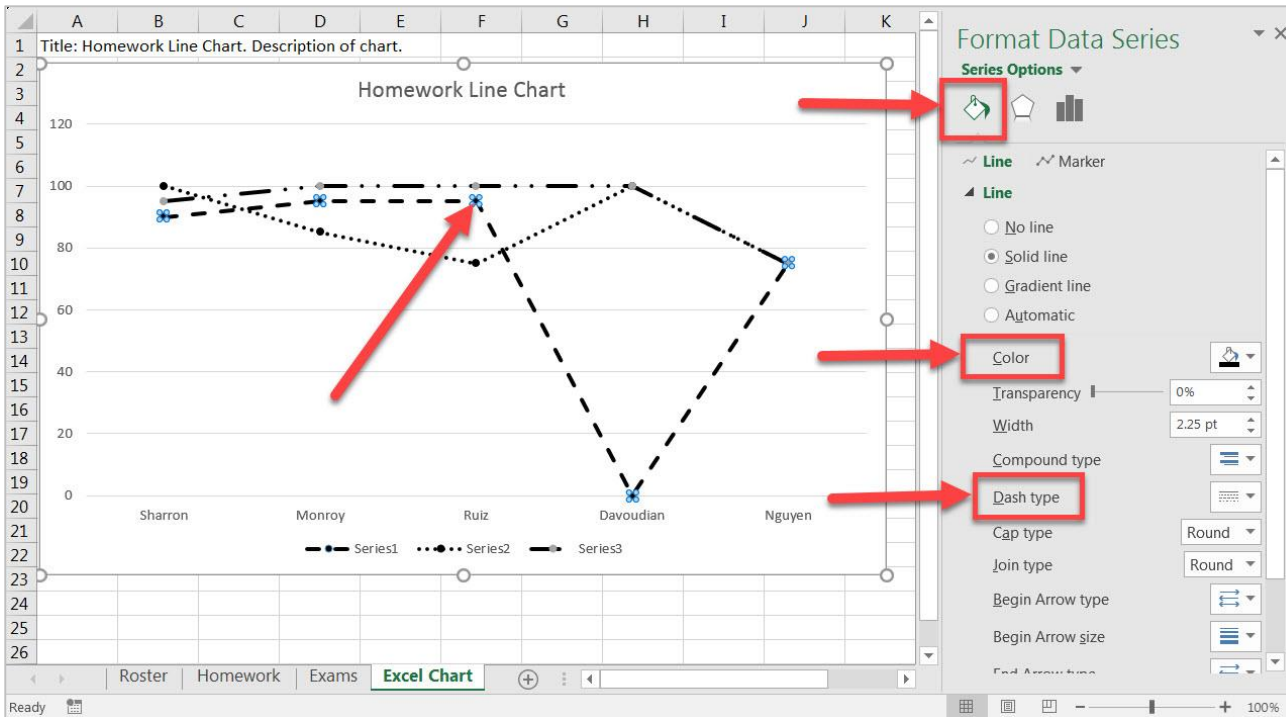

Color View
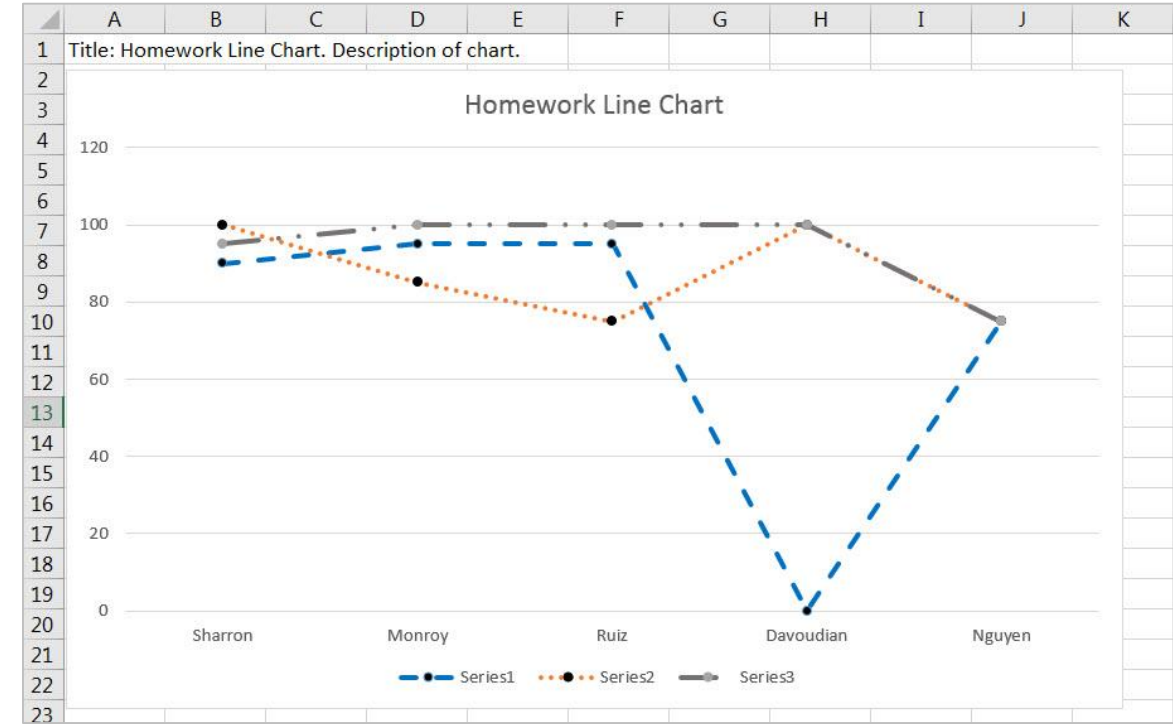
Black & White View

Format Data Series – Fill & Line

Format Data Series – Fill & Line, Color and Dash Type
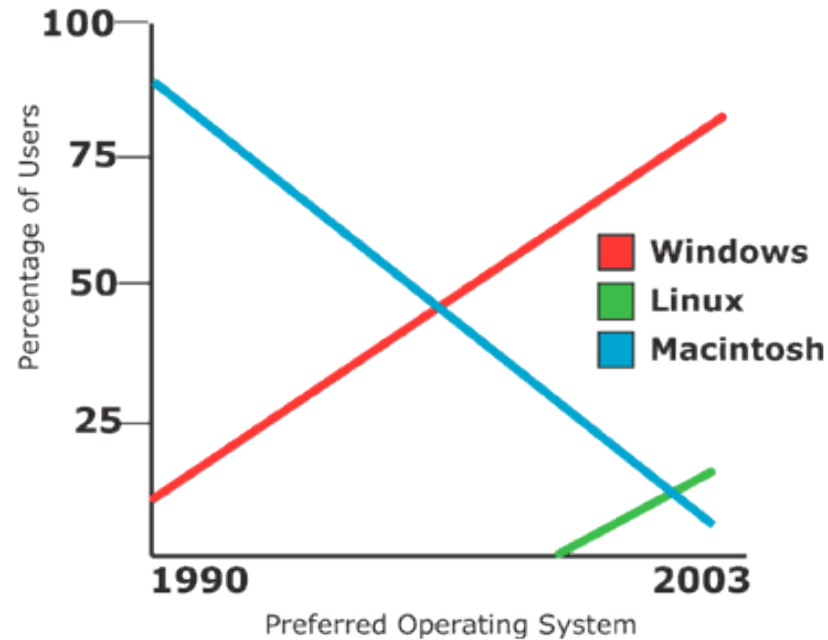## (repeat for each line)

