ProgressBook StudentInformation Advanced Ad-Hoc Reporting

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1   STANDARD REPORT WIZARD

The Standard Report Wizard is an interactive tool that walks you through the process of creating a new standard report. All the selections made in the Standard Report Wizard can be modified in the Report Designer after the report is created.

To navigate the wizard, either click the desired tab or use the buttons at the bottom.
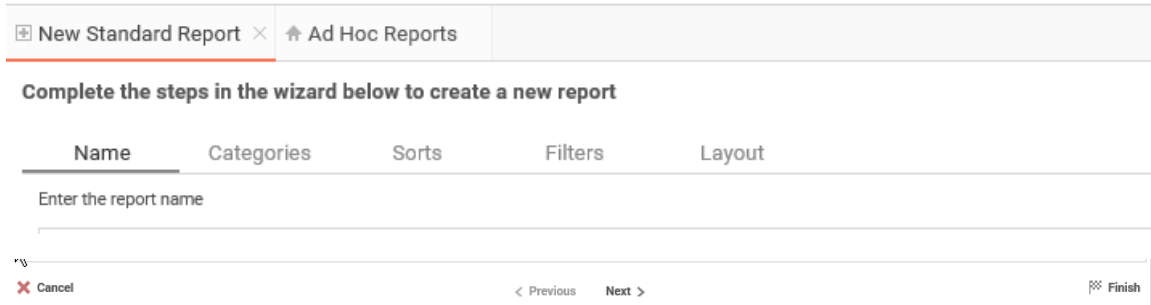
The Report Wizard has five subtabs. The **Name** and **Categories** tabs must be completed while the other tabs are optional.

1.1   NAME TAB

In the **Name** tab, enter a report name and click on the folder to which you want to save the report.

The report name can be up to 255 characters. Avoid special characters such as ? / \ * " " < >.

The report's description displays at the bottom of the **Main Menu** when you select it. The description text is also used when you search for a report.

> **Note:** *You cannot create a report inside a folder that is read-only (* 🔒 *).*
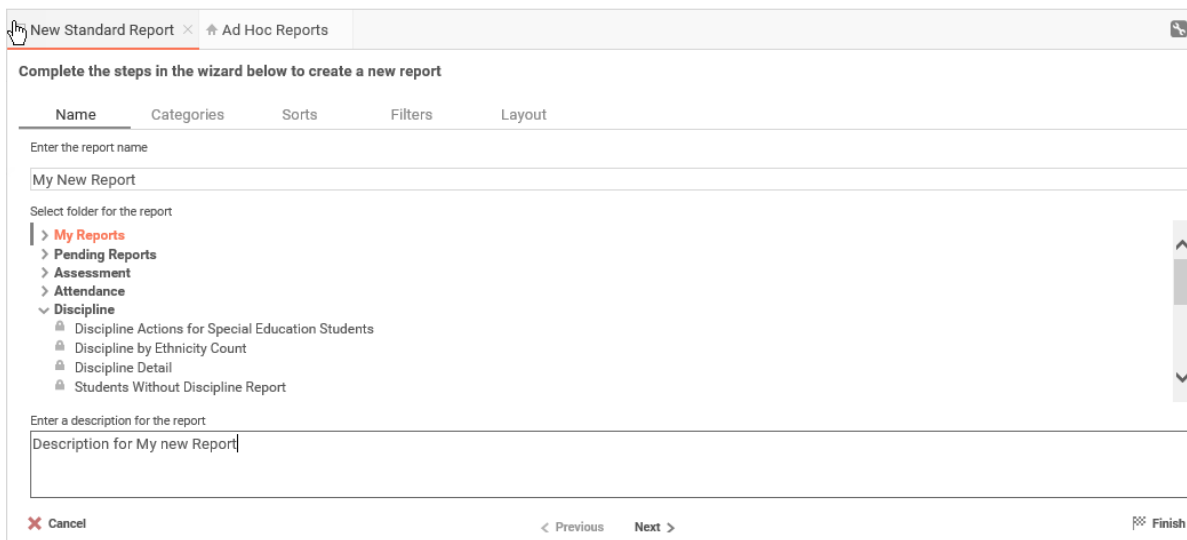
1.2 CATEGORIES TAB

In the **Categories** tab, select the Data Categories that you would like to have access to on the report. It is important to understand two terms: Data Category and Data Field.

Data Category – A Data Category is a data object that has several attributes. For example, **Students** is a category; each student has an ID, a major, an advisor etc.

Data Field – A Data Field is a single attribute within a category. For example, **Students.ID** is the numeric value that identifies a specific student.
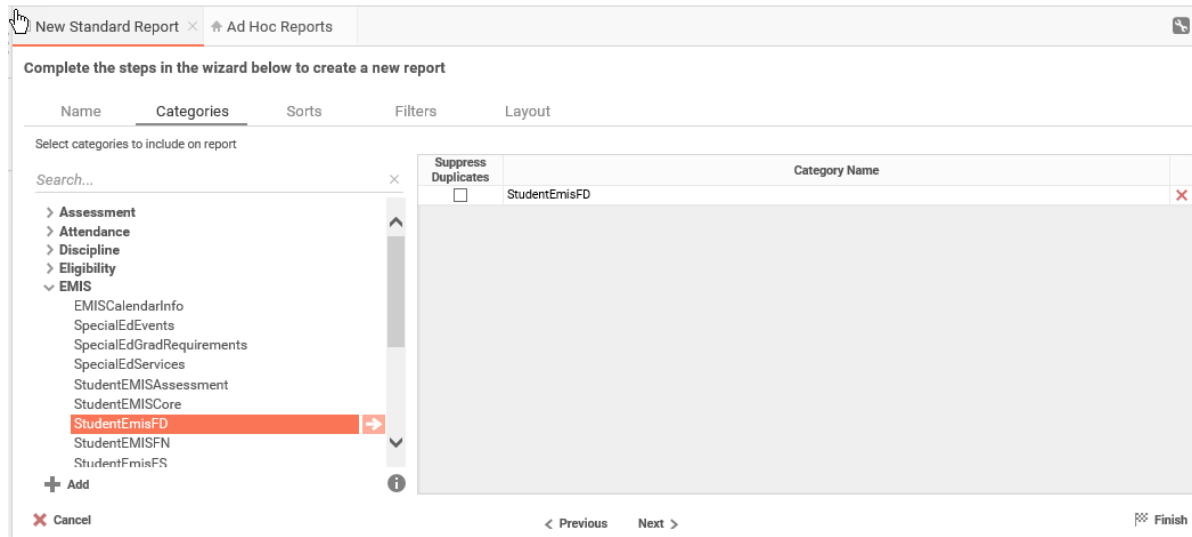
- To add a Data Category, either drag and drop it to the **Category Name** Column, use the **Add** button, or double-click it.
- To see what Data Fields are in a Data Category, click the information button (ⓘ).
- Select the **Suppress Duplicate** check box to suppress duplicate information from displaying on the report.
- To remove a Data Category, click the delete button (✕).

1.3 SORTS TAB

In the **Sorts** tab, you can specify which Data Fields are used to determine the order of data on the report.
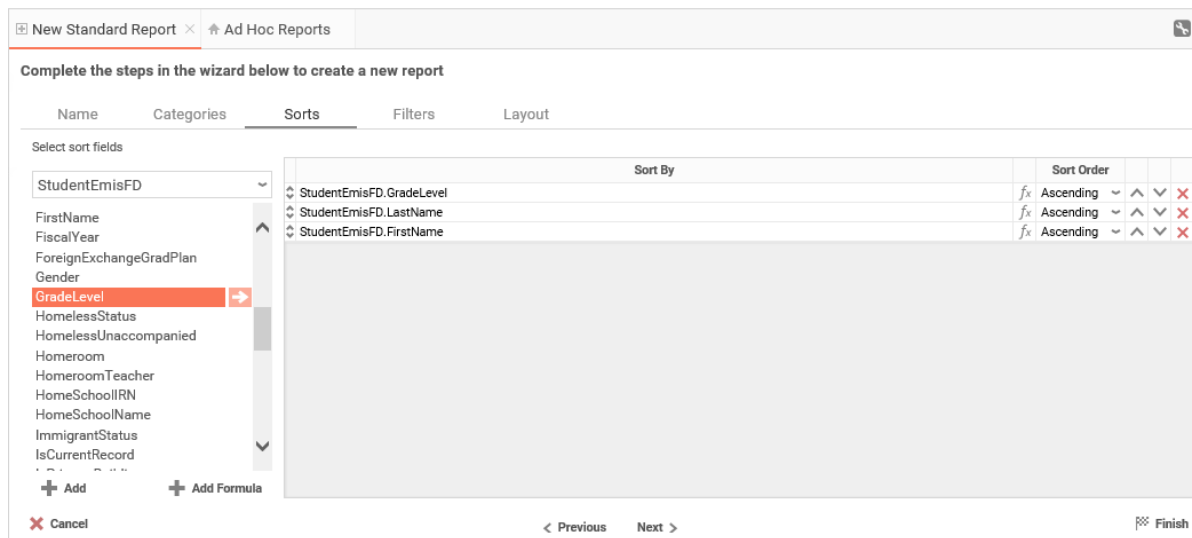
- To sort by a Data Field, either drag and drop it to the **Sort By** Column, use the **Add** button, or double-click it.
- Use the fx or **Add Formula** button to sort by a formula.
- Use the ︿﹀ (up/down) and ⇕ (up/down) arrows to indicate the sort priority.
- You can sort each Data Field in ascending (A- Z) or descending (Z-A) order.
- To remove a sort, click the delete button (✕).

1.4 FILTERS TAB

In the **Filters** Tab, you can create statements that are used to filter the data when you run the report.

There is no limit to the number of filters that can be defined. Filters can be numeric (up to eight decimals) or alphanumeric.

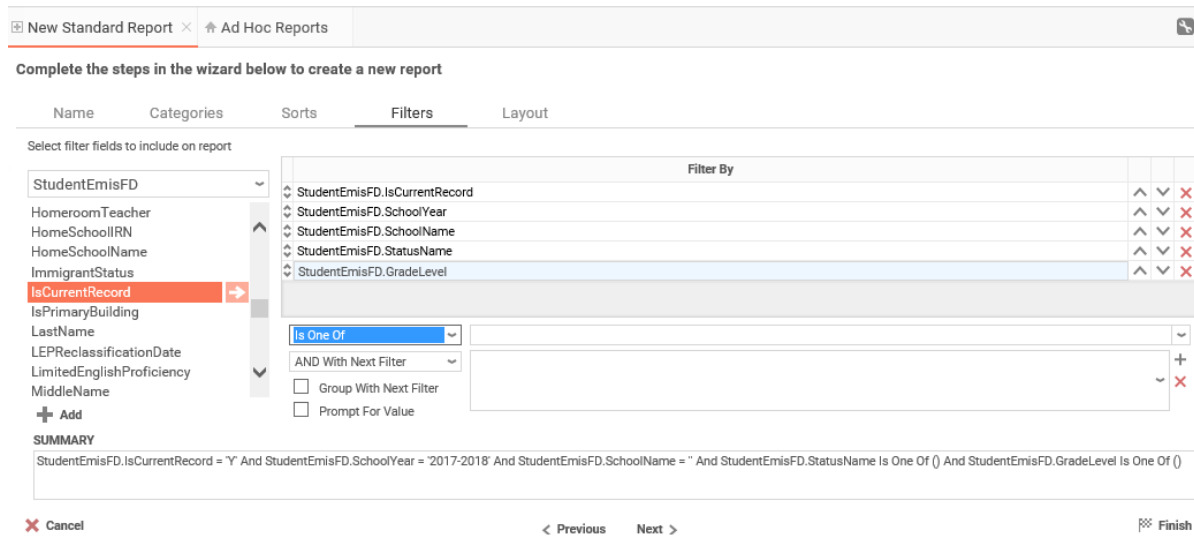- To filter a Data Field, either drag and drop it to the **Filter By** column, use the **Add** button, or double-click it.
- Use the ︿﹀ (up/down) and ⇕ (up/down) arrows to indicate the sort priority.
- To remove a sort, click the delete button (✕).
- Set the operator (**Equal To**, **Less Than**, **One of**, etc.) by selecting it from the operator drop-down list.
- Set the filter value by either entering it manually or selecting a value from the drop-down list. If the Data Field is a date, the calendar and function buttons can be used to select a value.
- Select **AND With Next Filter** to require that the selected filter and the one below it are both true. Select **OR With Next Filter** to require that either be true.
- Select the **Group With Next Filter** check box to indicate the precedence of the filters.
- Select the **Prompt for Value** check box to allow the filter to be modified at the time the report is executed.

1.5 LAYOUT TAB

In the **Layout** tab, you can select the Data Fields that display on the report. For each Data Field chosen, the report automatically creates a column header and places the Data Field in the detail section. Additionally, sub-totals, grand totals, and a page header/footer can be created.