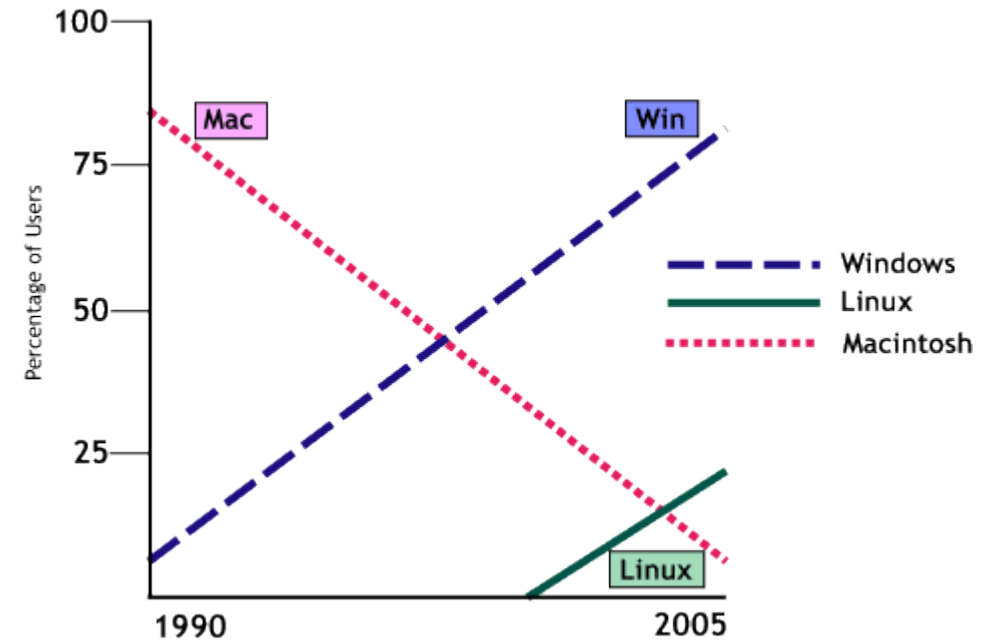**Black & White View**

Color View

Line Charts

Inaccessible Line Chart

This is an inaccessible line chart based on the data in the table comparing percentage of Mac and Windows users in 1990 and 2003. In grayscale, these colors are virtually identical may not be recognized by colorblind users.

Accessible Line Chart
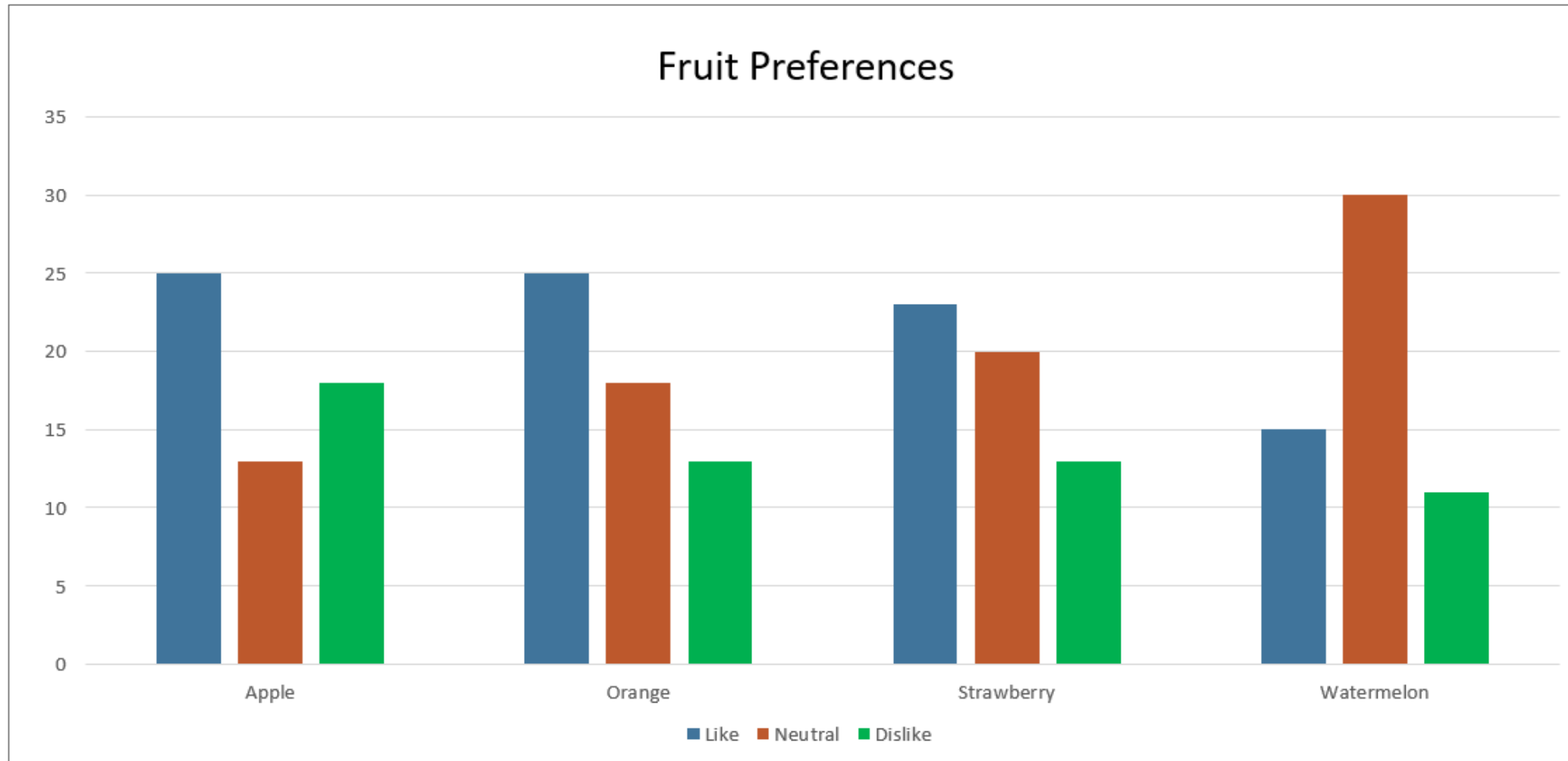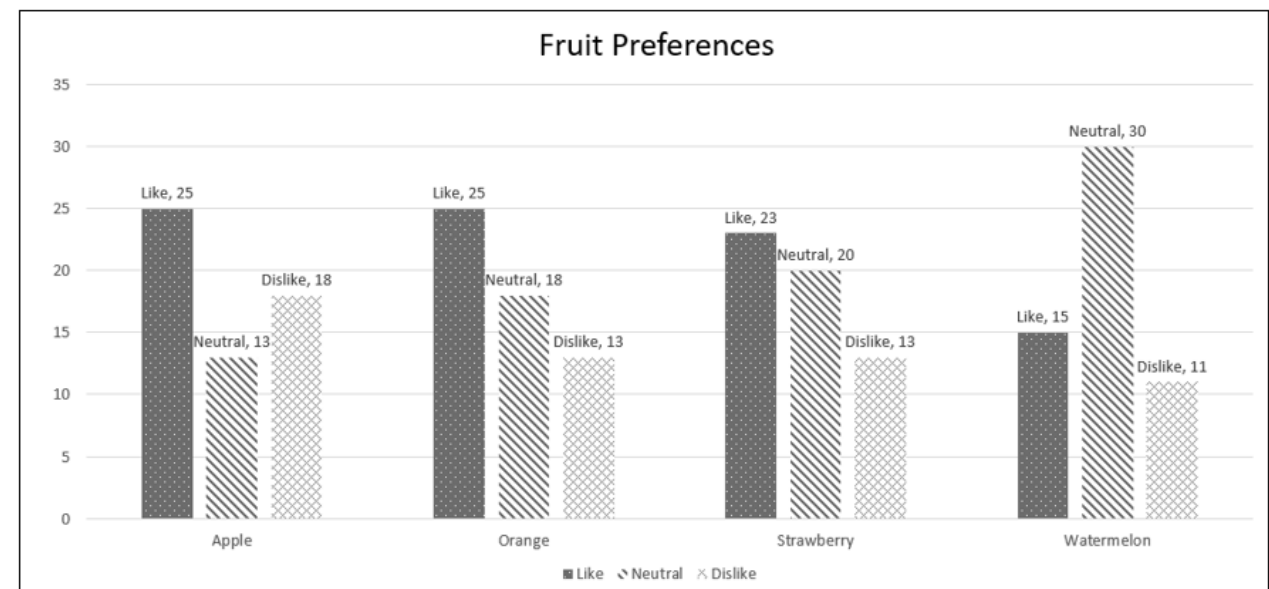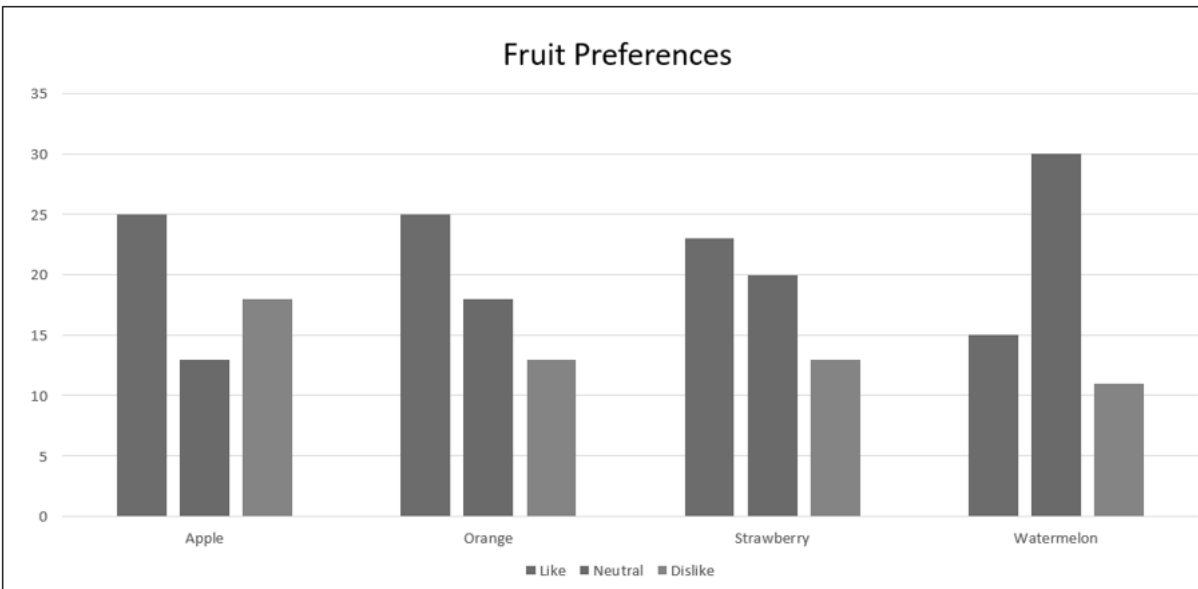
This chart replaces three solid lines with one solid line and two dotted lines, with labels for each. For line charts, changing the style of the graph lines and adding labels increases usability. Charts & Accessibility by Penn State.

Universal **D**esign **C**enter

csun.edu/udc

Why Color Coding is **Not** Accessible?

Fruit Preferences

View Presentation in Black & White
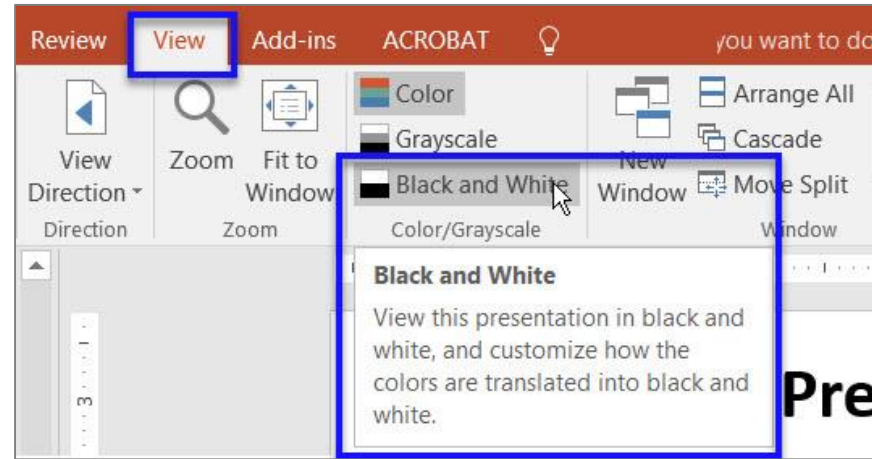
Pattern Fill – Format Data Series, Fill & Line

- Select 1 of 3 bars

- Option 1: Mouse right-click to select **Format Data Series**

- Option 2: **Format** tab, select **Format Selection**

- **Fill & Line** icon

- **Pattern Fill &** Select Pattern type

- Repeat for each bar with a different pattern type

Universal **D**esign **C**enter
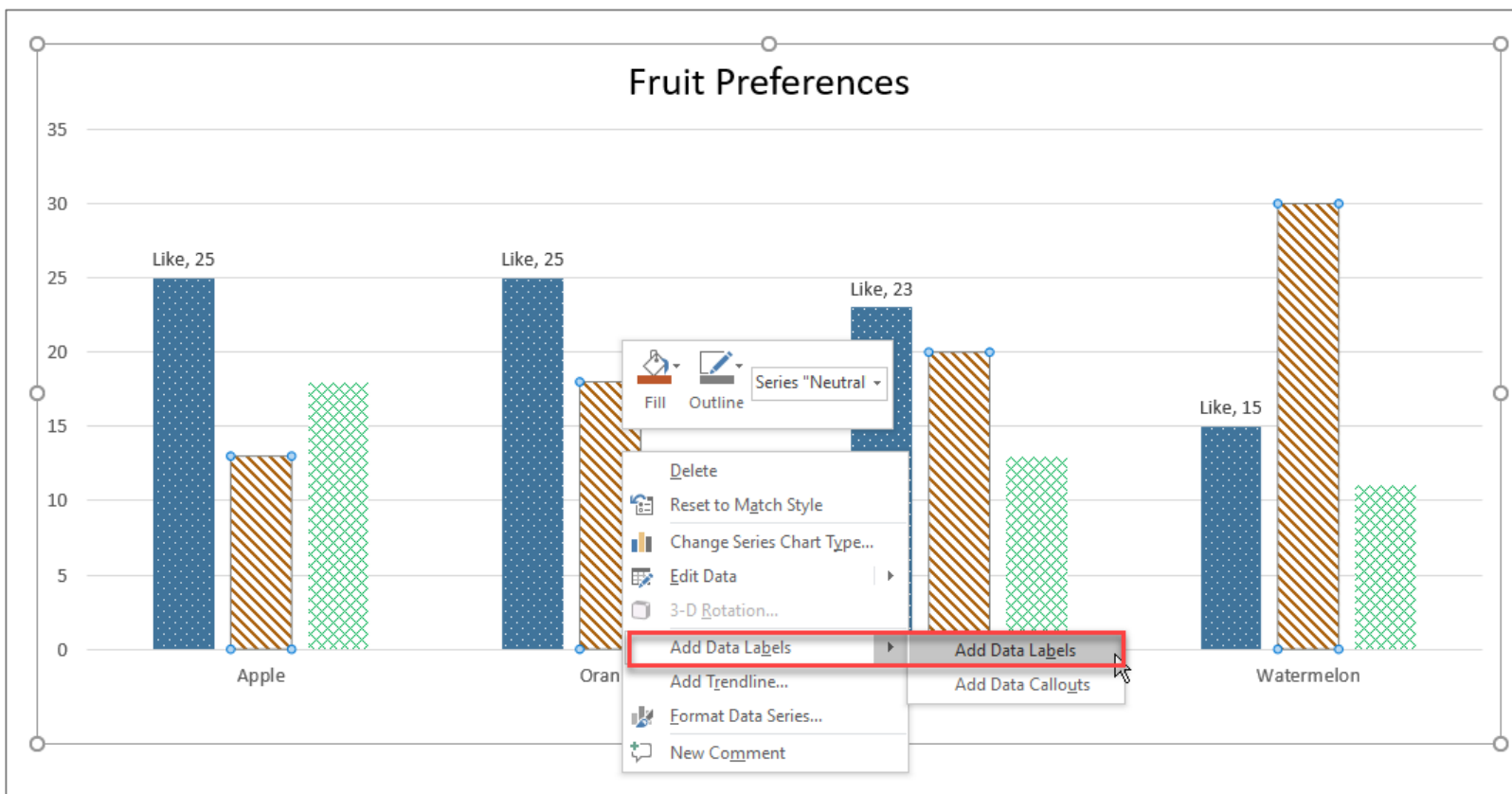
Add Data Labels