Standard Report Wizard

1.5.1 Display Data

- To place a Data Field on the report, either drag and drop it to the **Data Field** column, use the **Add** button, or double-click it.
- Use the ˄˅ (up/down) and ⬍ (up/down) arrows to indicate the order the Data Fields should display on the report. The Data Field at the top displays on the report as the left most column.
- The **Summary Function** column is used to make sub-totals and grand totals. See *Sub-Totals and Grand Totals* for more information.
- To remove a sort, click the delete button (✕).
- Using the **Summarize By** grid, you can display sub-totals, grand totals, or headers for each unique value of a Data Field.

1.5.2 Sub-Totals and Grand Totals

- To display sub-totals, select the corresponding check box of the category you want sub-totals for in the **Summarize By** grid. Then, for each Data Field you want totaled, select a Summary Function (see below).
- To display grand totals, select the **Grand Total** check box. Then, for each Data Field you want totaled, select a Summary Function (see below).
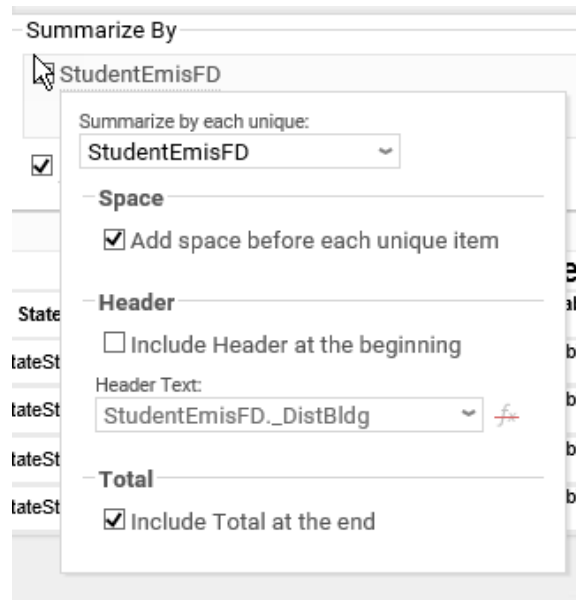
Summary Functions:

- o Sum: Totals all of the data in the Data Field.
- o Count: Returns the number of rows in the Data Field.
- o Average: Takes the mean of the data in the Data Field.
- o Minimum: Displays the lowest value in the Data Field.
- o Maximum: Displays the highest value in the Data Field.

1.5.3   Data Headers

A check box displays in the **Summarize By** grid for each Data Category in the **Sorts** tab. To display a header for each value of a Data Field, click on the associated Data Category in the **Summarize By** grid, and a Header menu displays.

- To include a Header, select the **Include Header at the beginning** check box. In order to select the text that displays as the header value, use the **Header Text** drop-down list to select a Data Field or use the **Formula Editor** Button (f_x) to create a formula.
- Select a specific field from the **Summarize by each unique** drop-down list to specify if the header should repeat based on a specific field or all the keys of a Category.
- Select the **Include Total at the end** check box to create a sub-total for this Category.
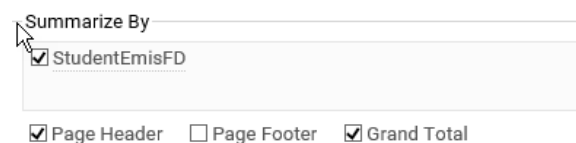
1.5.4   Page Header

To display information on the top of each page, select the **Page Header** check box below the **Summarize By** grid. A Page Header menu displays.

- Select the **Include Title at the top of every page** check box to display the name of the report on each page. If an image is also included, use the **Position** drop-down list to set where the title should appear and the number of columns it should span.
- Click the **Change Image** button to upload an image to display at the top of each page. If a title is also included, use the **Position** drop-down list to set where the image should appear and the number of columns it should span.

1.5.5   Footers

To display information on the bottom of each page, select the **Page Footer** check box below the **Summarize By** grid. A Page Footer menu displays.

- Select the **Include page number at the bottom of every page** check box to display the page number on each page. If an image is also included, use the **Position** drop-down list to set where the page number should display and the number of columns it should span.
- Click the **Change Image** button to upload an image to display at the bottom of each page. If the page number is also included, use the **Position** drop-down list to set where the image should display and the number of columns it should span.

1.5.6 Preview

At the bottom of the **Layout** tab, a preview displays how the report will appear based on the fields that have been added. You can increase the size of the preview or hide it all together by dragging.
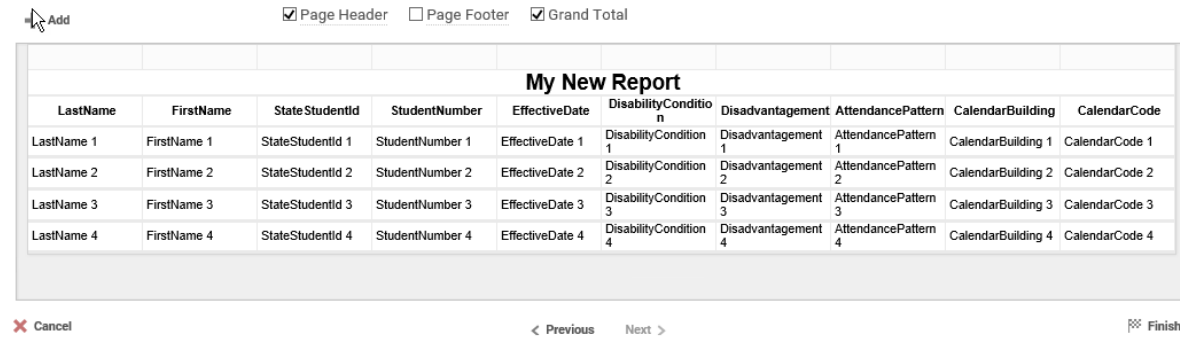
1.6 EDITING STANDARD REPORTS

1.6.1 Report Designer Overview

The Report Designer can be used to add data, charts, formulas, sorts, filters, and many other features to a report. The Report Designer has three parts: the Data Menu, Toolbar, and Design Grid.
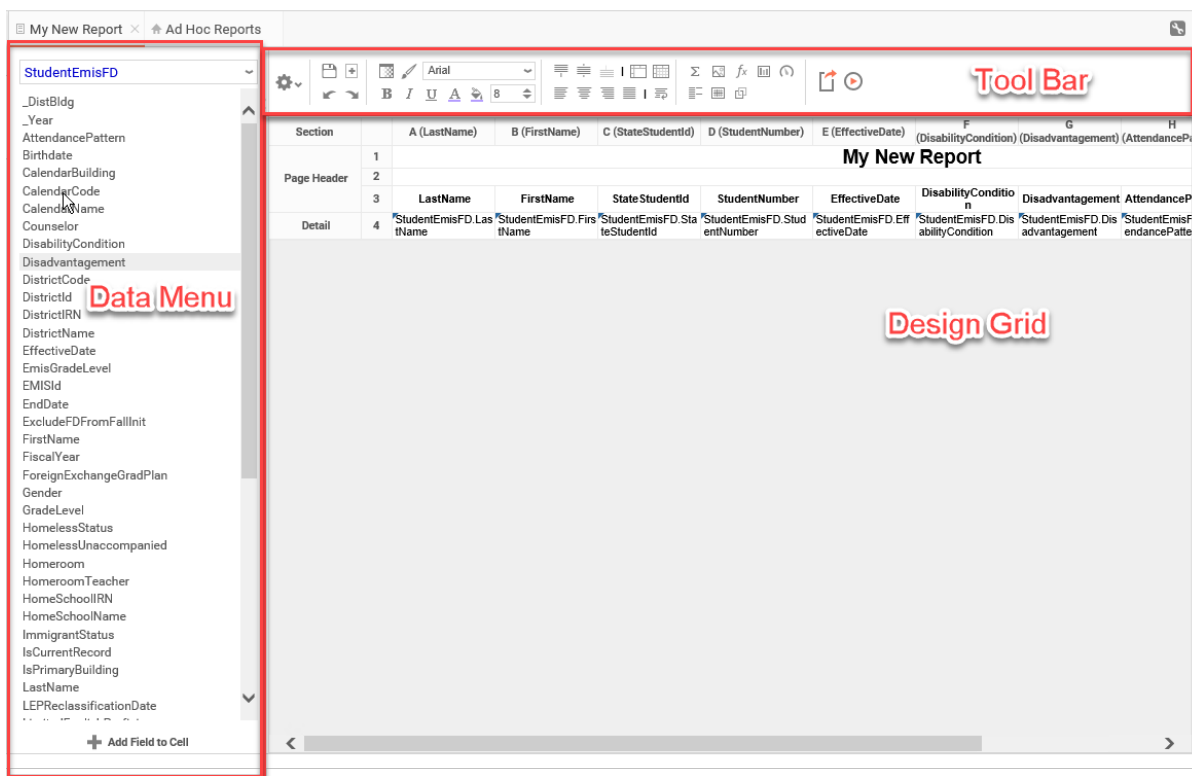
1.6.2 Data Menu

The left column of the Report Designer screen contains the Data Menu. Through this menu, users can add or swap Data Fields from various categories selected during the Report Design Wizard.

1.6.3   Toolbar

Using the toolbar, users can:

- Rename the report
- Add, modify, or remove sorts and filters
- Format cells' font, font size, alignment, color, and borders
- Use the Formula Editor to create complex functions
- Insert charts and images
- Link reports, allowing users to drilldown for more detail
- Save the report
- Execute the report as HTML, Excel, CVS, RTF, or PDF.
- Give a report access to new Data Categories or remove Data Categories from the report

a. **Report Options** – Provides several advanced feature options for the report that is being edited.
b. **Save** – Click to save the report.
c. **Create a new report** – Click to start a new Standard Report Wizard.
d. **Format Cells** – Provides a pop up window for additional formatting of cells. A cell or series of cells must be highlighted for the formatting to take effect. Formatting options include the following: formatting of data values, border outline of cells, and conditional formatting.
e. **Format Paintbrush** - Cell formatting can be copied using the **Format Paintbrush**. Select the format you want to copy, click the format paintbrush button, then click the cell to which you want to apply the formatting.
f. **Font** – You can change the font of cells from default (Arial) to another available font type.
g. **Align Top, Align Center, & Align Bottom** – Click to align text within cells vertically according to the option selected.
h. **Merge Cells** – Allows multiple cells to be highlighted and merged.
i. **Split Cells** – Allows merged cells to be split back to the original column span.
j. **AutoSum** – To quickly get a total on a Data Field, place the field in a Report or Group Footer and click the **Autosum** button.
k. **Insert Image in Active Cell**
l. **Formula Editor**
m. **Execute Selected Report** – Executes the report in the format chosen. A drop-down list is available if more than one format is allowed. Format options can include PDF, HTML, CSV, XLS, and RTF.
n. **Undo** – Click this or press CTRL + Z to undo any action on a report.
o. **Redo** – Click this or press CTRL + Y to recomplete an undone action.
p. **B**, *I* and U – Modifies the font to be bold, italicized and/or underlined, respectively.
q. **Foreground Color** – Changes the font color.
r. **Background Color** – Changes the cell color.
s. **Font Size** – Changes size of font for the cell selected.
t. **Left, Center, Right, Justify** – Changes Horizontal Cell Alignment.
u. **Wrap Text** – Wraps the text within the selected cell(s).

v. **Suppress Duplicate Values** - You can suppress duplicate values of a Data Object from displaying. Select the cell and click **Suppress Duplicate Values**. As an example, the two reports below are identical, except the right image has suppressed duplicates of the customer column.

> *Note: This is rarely used within StudentInformation as Data Objects are designed to have no duplication.*
>
> *Note: Charts should only be placed into a Group Footer or Report Footer section.*

w. **Linked Report** - The ability to create drill downs can be added by linking reports. Linked reports are only available for **HTML** output.

x. **Cross Tab Wizard** – Crosstabs allow the report to expand both horizontally and vertically based on data values and displays summary information where each column and row meets. A CrossTab consists of three parts: Row Headers, Column Headers, and Tabulation Data. Additional settings for CrossTabs can be found in the CrossTab Options menu. See *New CrossTab Wizard* for more specific information.

y. **Chart Wizard** – You may display a chart in a report to give a visual interpretation of the data. To insert a chart, select a cell and then click **Insert Chart**. The Chart Wizard appears. The Chart Wizard has four tabs: **Type**, **Data**, **Appearance**, and **Size and Preview**.

z. **Gauge Wizard** – You may display a gauge in a report to give a visual interpretation of the data. To insert a gauge, select a cell and then click **Insert Gauge**. The Wizard appears with two tabs: **Appearance** and **Data**.

aa. **Run Report –** Displays the report in Report Viewer mode**.**

> *Note: For the section a CrossTab is in, all the cells below and to the right of a CrossTab must be empty.*

1.6.3.1   Report Options
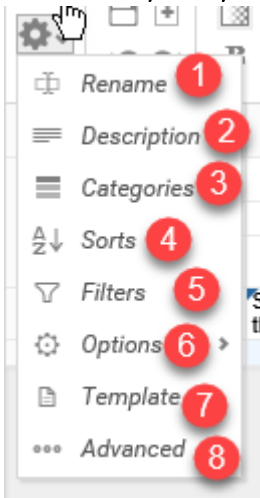
Report options can be accessed via the Standard Report Screen on the main toolbar. It is the icon (⚙⌄) located on the far left of the toolbar. The following report options can be maintained through this icon (⚙⌄)

1. **Rename** – Rename the report.
2. **Description** – Add or modify the description of the report.
3. **Categories** – Add or remove Categories from the report.