- Select 1 of 3 bars

- Option 1: Mouse right-click to select **Add Data Labels, Add Data Labels**
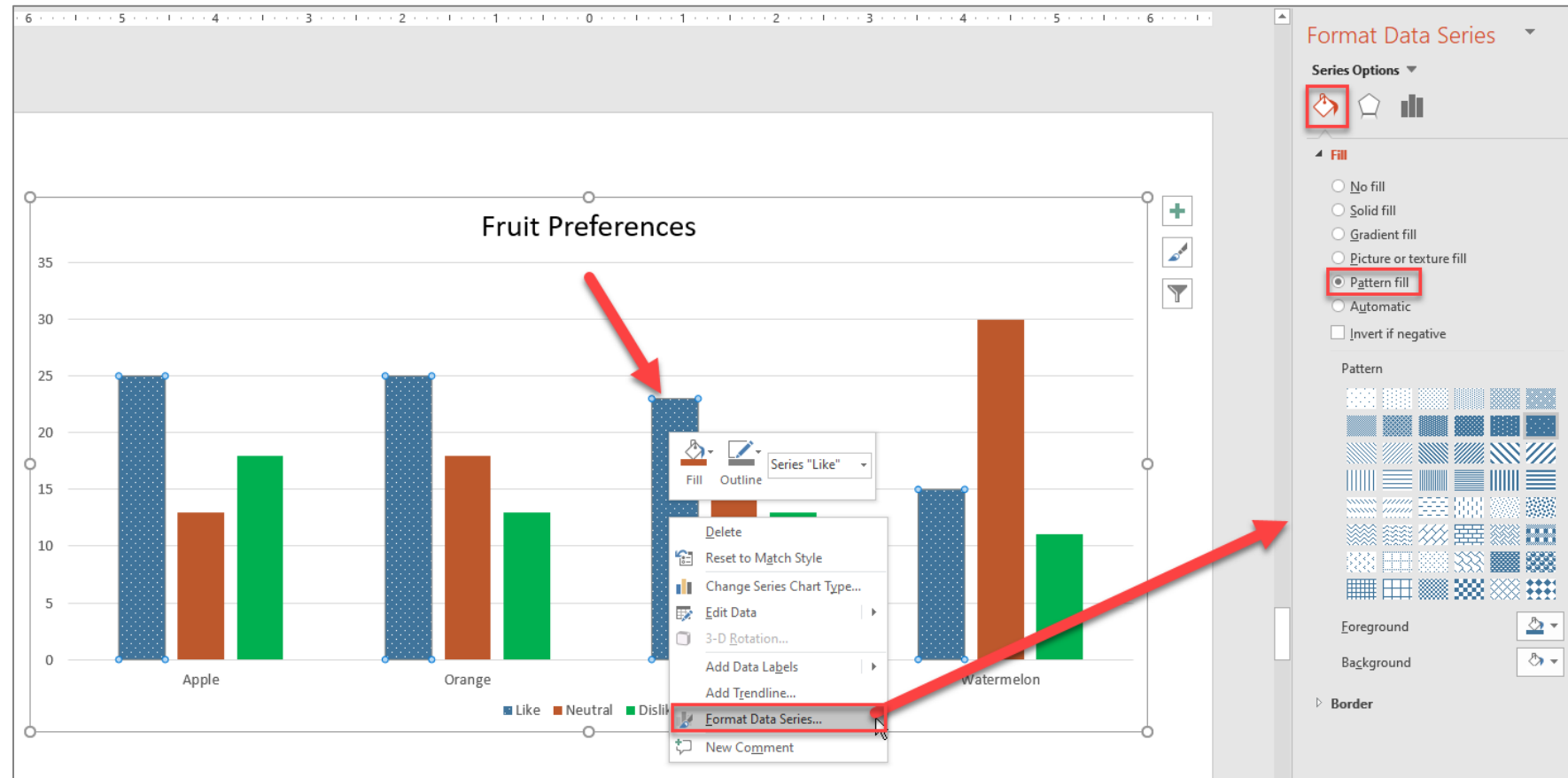 - Right-click again to select **Format Data Labels**
  - On right pane, select **Series Name**

- Option 2: **Design** tab, select **Add Chart Element, Data Labels**
  - Under **Data Labels**, select **More Data Label Options**
  - On right pane, select **Series Name**

- Repeat for each bar

Pattern Fill, Data Labels, Tabular Info

Fruit Preferences
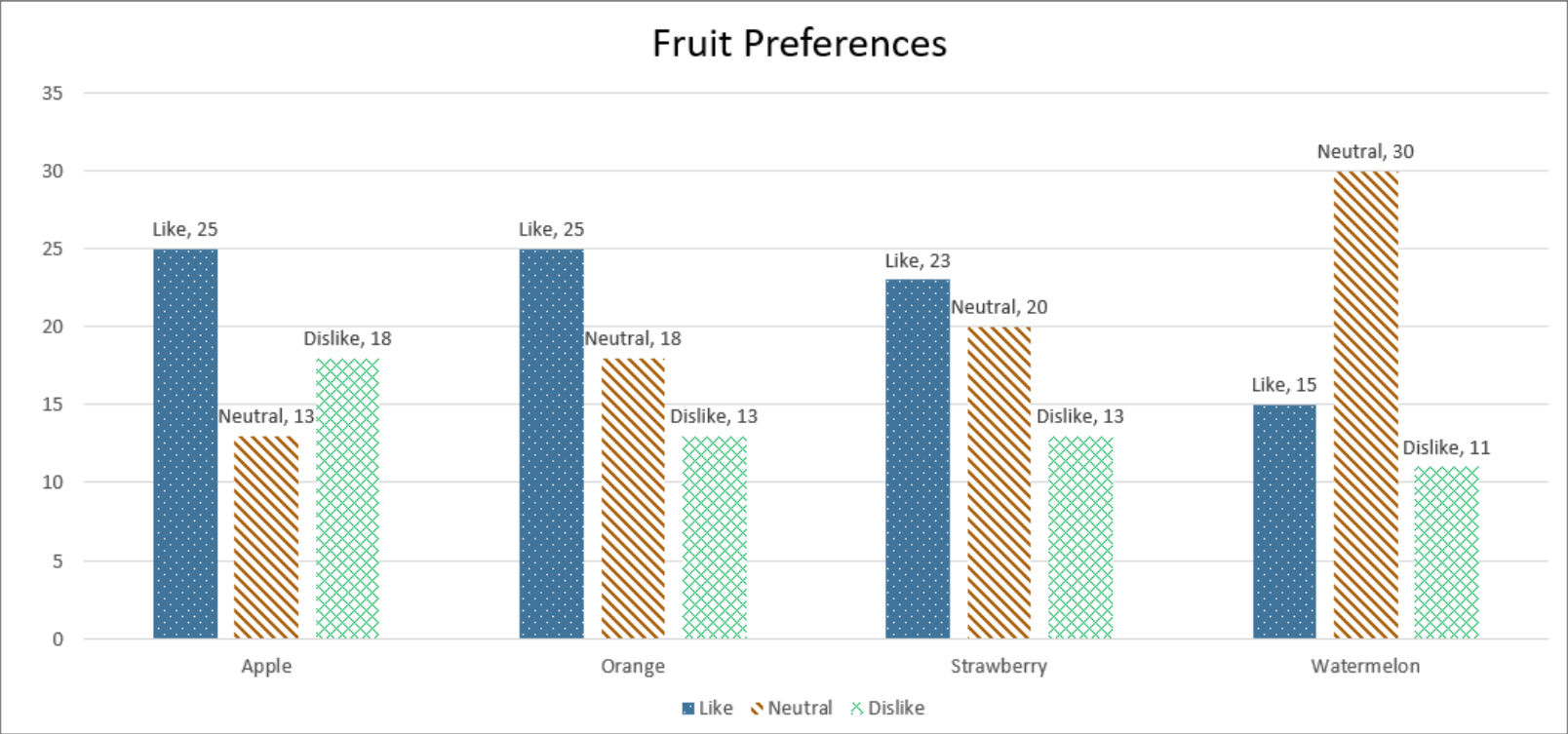
-	Like	Neutral	Dislike
Apple	25	13	18
Orange	25	18	13
Strawberry	23	20	13
Watermelon	15	30	11

Text descriptions for charts in tabular format

Charts, graphs and maps use visuals to convey complex images to users. But since they are images, these media provide serious accessibility issues to colorblind users and users of screen readers. See the examples on this page for details on how to make charts more accessible. Visit Charts & Accessibility by Penn State

Provide descriptions if using color to convey meaning

Example 1: Inaccessible color highlights in red

May 11 to 17, 2019

Example 1: Accessible with a description

May 11 to 17, 2019* (final exams)

Example 2: Inaccessible table

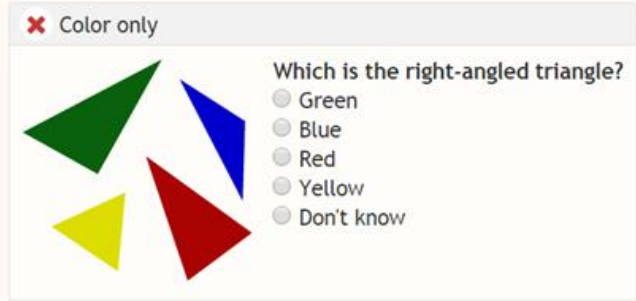|		
Assignments (overdue in red)		
Introduction		
Chapter 1		

Example 2: Accessible table

	Assignments	**Overdue**	
	Introduction	Yes	
	Chapter 1	No	

Example 3: Inaccessible color shape

Example: Refer to something using color alone

Color only

Which is the right-angled triangle?
- Green
- Blue
- Red
- Yellow
- Don't know
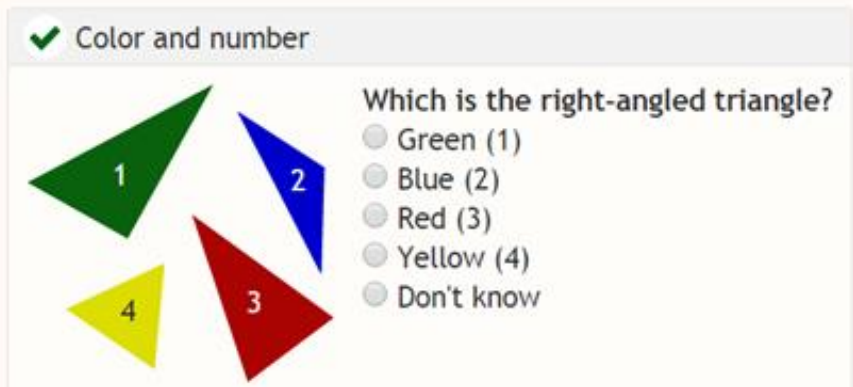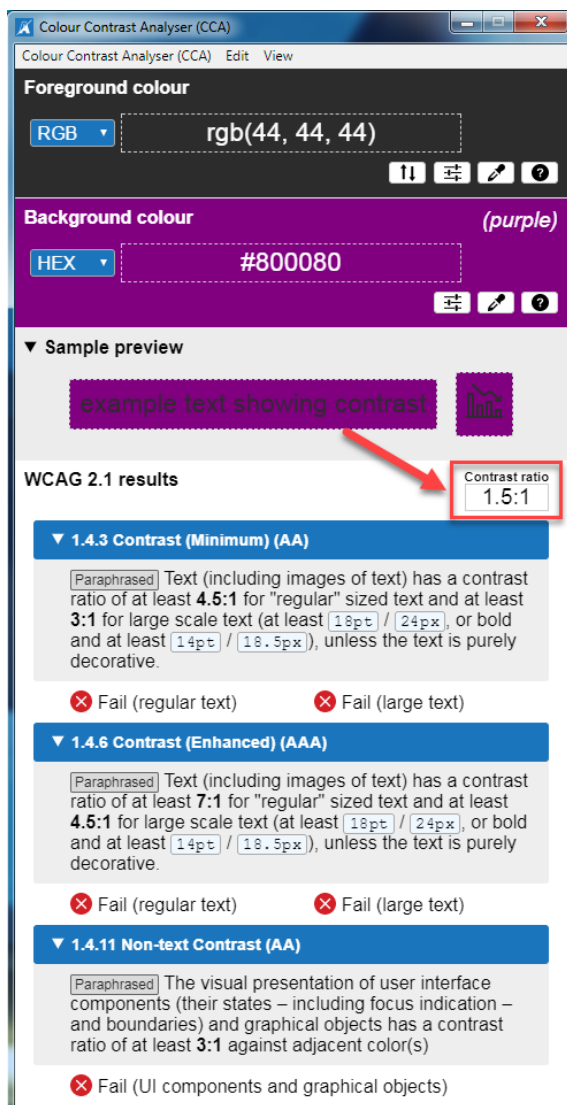
Color identical may not be recognized by colorblind users

Example: Refer to something using color alone

Color only

Which is the right-angled triangle?
- Green
- Blue
- Red
- Yellow
- Don't know

Example 3: Accessible color and number

Color and number

Which is the right-angled triangle?
- Green (1)
- Blue (2)
- Red (3)
- Yellow (4)
- Don't know

Check Color Contrast

People who have low vision or colorblind could encounter some difficulty distinguishing text color from a background color if the contrast is insufficient contrast ratio 1.5:1.

This example has a great color contrast ratio of 8.7:1. The contrast is sufficient for those who have color deficiencies

- Download Colour Contrast Analyser onto your computer (PC/Mac) to ensure accessible contrast or use an online contrast checker from WebAIM.