> ⚠ *Caution: Opening this option removes any joins created for the report. You must recreated joins after closing the categories window.*

4. **Sorts** – Add, modify, or remove sorting options for the report.
5. **Filters** – Add, modify, or remove filtering options for the report.

6. **Options** – Modify **General**, **Report Viewer**, and **Custom** options.
    a. **General** – Allows users to change general report execution options.
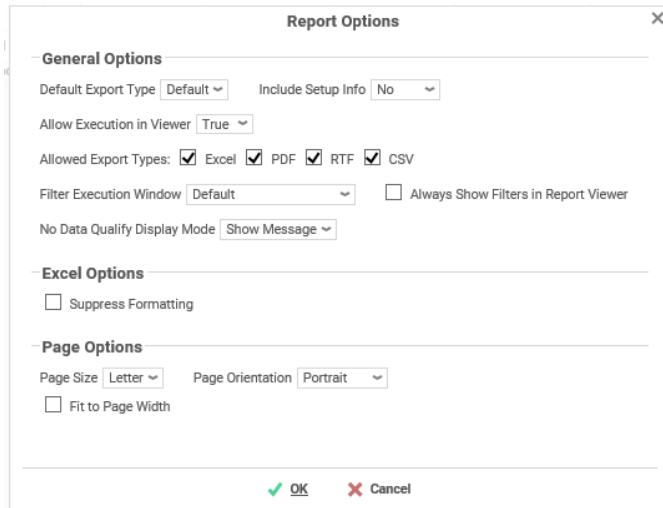
    b. **Report Viewer** – These options affect how reports are viewed when a report runs in HTML Mode.
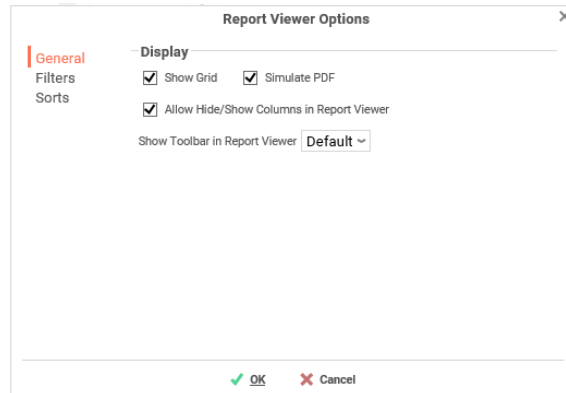
    c. **Custom Options** – This is where the **Is_Vendor_Extract** check box is located so that you can enable FTP for reports. See Section *6.4* for further details on FTP.
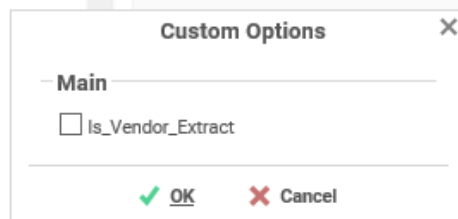
7. **Template** – Not utilized at this time.
8. **Advanced** – Provides advanced reporting options not covered in other menu items.
    a. **Joins** – See subsequent section *Joins* for further information regarding this option.

1.6.3.2   Joins

When using more than one category, joins between the categories are necessary. To access the **Joins** screen, the Standard or Cross tab report must be in Edit Mode.

*Helpful Hint: For column joining information, refer to the **View Information and Report List** document found within your StudentInformation documentation site under the **Helpful Hints** section.*

From the toolbar, click on the Report Options icon (⚙⌄). Then, click **Advanced** -> **Joins**.
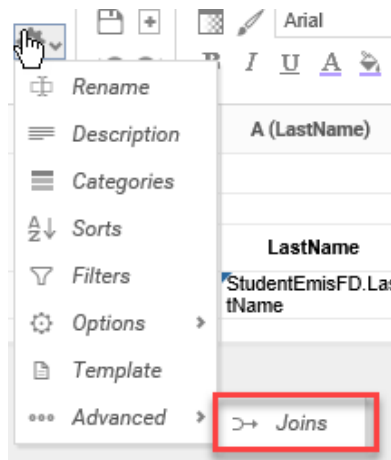
A new window displays so you can create the joins between two or more categories. Click **+Add** at the bottom right of the screen.
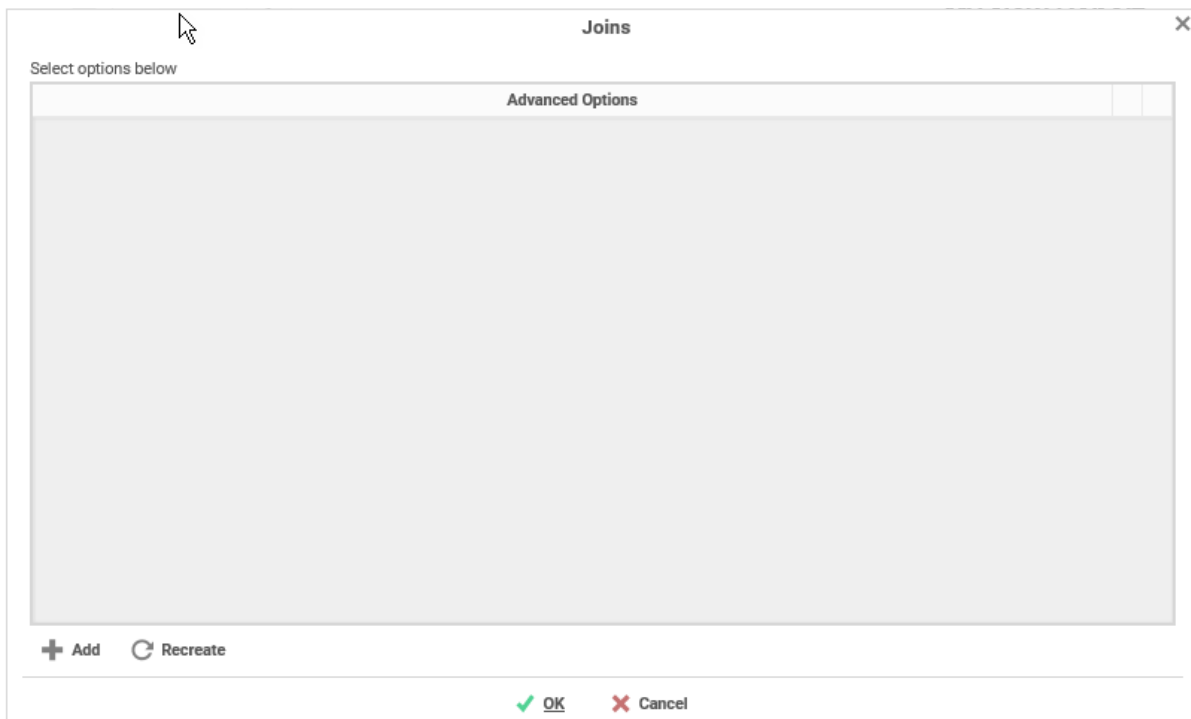
Standard Report Wizard

Another window displays and on the left, a drop-down list of categories are available, along with a list within each category of the column field names available. Select the first category to be joined and move columns over to create your unique matches between the categories. Then, select the second category to be joined and move the matching column field names over. You can use as many unique fields as necessary to join the two categories together.
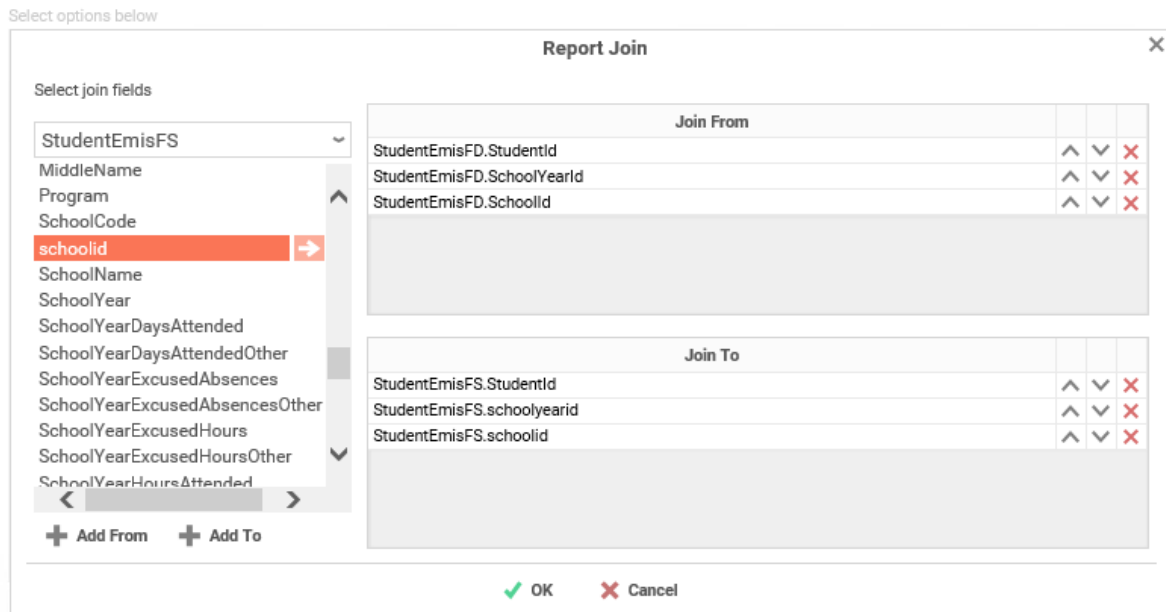
> *Note: The order of the column fields in the top and bottom sections of the join screen matter! If data within those columns do not match, you run the risk of receiving the 'No Data Qualified' report error when you run the report.*

If there are more than two categories to be joined together, you must create additional joins using the **Add** button and follow the process above until all categories are joined together as necessary.
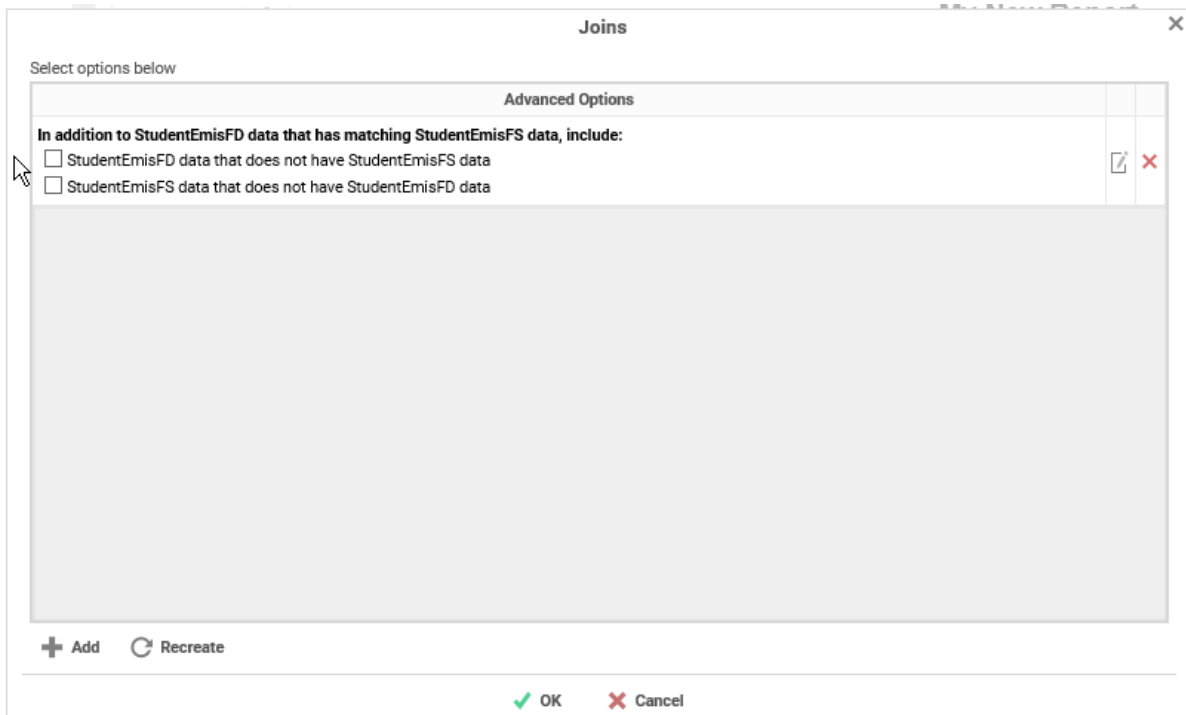
1.6.4   Design Grid

In the design grid you can:

- Add and delete rows, columns, and sections
- Enter data fields, text, and formulas
- Drag and drop fields into different sections, rows, or columns

1.6.4.1   Sections

Sections dictate how the data displays in a report. There are five types of sections: page, report, details, group, and repeating group.

Page Header & **Page Footer –** The rows in the **Page Header** section display at the top of every page of a report. Typically, the **Page Header** section is used to designate column headers for a report. The rows in the **Page Footer** section display at the bottom of every page of a report. Typically, the **Page Footer** sections are used to display the page number or confidentiality notices for a report.

> *Note: Formulas and calculations should not be made in the **Page Footer** section.*
>
> *Note: If you are printing a report, remember that Excel output does not have pages. Page Headers display only once at the beginning of the report. Reports executed as HTML display Page Headers similarly unless you select **Simulate PDF** in the **Options** menu.*

Report Header & **Report Footer** – The rows in the Report Header display at the beginning of a report. Typically, these rows display the title of a report, whereas the rows in the Report Footer display at the end of a report. Typically, the Report Footer displays grand totals and summary information for the report.

Detail – The **Detail** section is the main section of most reports. When the report is run, the **Details** section creates a row for each element in the Data Categories. For example, if the **Detail** section contains the Data Field Orders.OrderId, the report displays each Order Id in a separate row.

Group Header & **Group Footer –** Group Headers/Footer sections require a sort on a Data Field. The rows in a **Group Header** section display above the **Detail** section for each unique value of the sorted Data Field. Typically, **Group Header** sections are used to display data as labels. For example, a report may contain a Group Header on Orders.OrderDate and display Orders.OrderId in the **Detail** section. The output displays each date with orders that occurred on that date below them.

The rows in a **Group Footer** section displays below the **Detail** section for each unique value of the sorted Data Field. Typically, Group Footer sections are used to calculate subtotals. For example, a report may contain a Group Footer on Orders.OrderDate that displays the number of orders made on each date.

> *Note: Group Header/Footer sections can also be set to display rows for each value of a formula instead of a Data Field. (E.g., the report may be sorted on the Data Field Orders.OrderDate, but the report should show subtotals for each month. A Group Footer on the formula '=Month({Orders.OrderDate})' displays rows containing subtotals for each month.)*

▥ **Repeating Groups –** Repeating Groups require a sort on a Data Field. Repeating Groups have their own header, details, and footer subsections. Repeating Groups should only be used when the data has multiple one-to-many relationships and each should be rendered completely before the other. (For example, each teacher can teach multiple classes and advise multiple students. For each teacher, you want to see all the classes they teach and then all the students they advise.)

1.6.4.2 Using Sections

Sections can be added, deleted, modified, moved, and assigned shading.

Adding Sections

1. Click anywhere in the **Section** column.
2. Hover your cursor over **Add Section**, then select the type of section you would like to add.

Deleting Sections

1. In the **Section** column, click on the section you want to delete.
2. Click **Delete Section**.

Modify Sections (Group Header/Footers and Repeating Groups only)

1. In the **Section** column, click on the section you want to modify.
2. Click **Modify Section**. This brings up a **Modify Group Section** menu.
3. Select the desired Data Field for the group to use from the drop-down list.
4. Click **OK**.

Section Shading

1. In the **Section** column, click the section that you want to shade.
2. Click **Section Shading**. This brings up a menu.
3. Click **New** to add a color to the shading.
4. Click the color box to select a color or enter a hex value.
5. Click **OK**.

1.6.4.3   Columns & Rows

Columns and rows of cells can be added, modified, or removed as described below.

Columns

- To select a group of columns, hold the SHIFT key and then click the beginning and ending column.
- Select non-contiguous columns by holding the CTRL key and clicking the desired columns.
- Resize columns by dragging their right edge horizontally.
- Clicking on a column (or a selected group) displays a menu where you can:
    - Insert a new column
    - Delete the selected column
    - Set the column's width to be identical with the other selected columns
    - Hide the selected column
    - Set Column Info to make a label for the column and/or make it sortable on HTML reports
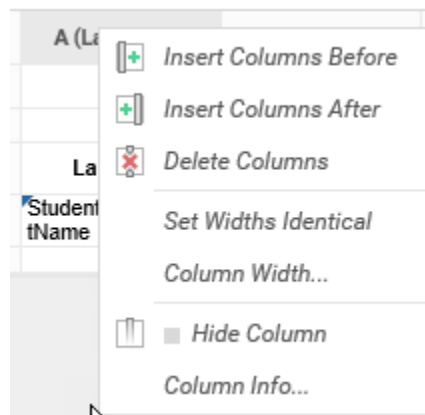
Sorting by Columns on HTML

While viewing reports run to HTML, a user can click the bar at the top of the report to sort by a column. For Express Reports, this is handled automatically but must be enabled for Standard and Crosstab Reports.

To make a column sortable in HTML:

1. Click on the column and select **Column Info…**
2. Provide the column with a label that will display in the **Interactive HTML Dock**.
3. From the **Sort** drop-down list, select the Data Field to be used for sorting or provide a formula by clicking the formula button (f_x).

> **Note:** *HTML Column Sorts are applied AFTER any sorts defined in the **Sorts Menu**.*
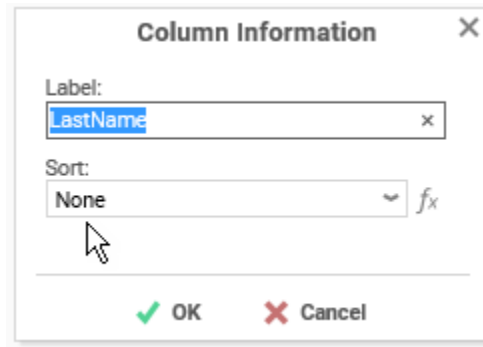
Rows

- To select a group of rows, hold the Sʜɪꜰᴛ key, then click the top and bottom row.
- Select non-contiguous rows by holding the Cᴛʀʟ key and clicking the desired rows.
- Resize rows by dragging their bottom edge vertically.
- Clicking on a row (or a selected group) displays a menu where you can:
    - Insert a new row
    - Delete the selected row
    - Set the row's height to be automatically controlled
    - Suppress the row from displaying on the report
    - Insert a page break

> *Note: Please see **Using Page Breaks**.*
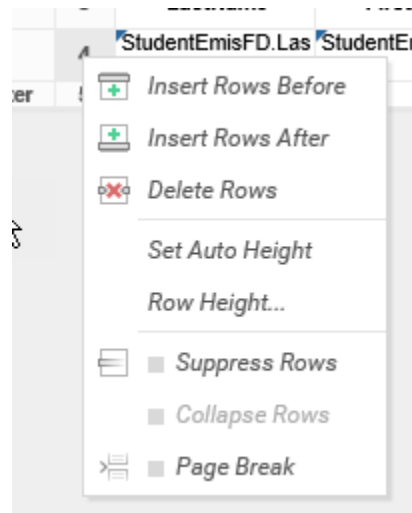
Using Page Breaks

For a page break to occur at the beginning of each element of a Data Field, place a page break on the top row of **Group Header** section for that Data Field. See *Sections* for more detail on Group Headers sections.
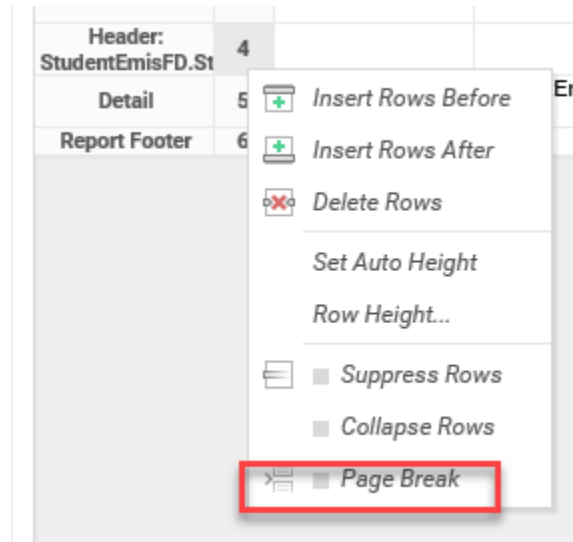
1.7 REFERENCING A CELL

To reference another cell's value, enter the column name with a capital letter and the row number between square brackets (e.g., [A2]). A cell reference can be used in functions or alone in a cell following an '=' sign.

> **Note:** *Cell references update if rows or columns are added or deleted; however, dragging a cell does not update cell references. This may cause errors in your formulas.*

2 ADVANCED FILTERING

2.1.1 Standard Filters

There are no limits to the number of filters that can be defined. Filters can be numeric (up to eight decimals) or alphanumeric.

- To filter a Data Field, either drag and drop it to the **Filter By** column, click the **Add** button, or double-click it.
- Use the ⌃⌄ (up/down) and ⌄ (up/down) arrows to indicate the sort priority.
- To remove a sort, click the delete button (✕).
- Set the operator (equal to, less than, one of, etc.) by selecting from the operator drop-down list.
- Set the value to filter by either entering it manually or selecting a value from the drop-down list. If the Data Field is a date, the calendar and function buttons can be used to select a value.
- Select **Prompt for Value** to let the filter be modified at the time the report is executed.
- Select **AND With Next Filter** to require that the selected filter and the one below it are both true. Choose **OR With Next Filter** to require that either be true.
- Select **Group with next filter** to indicate the precedence of the filters.

2.1.2 Group (Min/Max) Filters

Group filters are based on the minimum or maximum value in the Data Field. To modify group filters, click **Switch to Group (MIN/MAX) filters**. There are no limits to the number of group filters that can be defined.

- To filter a Data Field's minimum or maximum value, either drag and drop it to the **Filter By** column, click the **Add** button, or double-click it.
- Select **Minimum** or **Maximum** from the drop-down list.
- Use the ⌃⌄ (up/down) and ⌄ (up/down) arrows to indicate the sort priority.
- To remove a sort, click the delete button (✕).

Report Filters   ✕

Select filter fields to include on report   Switch to STANDARD Filters

StudentEmisFD   ⌄

Filter By			
⬍ StudentEmisFD.EffectiveDate	⌃	⌄	✕

_DistBldg
_Year
AttendancePattern
Birthdate
CalendarBuilding
CalendarCode
CalendarName
Counselor
DisabilityCondition
Disadvantagement
DistrictCode
DistrictId
DistrictIRN
DistrictName
EffectiveDate   ➡

Maximum ⌄   **StudentEmisFD.EffectiveDate**

for each   StudentEmisFD.StudentId   ⌄

➕ Add   ☐ Ignore other groupings on report

SUMMARY

Maximum StudentEmisFD.EffectiveDate for each StudentEmisFD.StudentId

✔ OK   ✖ Cancel

3 FORMULAS

Formulas let you do calculations, parse strings, insert images, and much more. Formulas are the composition of functions, parameters, Data Fields, and references to other cells.

Functions must begin with an '=' sign. You can use more than one function in each cell. Additionally, there are logical functions that allow for if/then/else conditional statements. Functions include date, financial, information, logical, mathematical, statistical, text, and data.

> *Note: Function names **are not** case sensitive (aggSum is the same as AggSum).*

3.1.1 Using Formulas
Formulas can either be entered in the **Formula Editor** or manually written into cells.

3.1.2 Formula Editor
1. Navigate to the *Report Designer*.
2. Click inside the cell in which you want to insert the formula.
3. Click the Formula Editor button (f_x).

4. Create the desired formula by selecting the desired functions and clicking **Add** or by dragging and dropping into the **Summary** box.

> *Note: When embedding functions begin with the outermost function and add them moving inward. (E.g., to get =TRUNCATE(SQRT(162)), first add Truncate, then the square root function.)*

5. Click **OK**.

3.1.3   Manual Formulas

To manually add formulas:

1. Navigate to the *Report Designer*.
2. Double click in the desired cell.
3. Enter the formula.
4. Save the report.

3.1.4   Types of Functions:

- Aggregate Functions
- Logical Functions
- Date Functions
- Financial Functions
- Database and Data Type Functions
- Arithmetic and Geometric Functions
- String Functions
- Formatting Functions
- Other Functions

3.1.5   Aggregate Functions

Aggregate functions can be executed on non-numeric fields.

AggAvg:

Description	Returns the average of the values in the field.
Remark	Only accepts Data Fields as input.
Example	E.g., *aggAvg({OrderDetail.Quantity})* - returns the average quantity of sales orders.

AggCount:

Description	Returns the number of unique entities in the Data Category.
Remark	The aggCount function uses the Data Category, not the Data Field. For example, the function "aggCount({Officer.Salary})" counts the number of Officers. You could replace "Officer.Salary" with any other field in the Officer Data Category and the function would still count the number of officers. Only accepts Data Fields as input.
Example	E.g., *aggCount({Orders.ProductPrice})* - returns the number of sales orders.

AggDistinctCount:

Description	Returns the number of unique values in the Data Field.
Remark	Unlike aggCount, aggDistinctCount returns the number of unique values of the Data Field. Only accepts Data Fields as input.
Example	E.g., *aggDistinctCount({OrderDetail.Quantity})* - returns the number distinct quantities in an order.