- WCAG Level AA requires a contrast ratio of at least **4.5:1** for regular sized text (12 or 14 pt. font) and **3:1** for large text (18 pt. font).

- Coblis Color Blindness Simulator

Bad Examples / Good Examples

| Bad Examples	Good Examples
Red on black is bad	Yellow on black is good
Blue on orange is bad	Black on orange is ok
Red on green is bad	White on green is good
Grey on purple is bad	Aqua on purple is ok

How to View Grayscale Document?
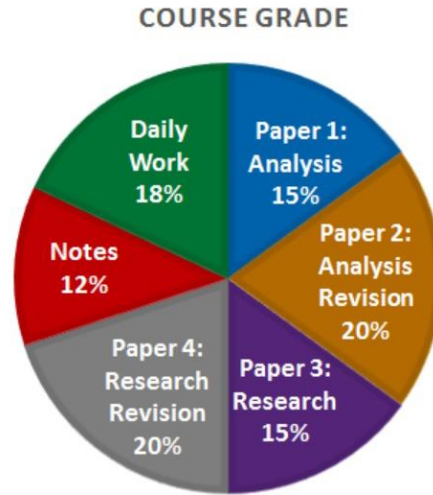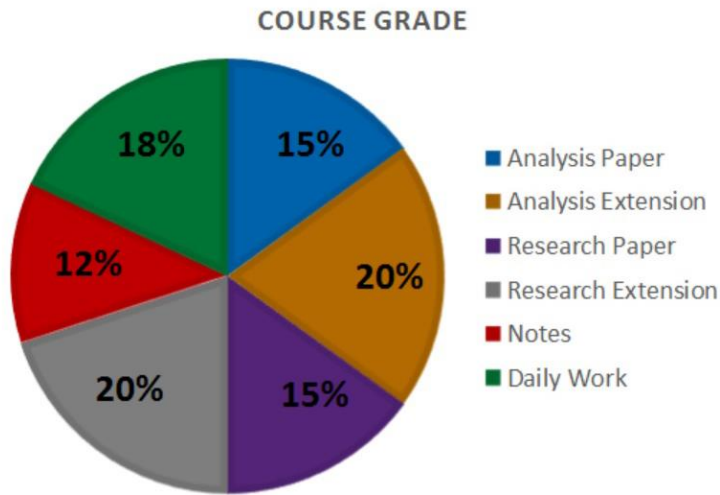
[Image courtesy of Accessible Syllabus](#)

- Information and charts should never be conveyed through color alone.

- Color may not be recognized by colorblind users.

- Provide text descriptions for charts and graphics.

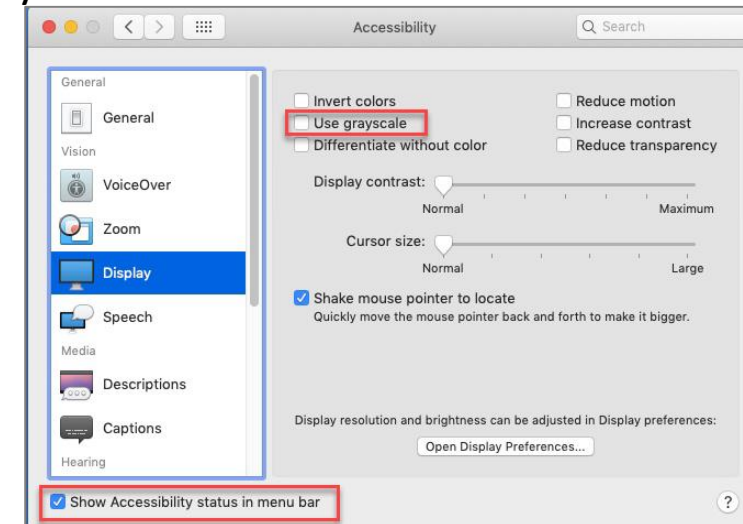- [Charts & Accessibility by Penn State](#)

To use color filters on Windows:

- Select **Start** > **Settings** > **Ease of Access** > **Color filters**.

- Switch on the toggle under **Turn on color filters**.
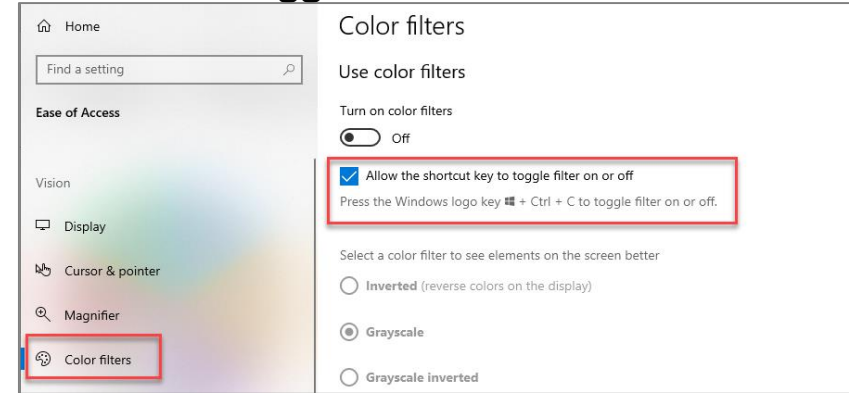
To use color filters on Mac:

- On your Mac, choose **Apple** menu > **System Preferences**, select **Accessibility**, select **Display**, select "Use grayscale"

Descriptive Link Text, 1 of 2

Not Accessible – vague and redundant

CSUN Honors Four Exceptional Graduate Students for Thesis and Project Work

CSUN's Division of Academic Affairs has selected four exceptional CSUN graduate students as the winners of the 2020 Distinguished Thesis/Graduate Project Competition, with each receiving a $1,000 award and recognition from the university. **Read more.**

CSUN Team to Tap into Power of Inouye Telescope to Study Sun's Atmosphere

With the aid of a telescope in Hawaii, a team of professors at California State University, Northridge hope to solve some of the mysteries found in the sun's atmosphere, information that could help us better understand the impact of solar flares, as well as what is happening with other stars in our solar system. **Read more.**

Minimizing the COVID Slide During the Summer

In response to the COVID-19 pandemic, schools across the nation transitioned to meeting online. Given the abruptness of the transition and lack of preparation parents had in becoming in-home teachers' aides, many parents and educators are worried about a "COVID slide" or "COVID slowdown," where students fail to retain any new information learned before and during the pandemic — as well as over the summer, when students are not in school. **Click here**

Screen readers read: "Read more, **link**" "Read more, **link**" "Click here, **link**"

Accessible – descriptive and unique

CSUN News

CSUN Honors Four Exceptional Graduate Students for Thesis and Project Work

CSUN's Division of Academic Affairs has selected four exceptional CSUN graduate students as the winners of the 2020 Distinguished Thesis/Graduate Project Competition, with each receiving a $1,000 award and recognition from the university. **Learn more about CSUN's Four Exceptional Graduate Students.**

CSUN Team to Tap into Power of Inouye Telescope to Study Sun's Atmosphere

With the aid of a telescope in Hawaii, a team of professors at California State University, Northridge hope to solve some of the mysteries found in the sun's atmosphere, information that could help us better understand the impact of solar flares, as well as what is happening with other stars in our solar system. **Continue reading about CSUN's Astronomy Team.**

Minimizing the COVID Slide During the Summer

In response to the COVID-19 pandemic, schools across the nation transitioned to meeting online. Given the abruptness of the transition and lack of preparation parents had in becoming in-home teachers' aides, many parents and educators are worried about a "COVID slide" or "COVID slowdown," where students fail to retain any new information learned before and during the pandemic — as well as over the summer, when students are not in school. **Learn more about the "COVID Slide".**