AggMax:

Description	Returns the maximum value in the field.
Remark	Only accepts Data Fields as input.
Example	E.g., *aggMax({OrderDetail.Discount})* - returns the largest discount.

Formulas

AggMin:

Description	Returns the minimum value in the field.
Remark	Only accepts Data Fields as input.
Example	E.g., *aggMin({OrderDetail.Discount})* - returns the smallest discount.

AggSum:

Description	Returns the sum of the values in the field.
Remark	Only accepts Data Fields as input.
Example	E.g., *aggSum({OrderDetail.Quantity})* - returns the total quantity of units ordered.

3.1.6   Logical Functions

Logical functions can be used to handle conditional information.

And:

Description	Returns TRUE if all its arguments are TRUE; returns FALSE if any argument is FALSE.
Remark	The arguments must evaluate to TRUE or FALSE. Note: The And function can take more than two arguments as input.
Example	E.g., AND(2+2=4, 4+0=4, 2+3=6) – returns FALSE.

False:

Description	Returns the logical value FALSE.
Remark	You can also type the word FALSE directly onto the worksheet or into a formula; it is interpreted as the logical value FALSE.
Example	

If:

Description	Takes three arguments as input. Returns the second argument if the first evaluates to TRUE. Otherwise returns the third argument.
Remark	The first input must evaluate to TRUE or FALSE.
Example	E.g., if({OrderDetail.Price}= 0,'FREE',{OrderDetail.Price}) - returns FREE if the price is 0, otherwise it returns the price.

Not:

Description	Reverses the value of its argument.
Remark	Argument should evaluate to TRUE or FALSE.
Example	E.g., Not(FALSE) - returns TRUE.

Or:

Description	Returns TRUE if any argument is TRUE.
Remark	The arguments must evaluate to logical values such as TRUE or FALSE. Note: The Or function can take more than two arguments as input.
Example	E.g., OR(2+2=4, 4+0=8, 2+3=6) - returns TRUE.

Switch:

Description	This functions should be used instead of placing if() function inside of if() functions. Takes any even number of inputs arguments.
Remark	The 1st argument is the test value to compare to. The 2nd argument is returned if none of the comparisons return true.

	The 3rd, 5th, 7th… arguments are compared to the 1st argument. When the first match occurs, the following argument will be returned. For example, if argument 3 matches argument 1, then the 4th argument isreturned.
Example	E.g., Switch({Categories.CategoryName},"NOT FOUND," "Beverages," "Drink up!" "Condiments," "Enhance," "Confections," "Sweet Tooth") – returns a string based on the Category Name.

True:

Description	Returns the logical value TRUE.
Remark	You can also type the word TRUE directly onto the worksheet or into a formula; it is interpreted as the logical value TRUE.
Example	

3.1.7 Date Functions

Date functions can be used to do calculations and formatting on Date values.

Date:

Description	Creates a date value from three numeric values.
Remark	This function should be used to represent a date to other functions instead of representing a date as text.
Example	E.g., Date(2012,7,4) – returns the date July 4th , 2012.

DateAdd:

Description	Returns the sum of a date and a quantity of time.
Remark	DateAdd takes three input arguments. A string representing the interval you want to add. The interval can be. "yyyy" (year), "y" (days), "d" (days), "w" (weeks), "m" (months), "h" (hours), "n" (minutes), "s" (seconds), "ww" (weeks of year), or "q" (quarters). A real number representing how much time you want to add to the date. A DateValue.
Example	E.g., DateAdd('h',1,Now()) – returns the date and time 1 hour from now.

DateDiff:

Description	Returns the amount of time between two dates.
Remark	DateDiff takes three input arguments. A string representing the interval you want to add. The interval can be. "yyyy" (year), "y" (days), "d" (days), "w" (weeks), "m" (months), "h" (hours), "n" (minutes), "s" (seconds), "ww" (weeks of year), or "q" (quarters). The first date value. The second date value.
Example	E.g., DateDiff("yyyy", date(1787,9,17), now())- returns the number of years since the signing of the United States' Constitution

DateValue:

Description	Converts a date represented as text (e.g. '30-jan-2008') to a date value.
Remark	Any time information in the Date_text is ignored. The ticks returned always represent a time-of-day of Midnight (in the server's local time). If the year portion of Date_text is omitted, DATEVALUE uses the current year on the server. Use this function when comparing two dates.

Formulas

Example	E.g., DateValue(30-jun-2011) – returns the date object 6/30/2011.
	E.g., DateValue({Orders.OrderDate}) > DateValue(Today()) – compares the order date to today.

Day:

Description	Returns the day portion of a date as a whole number.
Remark	Values returned by the YEAR, MONTH, and DAY functions are *Gregorian* Calendar values regardless of the display format for the supplied date value.
Example	E.g., Day({Appointment.Date}) - returns the day of the appointment.

Day360:

Description	Returns the number of days between two dates based on a 360-day year.
Remark	Often used in accounting applications.
	Date360 takes three input arguments.
	The first date value.
	The second date value.
	Optional: True/False indicating to use European or American method of computation. If not included, the American method is used.
Example	E.g., Day360({Appointment.Date},today())- returns the number of days between today and the appointment date.

GlobalDateFormat:

Description	Returns a DATE value whose format is based on the session format.
Remark	Only accepts data objects as input.
Example	E.g., GlobalDateFormat({Appointment.Date})- returns the date of the appointment based on the session format.

GlobalDateTimeFormat:

Description	Returns a DATETIME value whose format is based on the session format.
Remark	Only accepts data objects as input.
Example	E.g., GlobalDateTimeFormat({Appointment.Date})- returns the date and time of the appointment based on the session format.

Hour:

Description	Returns the hour of a time value ranging from 0 (12:00 AM) to 23 (11:00 PM).
Remark	Times may be entered as text strings within quotation marks or a date time value.
Example	E.g., Hour("2:50:05PM") – returns 14.

Minute:

Description	Returns the Minute of a time value ranging from 0 to 59.
Remark	Times may be entered as text strings within quotation marks or a date time value.
Example	E.g., Minute("2:50:05PM") – returns 50.

Month:

Description	Returns the month portion of a date as a whole number, ranging from 1 (January) to 12 (December).
Remark	Values returned by the YEAR, MONTH, and DAY functions are *Gregorian* Calendar values regardless of the display format for the supplied date value.
Example	E.g., Month({Appointment.Date})- returns the month of the appointment.

Now:

Description	Returns today's date and time (in local server time).
Remark	If embedding in other functions use Now('false').
Example	E.g., Now() - returns the current date and time. Now('false') returns the current date and time formatted MM/dd/yyyy hh:mm:ss.

Second:

Description	Returns the seconds of a time value ranging from 0 to 59.
Remark	When a time omits seconds, 0 (zero) is assumed. Times may be entered as text strings within quotation marks or a date time value.
Example	E.g., Second("2:50:05PM") – returns 5.

Time:

Description	Returns the number of ticks in a period of hours, minutes, and seconds.
Remark	This function should be used to represent a time to other functions instead of representing a time as text. Time takes three input arguments. • Hours • Minutes • Seconds
Example	E.g., Time(14,50,5) – returns 534050000000.

TimeFormat1:

Description	Returns the time component of a DATETIME input formatted as 'hh:mm tt'.
Remark	This function should be used to represent a time to other functions instead of representing a time as text.
Example	E.g., Timeformat1({Appointment.Date}) – returns the appointment date in the format as 'hh:mm tt'.

TimeValue:

Description	Convert a time represented in text (*i.e.,* "HH-mm-ss") into time values that can be passed to other functions.
Remark	Acceptable formats include "5:55 PM" and "17:55". A time separator is mandatory ("17:00" is acceptable, "1700" is not). If AM/PM is not present AM is assumed. When specifying AM or PM, do not use periods ("A.M." or "P.M." return an error).
Example	E.g., TimeValue(Time(14,50,5))- returns the time object 14:50:05.

Today:

Description	Returns today's date with no time component.
Remark	If embedding in other functions, use Today('false'). See the *Now()* function to get today's date *with* its time component.
Example	E.g., Today()- returns the current date. Today('false') returns the current date formatted as MM/dd/yyyy.

Year:

Description	Returns the year portion of a date as a whole number, ranging from 1 to 9999.
Example	E.g., Year(today()) – returns 2011.

3.1.8   Arithmetic & Geometric Functions

+, -, *, /:

Description	Basic mathematical functions.

Abs:

Description	Returns the absolute value of a number.
Remark	
Example	E.g., Abs(-23.1) – returns 23.1.

Acos:

Description	Returns the *arccosine*, or *inverse cosine*, of a number.
Remark	The input must be from -1 to 1. The returned angle is given in radians in the range 0 (zero) to pi. If you want to convert the result from *radians* to *degrees*, then *multiply it by 180/PI()* or use the DEGREES function.
Example	E.g., Acos(-.231) – returns 1.80390168255052.

Acosh:

Description	Returns the *inverse hyperbolic cosine* of the given number.
Remark	The input must be a real number greater than or equal to 1.
Example	E.g., Acosh(10) – returns 2.993223.

Asin:

Description	Returns the *arcsine* of the given number in radians, in the range -Pi/2 to Pi/2.
Remark	The input is the sine of the angle you want and must be in the range from -1 to 1.
Example	E.g., Asin(-0.5) – returns 0.5236.

Asinh:

Description	Returns the inverse hyperbolic sine of a number.
Remark	The input can be any real number. Note: *asinh(sinh(n))* returns *n*.
Example	E.g., Asinh(-2.5) – returns -1.64723.

Atan:

Description	Returns the arctangent, inverse tangent of a number.
Remark	The input can be any real number. Atan returns an angle given in radians in the range -Pi/2 to Pi/2.
Example	E.g., Atan(1) – returns 0.785398 (pi/4).

Atan2:

Description	Returns the angle from the x-axis to a line containing the origin (0, 0) and a point with coordinates (x,y).
Remark	The input requires two values: the x and y coordinates. Note: If both x,y are 0 then Atan2 will return the error #Div/0! A negative result represents a clockwise angle.
Example	E.g., Atan2(1, 1) – returns 0.785398 (pi/4).

Atanh:

Description	Returns the inverse hyperbolic tangent of a number.
Remark	The input must be from -1 to 1. Note: *Atanh(tanh(n))* returns *n*.
Example	E.g., Atanh(.76159416) – returns 1 (approximately).

Ceiling:

Description	Returns the number rounded up, away from zero, to the nearest multiple of significance.
Remark	The input requires two values, the number to be rounded and the multiple of significance. Regardless of the sign of number, a value is rounded up when adjusted away from zero. Note: If the argument is non-numeric, then Ceiling returns the error #VALUE!
Example	E.g., Ceiling(4.42,.05) – returns 4.45.

Cos:

Description	Returns the *cosine* of an angle in radians.
Remark	The returned angle is given in radians in the range 0 (zero) to pi. If you want to convert the result from *radians* to *degrees*, then *multiply it by 180/PI()* or use the DEGREES function.
Example	E.g., Cos(1.047) – returns 0.500171.

Cosh:

Description	Returns the *hyperbolic cosine* of a number.
Example	E.g., Cos(4) – returns 27.30823.

Even:

Description	Returns a number rounded up to the nearest even integer.
Remark	Regardless of the sign of number, a value is rounded away from zero. Note: If the number is non-numeric, then EVEN returns the error #VALUE!
Example	E.g., Even(1.5) – returns 2.

Exp:

Description	Returns *e* raised to the power of the input.
Remark	Exp is the inverse of Ln, the natural logarithm.
Example	E.g., Exp(1) – returns 2.718282 (the approximate value of *e*).

Fixed:

Description	Returns the first argument rounded to the number of decimal places specified in the second argument.
Remark	Takes three input: 1. The number you want to round. 2. The number of digits to the right of the decimal to include. 3. OPTIONAL: TRUE/FALSE whether to omit commas. The default is FALSE (includes commas as normal).
Example	E.g., Fixed(1234.5678, 2) – returns 1,234.56.

Floor:

Description	Rounds the number down, toward zero, to the nearest multiple of significance.
Remark	The input requires two values: the number to be rounded and the multiple of significance. Regardless of the sign of number, a value is down toward zero.

Formulas

	Note: If the argument is non-numeric, then Floor returns the error #VALUE!
Example	E.g., Floor(2.6, .5) – returns 2.5.

Int:

Description	Rounds a number down to the nearest integer.
Remark	The input must be a real number.
Example	E.g., Int(2.6) – returns 2.

Ln:

Description	Returns the natural logarithm of a number.
Remark	LN is the inverse of the EXP function.
Example	E.g., Ln(86) – returns 4.454347.

Log:

Description	Returns the logarithm of a number to the base you specify.
Remark	The first input is the number and the second is the base (if omitted base 10 used).
Example	E.g., Log(100) – returns 2.

Log10:

Description	Returns the base 10 logarithm of a number.
Remark	
Example	E.g., Log10(86) – returns 1.934498451.

Mod:

Description	Returns the remainder after first argument is divided by the second argument.
Remark	The second argument must not be 0.
Example	E.g., Mod(27,5) – returns 2.