Screen readers read: The content and link text then announce the word **"link"**

Full URL text https://www.csun.edu/universal-design-center
(raw URL may not make sense to screen reader users or others, so make the link text descriptive i.e. Universal Design Center)

Descriptive Link Text, 2 of 2
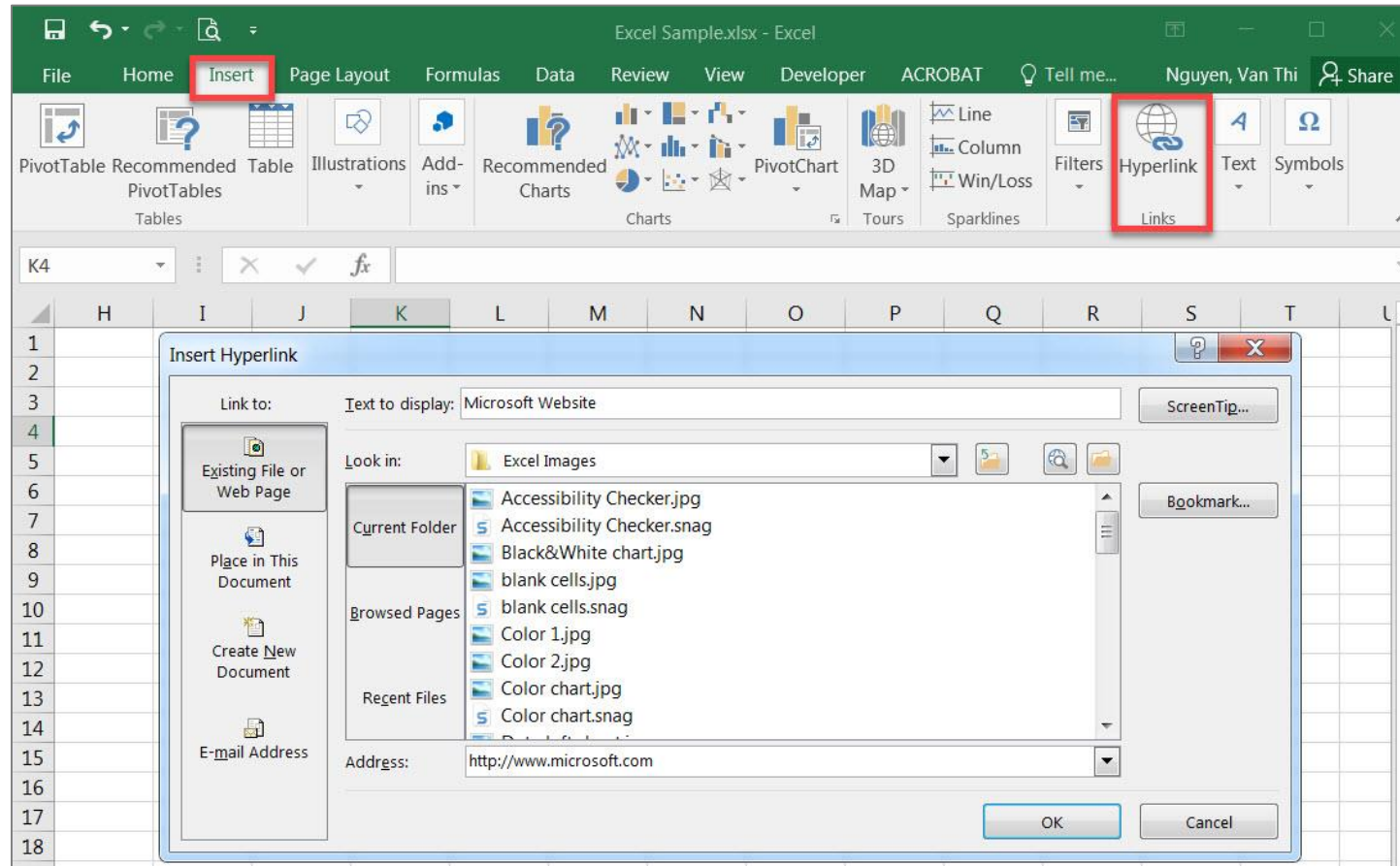
Best Practices for Accessible Links

DESCRIPTION

- Link text must always properly **describe the purpose** of the link and tell a user **where** the link will take them.

- Do not use text such as "**click here**" or "**read more,**" nor web addresses (URLs).

PRESENTATION

- Each link on the page should be **visually different** from regular text on the website.

- Can be differentiated by color, **bold,** underline, or *italics*.

- Using color alone **does not** make it accessible.

FUNCTIONALITY

- Link functionality is about ensuring a link functions the way the user expects.

- Links must always enhance the accessibility of a webpage.

- Users must be able to access links using a mouse, keyboard, or speech recognition commands.