Odd:

Description	Returns a number rounded up to the nearest odd integer.
Remark	The input must be a real number. Odd always rounds away from zero.
Example	E.g., Mod(1.5) – returns 3.

Pi:

Description	Returns the number 3.14159265358979, the mathematical constant *pi*, accurate to 15 digits.
Remark	
Example	E.g., Pi() – returns 3.14159265358979.

Power:

Description	Returns the result of the first argument raised to the second argument.
Remark	The operator ^ may be used instead of this function
Example	E.g., Power(5,2) – returns 25.

Product:

Description	Returns the product of the arguments.
Remark	The * symbol may be used in place of product. Arguments must be numbers, cell references, or text representations of numbers.
Example	E.g., Product(5,2) – returns 10. Also 5 * 2 - returns 10.

Quotient:

Description	Returns the integer portion of a division.
Remark	The / symbol may be used in place of product. This function discards the remainder of the division.
Example	E.g., Quotient(5,2) – returns 2. Also 5/2 – returns 2.

Rand:

Description	Returns an evenly-distributed random number between 0 and 1 (inclusive).
Remark	To generate a random real number between a and b, use: *RAND()*(b-a)+a.*
Example	E.g., Rand() – returns a random number between 0 and 1.

Round:

Description	Returns a rounded number.
Remark	Takes one or two input: 1. The number to round. 2. The number of decimal places desired.
Example	E.g., Round(5.236, 2) – returns 5.24

RunningSum:

Description	Returns a running total of the input field.
Remark	Takes one or two input: 1. The Data Field you want to sum. 2. OPTIONAL: A Data Field or Category. The running sum resets to 0 whenever there is a new value for this Data Field or Category. Note: RunningSum should not be used with the AutoSum feature.
Example	E.g., 1. RunningSum({Employees.Salary}) – returns running total of all the employee's salary. 2. RunningSum({Employees.Salary}, {Employees.Region}) – returns a running total of employee's salary for each region. 3. RunningSum({Employees.Salary}, {Company}) – returns a running total of employee's salary for each Company.

Sin:

Description	Returns the *sine* of the given angle.
Remark	The returned angle is given in radians in the range 0 (zero) to pi. If you want to convert the result from *radians* to *degrees*, then *multiply it by 180/PI()* or use the DEGREES function.
Example	E.g., Sin(1.047) – returns .0865926611287823.

Sinh:

Description	Returns the *hyperbolic sine* of a number.
Remark	
Example	E.g., Sinh(4) – returns 27.1899171971278.

Sqrt:

Description	Returns the positive square root of the argument.
Remark	If the input is negative, Sqrt returns the error #NUM!.
Example	E.g., Sqrt(25) – returns 5.

Formulas

Tan:

Description	Returns the tangent of the given angle.
Remark	The returned angle is given in radians in the range 0 (zero) to pi. If you want to convert the result from *radians* to *degrees*, then *multiply it by 180/PI()* or use the DEGREES function.
Example	E.g., Tan(.785) – returns .99920.

Tanh:

Description	Returns the *hyperbolic tangent* of a number.
Remark	
Example	E.g., Tanh(-2) – returns .96403.

Truncate:

Description	Truncates a number to an integer by removing the fractional part of the number.
Remark	INT and TRUNC are different only when using negative numbers: TRUNC (-4.3) returns -4, but INT (-4.3) returns -5 because -5 is the lower number.
Example	E.g., Truncate(9.9) – returns 9.

3.1.9   String Functions

Concatenate:

Description	Joins several text strings into one text string.
Remark	The "&" operator can be used instead of CONCATENATE to join text items.
Example	E.g., Concatenate("This," "is," "one string!") – returns This is one string!

Left:

Description	Returns the first character(s) of a text string.
Remark	The first argument is the string you want to display. The second argument is number of characters you want.
Example	E.g., Left("example", 2) – returns ex.

Len:

Description	Returns the number of characters in a text string.
Example	E.g., Len("example") – returns 7.

Lower:

Description	Converts all uppercase letters in a text string to lowercase.
Example	E.g., Lower("EXAMPLE") – returns example.

Mid:

Description	Returns a specific number of characters from a text string starting where you specify.
Remark	Mid takes three input arguments: 1. The text string. 2. The place you want to start. 3. The number of characters you want to display.
Example	E.g., Mid("example," 2, 3) – returns xam.

NewLine:

Description	Begins a new line of text.

Replace:

Description	Replaces part of a text string.

Remark	Replace takes four input arguments:
	    1. The text string to partially replace.
	    2. The place you want to start replacing.
	    3. The number of characters to replace.
	    4. The string you want to substitute.

Example	E.g., Replace("example," 2, 3, "*") – returns e*ple.

Right:

Description	Returns the last characters in a text string.
Remark	The first argument is the string you want to display. The second argument is number of characters you want.
Example	E.g., Right("example," 2) – returns le.

Trim:

Description	Removes all spaces from text except for single spaces between words.
Example	E.g., Trim("This sentence has weird spacing.", 2) – returns This sentence has weird spacing.

Upper:

Description	Converts text to uppercase.
Example	E.g., Upper("example") – returns EXAMPLE.

Value:

Description	Converts a text string that represents a number to a number.
Example	E.g., Value("$1,000") – returns 1000.

3.1.10   Formatting Functions

Bold:

Description	Applies the bold formatting to the input.
Remark	Can be used to bold part but not all of the text in a cell. An entire cell can be made bold using the bold button in the toolbar or ctrl + B.
Example	E.g., = 'The second half of '& bold('this sentence is bold.') – returns 'The second half of **this sentence is bold.**'

Italic:

Description	Applies the italic formatting to the input.
Remark	Can be used to italic part but not all of the text in a cell. An entire cell can be italicized using the italic button in the toolbar or ctrl + I.
Example	E.g., = 'The second half of '&italic ('this sentence is italic.') – returns 'The second half of *this sentence is bold.*'

Formulas

Underline:

Description	Applies the underline formatting to the input.
Remark	Can be used to underline part but not all of the text in a cell.
	An entire cell can be underlined using the underline button in the toolbar or ctrl + U.
Example	E.g., = 'The second half of '&underline ('this sentence is underlined.') – returns 'The second half of <u>this sentence is underlined</u>.'

3.1.11 Other Functions

CellValue:

Description	Returns the value of the current cell.
Remark	This function is only used in **Conditional Formatting**.
Example	Suppose a cell of a report displays the price of products.
	E.g., CellValue()> 150 returns True if the price of the product is greater than 150.

FilterValue:

Description	Returns the current value of a filter.
Remark	Takes three arguments.
	1. The index of the filter.
	2. The sub-index used for filters that contain multiple values (i.e. between or one of).
	3. (Optional) A true/false indicator if the value should be formatted following the user's culture settings. This is used for numbers and dates.
	If there are no filters, the function returns an Index out of Range message.
	Indexes begin with 1.
Example	Suppose the filter summary is "Order Detail.UnitPrice > '3.6' and Products.ProductName is one of ('Boston Crab Meat,' 'Tofu')".
	E.g., FilterValue(2,2) returns Tofu.

Hyperlink:

Description	Creates a hyperlink to an external website.
Remark	Takes two arguments.
	1. The URL of the website.
	2. (Optional) The text to display in the cell.
	If display text is omitted, the URL will display.
	Note: If PDF exports open in a tab within this application, then clicking the hyperlink may direct a user to leave the application.
Example	E.g., Hyperlink('www.fakeWebSite.com', 'click here') returns a hyperlink that displays the text 'click here'.' Clicking this text opens http://www.fakeWebSite.com.

LoadImage:

Description	Loads a server side image based on the input path into the cell.
Remark	Can be used to load an image dynamically in place of the insert image feature. The path to the image must be in quotation marks. The entire path of the image is not required if your administrator has set a 'LoadImage' Prefix.
Example	E.g., LoadImage("c:/StarryNight.JPG") returns

StripHtmlTags:

Description	Removes any html tags from the input string.
Remark	The input must be a string in between quotation marks.
Example	E.g., StripHtmlTags(" This is heading 1 ") - returns This is heading 1.

4 CHARTS

Charts are a way of illustrating data to make it easy to spot trends and patterns. Most types of charts are simply a collection of points on a grid, with interstitial designs and labels that make them easier to read.

By default, charts are generated dynamically, based on data points that come from Data Fields. Each data field can be thought of as a "series" of data, which have a common association and are connected in some way. When we put one data field on a chart, we have a **single-series** chart, which is useful for comparing values to each other. When we put multiple data fields on a chart, we have a **multi-series** chart, which is useful for comparing trends.

Before creating a chart, make sure that your data exists in cells on the report. These cells don't have to be visible, so you can suppress them if desired. Charts are interactive in the Report Viewer, but will appear as static images in PDF, RTF, and Excel formats (CSV is incompatible).

To insert a chart into a report, select a Group Footer or Report Footer cell and click the ▥ **Chart Wizard** button. The **Chart Wizard** window will open.

The **Chart Wizard** has four tabs: **Type**, **Data**, **Appearance**, and **Size and Preview**. You can navigate between the tabs by clicking on the tab, or using the **Previous** and **Next** buttons.

Charts

4.1 TYPE
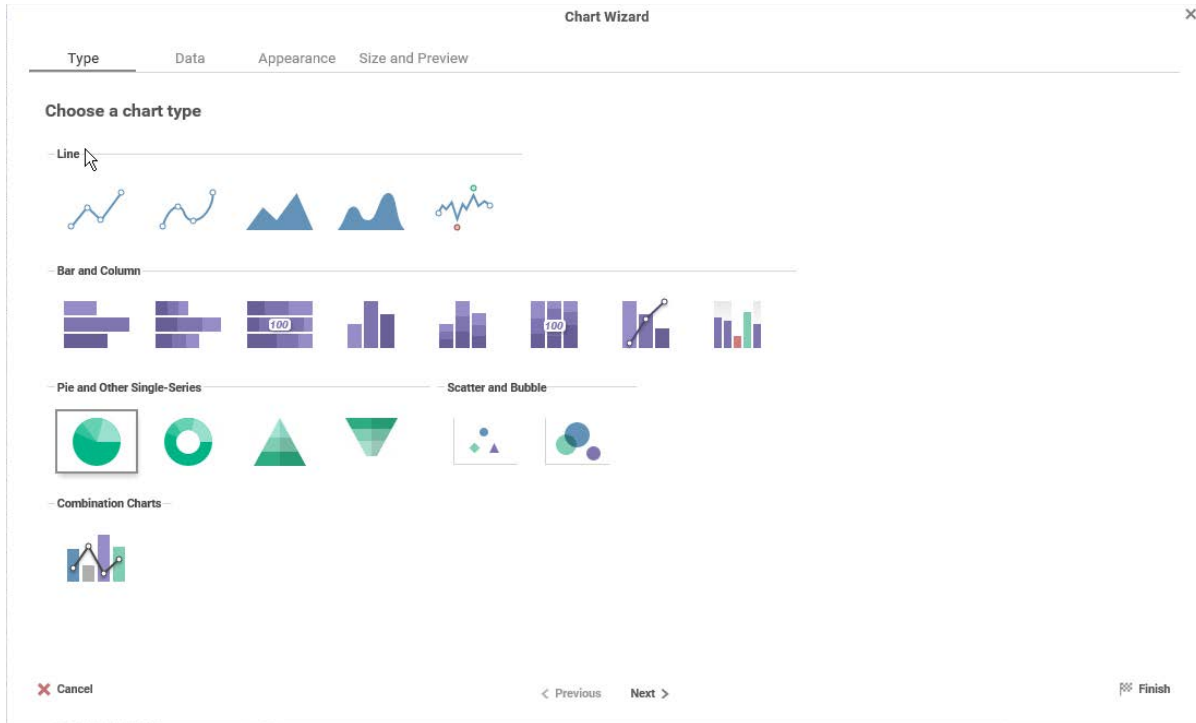
The **Type** tab lays out all the available types of charts you can create. There are 20 types, sorted into five general categories. Click on a category header to see more information about that type.

4.1.1 Line

Line charts display series of data points on a grid, connected by straight lines. They are often used to display a trend over time. Each series on a line chart is represented as a colored line. Line charts can have up to three Y-axes.

Variations:

- **Spline chart** – Data points are connected by interpolated curves instead of straight lines.
- **Area chart** – The area under each line is filled in by a color. Overlapping areas have mixed colors.
- **Spline-Area char**t – A combination of a spline chart and an area chart.
- **Spark Line chart** – Has no grid or axes. Use point labels and benchmark lines for reference.

4.1.2 Bar and Column

Bar charts use rectangular bars which extend horizontally left to right to show comparisons between categories. Column charts use vertical bars which extend upward. The length of a bar represents the quantity of the data value.

Each series on a bar or column chart is represented by a colored set of bars.

Variations:

- **Stacked bar/column chart** – Series are stacked on top of each other, additively.
- **100% Stacked bar/column chart** – Series are converted to a % of the max, then stacked on top of each other, additively to 100%.
- **Spark column chart** – Has no grid or axes. Use point labels and benchmark lines for reference.
- **Pareto chart** – Combines a descending column chart, where each column is the next highest data value, and an overlapping line chart, where each point is the cumulative sum to that point. Often used to highlight the most important field in a series. Single-series only.

4.1.3 Pie and Other Single-Series

Pie charts are used to show the relationship of data values in a series as portions of the total. The area of each slice is proportional to the quantity. Each data value on a pie chart is represented by a colored "slice." Pie charts are single-series only.

Variations:

- **Doughnut chart** – Pie charts with a hole in the center.
- **Pyramid chart** – Used to show data hierarchy in addition to value. Data values are represented by vertically stacked slices, the height (not width) proportional to the quantity. The vertical order of the slices is determined by the sort order.
- **Funnel chart** – Inverted pyramid chart. Often used to show retention amount or stages in a process. Shape is inverted, not data order. To change the order, swap the sort direction.

4.1.4 Scatter and Bubble

Scatter charts use pairs of data fields with a common relation to generate coordinates as points on a grid. They are often used to find relationships between two variables in a set of data. Unlike most other report types, scatter charts often map data from detail rows, instead of group rows.

Each series on a scatter chart is represented by a different shape and color combination.

Variations:

- **Bubble chart** – The points become circular "bubbles", with a third coordinate field as the radius of the bubble.

4.1.5 Combination Charts

Combination charts are several different charts layered on top of one another. They comprise a combination of Column, Line, Area, and/or Stacked Column charts. (Column and Stacked Column charts are not compatible with each other). Combination charts can have up to two Y-axes.

4.2 DATA

The **Data** tab is used to specify which cells to use as chart data. You can change how data is translated into points by changing the data layout. You can also choose a sort order, as well as upper and lower boundaries for the data and axes.

Add series to the chart by selecting a Data Field containing numeric values from the **Series Values** drop-down list. Some charts may require you to select a Data Field to label the X-Axis. Some charts may ask for two or three data fields per series. The data axis is drawn automatically.

Data is on the Y-Axis; this may not always be the vertical axis. Labels are on the X-Axis; this may not always be the horizontal axis. Scatter charts have no labels axis, but have X- and Y- data axes.

Add additional series by clicking **+ Add Series** (disabled for single-series charts). Give a **Name** to each series. Click delete (❌) to remove a series.

Change the data layout by clicking ❯ **Data Layout...** This will open the Data Layout dialog. If you change the data layout, this section will change for you to add either individual points or groups of series, instead of adding individual series. See *Data Layout* for details.

Use the **Sort data by** drop-down lists to determine how series data should be ordered:

- **Report Order** – Use the sort order specified by the report.
- **Data Labels** – Sort by the label axis value, alphabetically or numerically.
- **Data Values** – Sort by the value of the data.

You can sort data in **Ascending** (A- Z, 0-9) or **Descending** (Z-A, 9-0) order.

Use the exclude values fields to ignore values that are too large and/or too small.

- (Grid charts) Use the **Data Axis Value** fields to set upper and/or lower bounds for the data axis.
- (Grid charts) Select the **Align Data Labels Across Series** check box if you have multiple series with data points at common intervals.
- (Pie charts) Use the **Other Category Percent** field to group data fields with small quantities into an "Other" category.

4.2.1 Data Layout

Your data may not fit neatly into series. This dialog accommodates different data layouts by allowing you to select from a couple of different ways to build a chart.

Column Based Chart is the default. This layout builds charts by taking data fields, and mapping selected values as Y-coordinates on the data axis. Determine which values are selected by specifying a data field with a common relation as the X-Axis. This layout is useful if you want to plot one or more unrelated series in a group (e.g. Budget and Sales and Expenditures *per* Store).

Use **Column Based Chart** if your report contains a group with one or more elements.

Row Based Chart is a little more complex. This layout still uses fields as series, but all your series are a group, nested within another group, which determines the X-Axis values. Data values are mapped per series per group. This layout is useful if you want to plot two or more related series in a group (e.g. Sales *per* Employee *per* Store).

If you select this layout, the data selector will change to allow you to add all your series as a group, nested within an outer group for the data labels.

Use **Row Based Chart** if your report contains a group within a group.

Cell Based Chart is the simplest option. This layout builds charts by taking pairs of static report values and using them as (X,Y) or (label, value) coordinate pairs.

If you select this layout, the data selector will change to allow you to add points. This layout only supports one series of data (duplicating data labels will create duplicate axis labels).

Charts

In order for the Chart Wizard to recognize report cells, they must be in Formula form, with a preceding = sign, text surrounded by quotes, and data fields surrounded by braces { }. Examples below:

> *Number*: =42
> *Text*: ="February 24th"
> *Data field*: ={Employees.EmployeeName}
> *Formula*: =Month{Orders.OrderDate}
> *Math*: ={Orders.UnitPrice} * 2.43

Use **Cell Based Chart**s if you want to build a chart point by point, and only have one data series.

4.2.2   Appearance

The **Appearance** tab contains options for customizing how the chart will look.

4.2.2.1   Colors

Use the **Colors** drop-down list to select a color theme to apply to the chart. Specify a custom range of colors by selecting the **Linear Range** option.

4.2.2.2   Labels

Chart Title – Enter the text you want to appear in at the top of the chart.

> (Grid charts) **X-Axis Title** – Enter the text you want to appear on the X-Axis (horizontal axis).

> (Grid charts) **Y-Axis Title** – Enter the text you want to appear on the Y-Axis (vertical axis).
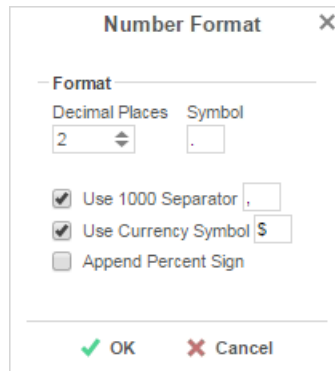
Use the **Point Labels** drop-down list to label the points on the chart:

- **Series Values**
- **Percent of Series Values**
- **Data Labels**
- **Data Labels with Data Values**

Use the **Legend Position** drop-down list to choose where to display the legend relative to the chart.

Use the **Label Font** drop-down list to specify the font for the labels.

Use the ▦ **Number Format...** dialog to specify how data and axis labels should be formatted:


(Line & combo charts) Use the ▦ **Chart Axes** button to add and format axes:

Click ➕ **Add Y Axis** to add an additional axis. Give it a title and use the formatting options to format the axis labels and data labels for associated series. Click ✖ to remove an axis.

Y-Axis Assignment – Use the drop-down list for each series to associate the series with an axis. Each series will have the same format as the axis, and hiding an axis will hide associated series.

Click ✔ **OK** when done.

Use the ▦ **Benchmark Lines..**. dialog to add horizontal lines at specific sections of the chart:
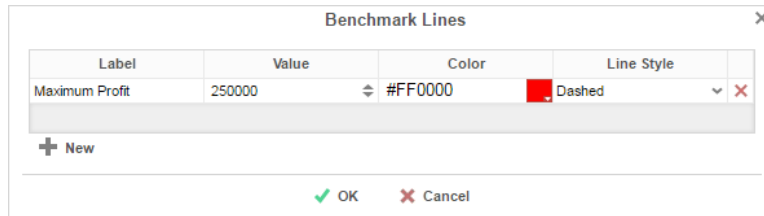
Click ➕ **New** to add a benchmark line:

- **Label** – Enter the text you want to label the line.
- **Value** – Set the value for where the line will display.
- **Color** –Specify the color of the line.
- **Line Style** – Solid or Dashed.

Click ✖ to remove a benchmark line. Click ✔ **OK** when done.

4.2.2.3   Other Features
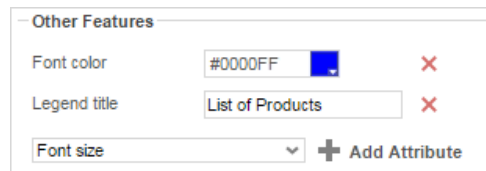
To add a customization, select an attribute from the drop-down list and click ➕ **Add Attribute**. Then enter a custom property into the attribute field or select from the attribute drop-down list.
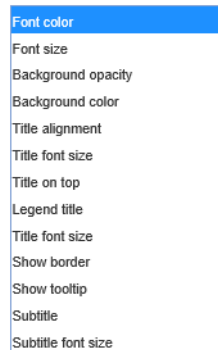
Click ✖ to remove a customization.

4.2.1   Size and Preview

The **Size and Preview** tab allows you to change the size of the chart and preview any customizations.

Charts preview in the Wizard and on the Design Grid using placeholder data.
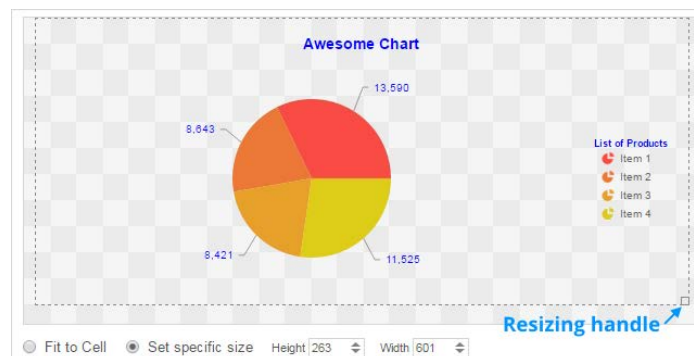
You can change the size of the chart in one of three ways:

- Drag-and-drop the handle chart size at the bottom-right corner.
- Select **Fit to Cell** and resize the chart cell on the Design Grid.
- Select **Set specific size** and enter a custom **Height** and **Width** (in px).

5 GAUGES

A Gauge can be displayed in a report to give a visual representation of the scale of a value. To insert a Gauge, select a cell and click the Insert Gauge button ( ). The **Gauge Wizard** will display. The **Gauge Wizard** has two tabs: **Appearance** and **Data**.

> ***Note:*** *You can place Gauges in any section of the report.*

5.1 APPEARANCE
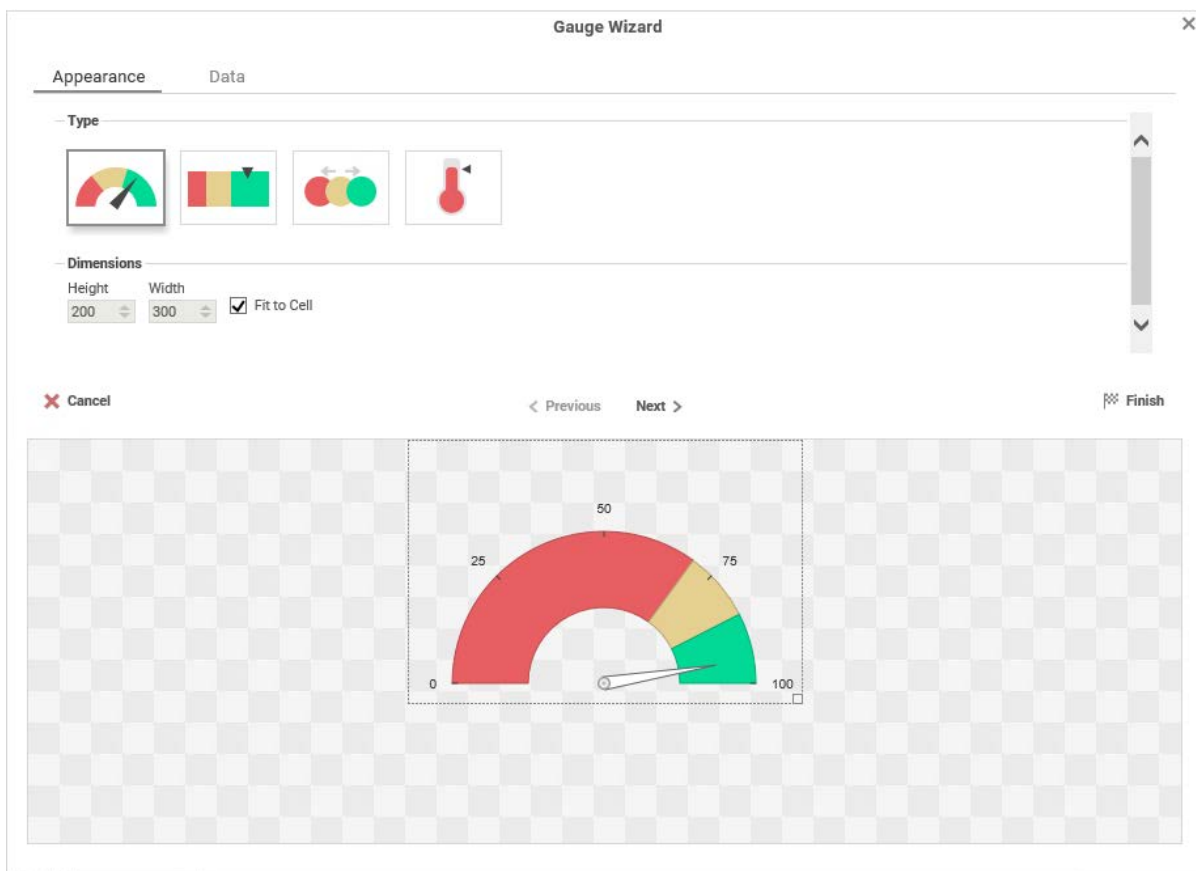
In the **Appearance** tab, select the **Type** and **Dimension** of the Gauge.