LINKED IMAGES

- A linked image is an image (with or without text) that is linked to another resource or webpage.
- Linked images need link descriptions as well as image descriptions (alt text).
- If the link description is different than the alt text, enter the link description in the HTML Title field.
- Visit Linked Images on the Best Practices for Accessible Images page for more information.
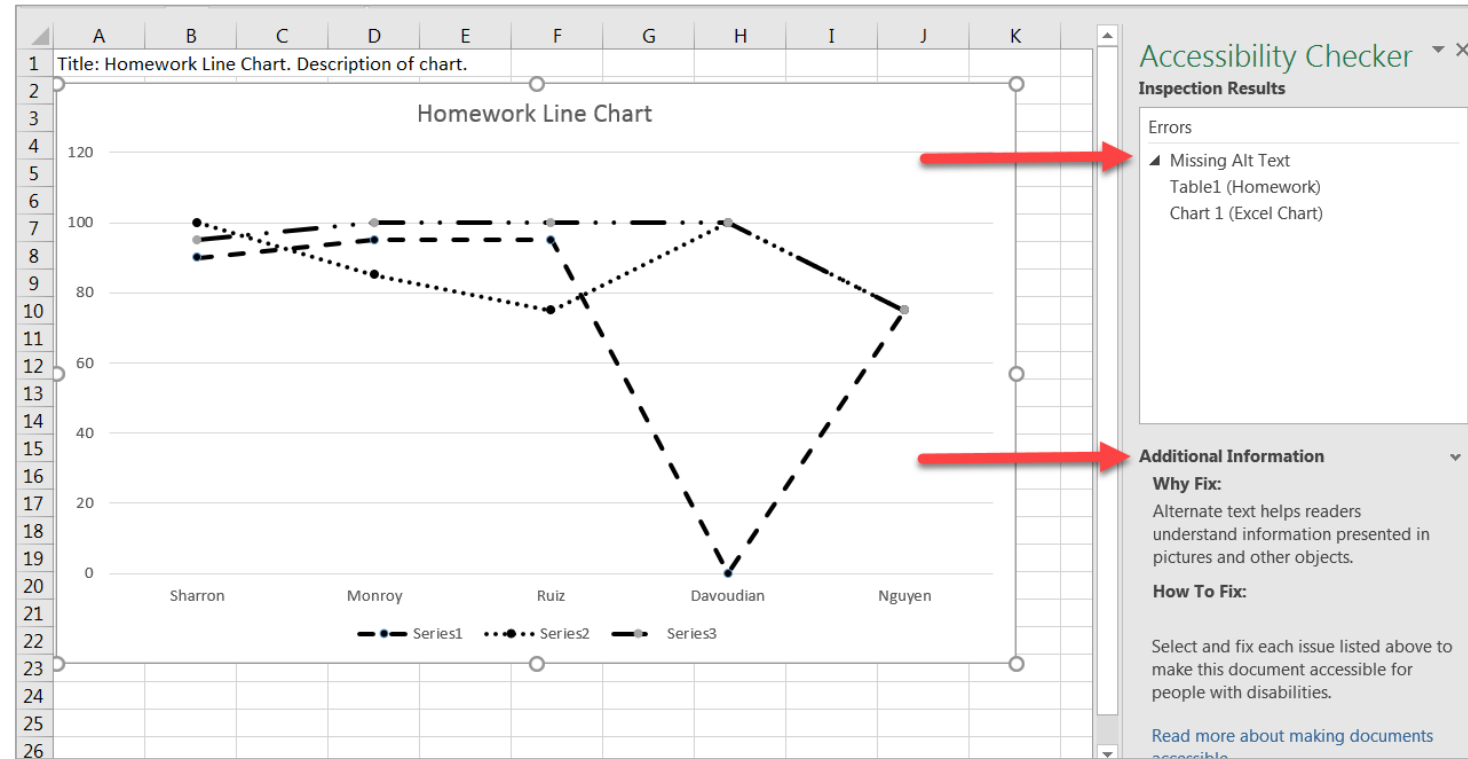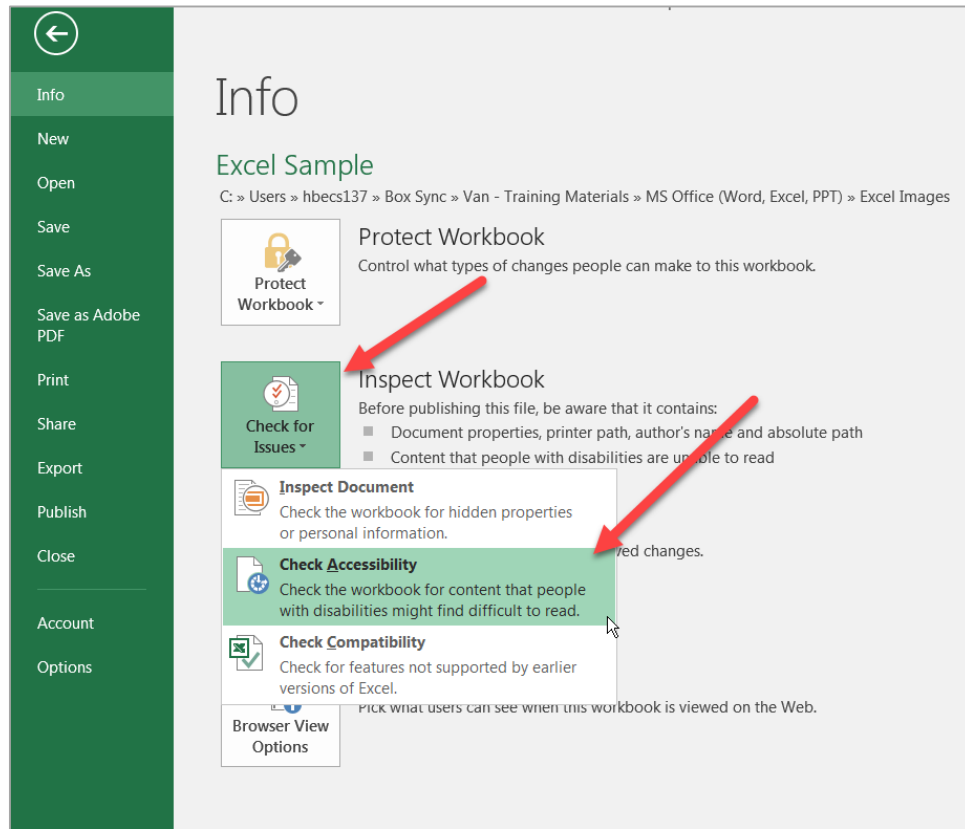
File – Info - Title

Microsoft Office Accessibility Checker
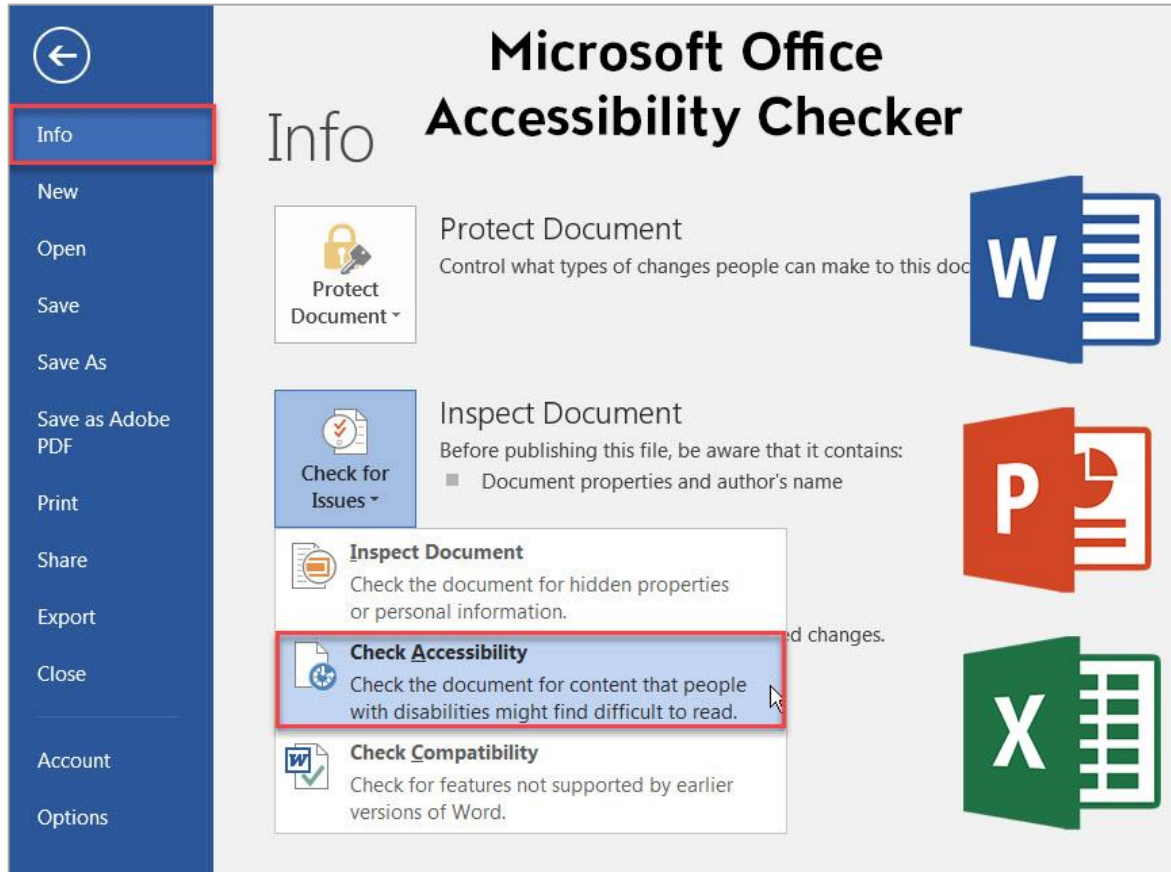
Check for Issues, Check Accessibility

Always use Excel's built-in Accessibility Checker

Repair Errors, Warnings and Tips

How can we help you make a **difference**?

Documents

Website

Media with captioning

Make **one** design that fits everyone

Universal Design means design for **everyone**

Online & Self-Paced **Accessibility Modules** in canvas

Universal Design Center Offers
- Online, self-paced training
- In-person training each semester
- Consultations
- Tools and Services

Universal **D**esign **C**enter

csun.edu/udc