- **Type** – Select the icon representing the type of gauge. Available types include: *Angular, Linear, Bulb*, and *Thermometer*.
- There are three ways to set the size of the Gauge.
  - o Enter the **Height** and **Width** in the dimension boxes.
  - o Resize the gauge by dragging the lower right corner in the preview.
  - o Select the **Fit to Cell** check box.

5.2 DATA

In the **Data** tab, select the **Data Values** and **Color Ranges** for the Gauge.

- Use the **Value and Range** drop-down list to select the cell that contains the numeric value for the Gauge.
- Use the **Provide range as** buttons to specify if the **Min** and **Max** values for the Gauge should be static numbers or come from cells on the report.
- In the **Color Ranges** section, use the **Color By** buttons to specify if color ranges should be percentages of the Max value, static numbers, or come from cells on the report.

Note: Percent Color Ranges must be in ascending numeric order.

Use the ✚ **Add** and ✖ **Remove** buttons to create additional colors. To change a color, either use the drop-down list or enter a Hex value.

Note: Thermometer Gauges can only have one color.

6 NEW CROSSTAB WIZARD

The New CrossTab Wizard is an interactive tool that walks you through the process of creating a new report. All of the settings in the New Report Wizard can be modified in the Report Designer after the report is created.

To navigate the wizard, either click the desired tab or use the buttons at the bottom.

The New Report Wizard has five sub tabs. The **Name**, **Categories**, and **Layout** tabs must be completed, while the other tabs are optional.

6.1 NAME TAB

In the **Name** tab, enter a report name and click on the folder where the report will be saved.

The report name can be up to 255 characters. Avoid special characters such as ? / \ * " " < >.

A report's description appears at the bottom of the Main Menu when you select it. The description text is also used when searching for a report.

**Note:** You cannot create a report inside a folder that is read-only ( ).

6.2 CATEGORIES TAB

In the **Categories** tab, select the Data Categories to which you would like to have access on the report. It is important to understand two terms: Data Category and Data Field.

Data Category – A Data Category is a data object that has several attributes. For example, StudentDemographicCore is a category; each student has a studentnumber, a homeroom teacher, school building and school year, etc.
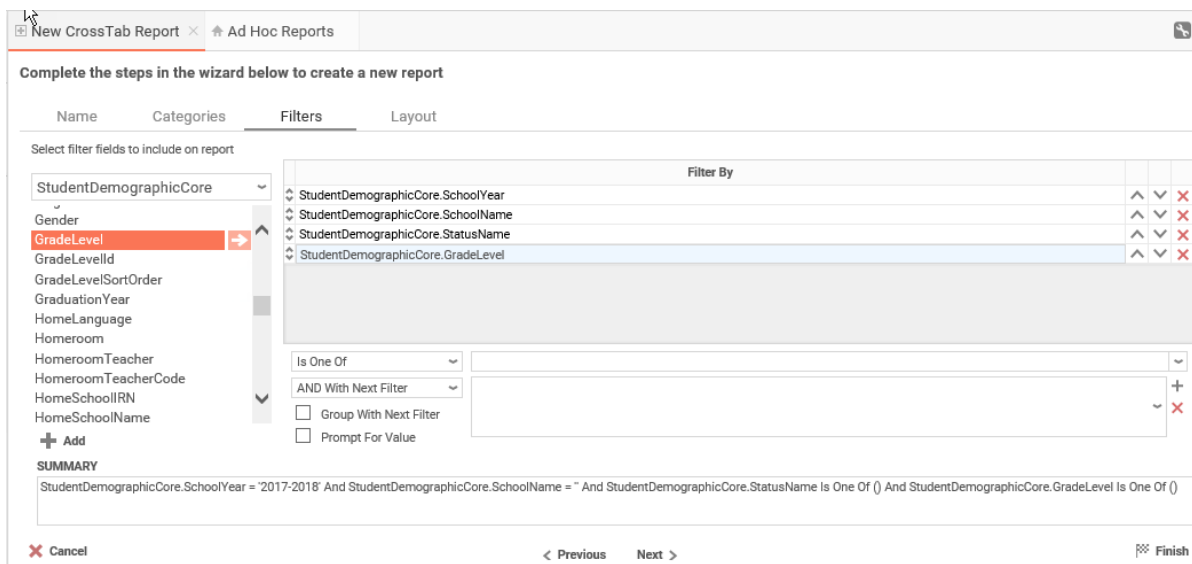
New CrossTab Wizard

Data Field – A Data Field is a single attribute within a category. For example, Students.ID is the numeric value that identifies a specific student.
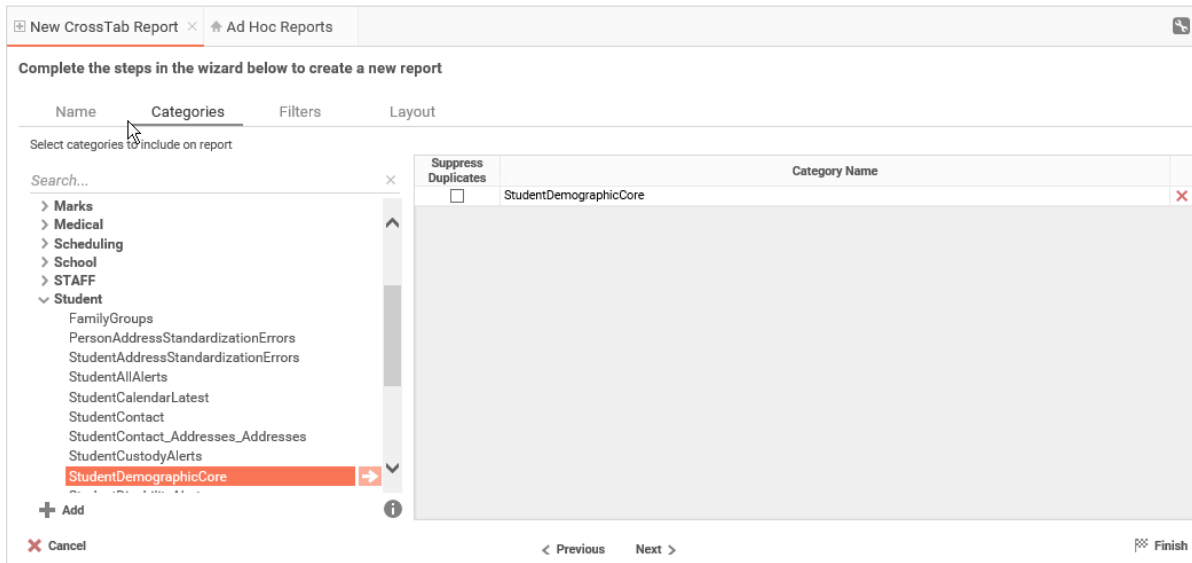
- To add a Data Category, either drag and drop it to the **Category Name** column, click the **Add** button, or double-click it.

- To see what Data Fields are in a Data Category, click the information button (🛈).
- Check the **Suppress Duplicate** button to suppress duplicate information from displaying on the report.
- To remove a Data Category, click the delete button (✖).

6.3 FILTERS TAB

In the **Filters** tab, create statements to filter the data at runtime.

There is no limit to the number of filters that can be defined. Filters can be numeric (up to eight decimals) or alphanumeric.

- To filter a Data Field, either drag and drop it to the **Filter By** column, click the **Add** button, or double-click it.
- Use the ⌃⌄ (up/down) and ⌃⌄ (up/down) arrows to indicate the sort priority.

- To remove a sort, click the delete button (⊠).
- Set the operator (equal to, less than, one of, etc.) by selecting it from the operator drop-down list.
- Set the filter value by either entering it manually or selecting a value from the drop-down list. If the Data Field is a date, the calendar and function buttons can be used to select a value.
- Select **AND With Next Filter** to require that the selected filter and the one below it are both true. Choose **OR With Next Filter** to require that either be true.
- Select the **Group With Next Filter** check box to indicate the precedence of the filters.
- Select the **Prompt for Value** check box to allow the filter to be modified at the time the report is executed.

6.4   LAYOUT TAB

In the **Layout** tab, design the CrossTab by moving Data Fields into the **Row Header Source**, **Column Header Source**, and **Tabulation Data Source** panels.
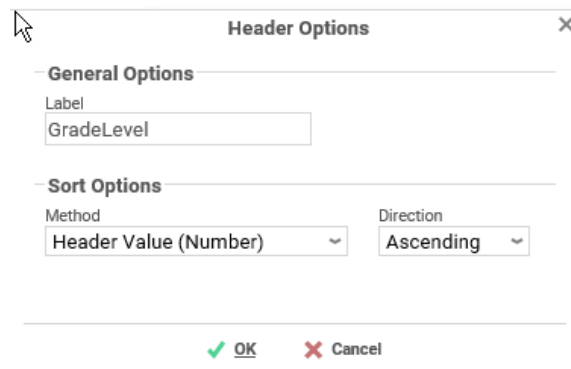
6.5 ROW HEADERS

Row Headers expand a CrossTab vertically. A CrossTab has a row for each unique value of a Row Header. For example, if you were using student data, you may have the Row Header StudentDemographicCore.GradeLevel to provide rows of each Grade Level within a building.

- To add a Row Header, either drag and drop it to the **Row Header Source** panel or use the **Add Row Header button** (➕☰).
- Click the *Formula Editor* button (𝑓𝑥) to insert a formula into the Row Header.
- Click the Edit Header button (◰) to view the **Header Options** menu. In the **Header Options** menu, you can:
  - Set a **Label** for the Row Header. This label displays at the top of the CrossTab.
  - Select a sorting method and direction.
    - **None** – Does not sort the Row Headers.
    - **Header Value (Text)** – Sorts the Row Header by its values as though they are text.
    - **Header Value (Number)** – Sorts the Row Header by its values as though they are numbers.
    - **Tabular Totals** – Sorts the Row Header by the totals of the Tabulation Data.

*Note: If there is more than one Row Header, the **Header Options** menu for the top most Row Header has options for subtotals of Tabulation Data.*

  - Select where to display subtotals by using the **Placement** drop-down list.
    - **None** – Does not display subtotals.
    - **Top** – Displays subtotals above the Tabulation Data for each Row Header value.
    - **Bottom** – Display subtotals below the Tabulation Data for each Row Header value.
  - Set a label for the subtotals.
- Use the ⌃⌄ (up/down) and ⌄ (up/down) arrows to indicate the sort priority.
- To remove a sort, click the delete button (✖).

6.6 COLUMN HEADERS

Column Headers expand a CrossTab horizontally. A CrossTab has a column for each unique value of a Column Header. For example, if you were using student data, you may have the Column Headers StudentDemographicCore.LocalEthnicity and StudentDemographicCore.Gender to provide columns for each gender count grouped by ethnicity.

- To add a Column Header, either drag and drop it to the **Column Header Source** panel or click the **Add Column Header** button (use the ⌄⌃ (up/down) and ⬍ (up/down) arrows to indicate the sort priority).
- To remove a sort, click the delete button (✕).
- Click the *Formula Editor* button (𝑓𝑥) to insert a formula into the Column Header.
- Click the Edit Header button (🖉) to open the **Header Options** menu. In the **Header Options** menu, you can:
  - Set a **Label** for the Column Header to display at the top of the CrossTab.
  - Select a sorting method and direction.
    - **None** – Does not sort the Column Headers.
    - **Header Value (Text)** – Sorts the Column Header by its values as though they are text.
    - **Header Value (Number)** – Sorts the Column Header by its values as though they are numbers.
    - **Tabular Totals** – Sorts the Column Header by the totals of the Tabulation Data.

*Note: If there is more than one Column Header, the **Header Options** menu for the top most Column Header has options for subtotals of Tabulation Data.*

  - Select where to display subtotals by using the **Placement** drop-down list.
    - **None** – Does not display subtotals.
    - **Left** – Displays subtotals to the left of the Tabulation Data for each Column Header value.
    - **Right** – Display subtotals to the right of the Tabulation Data for each Column Header value.
      - Set a label for the subtotals.
- Use the ⌄⌃ (up/down) arrows to rearrange the order of the Column Headers.
- To remove a Column Header, click the delete button (✕).

ProgressBook StudentInformation Advanced Ad-Hoc Reporting

Column Header Source					
StudentDemographicCore.LocalEthnicityName	*fx*	✎	∧	∨	✕
StudentDemographicCore.Gender	*fx*	✎	∧	∨	✕

6.6.1   Tabulation Data

Tabulation Data provides information when data exists for both the Column Header and Row Header values. For example, if you have a Row Header on products and a Column Header on the month, then the Tabulation Data of StudentDemographicCore.StudentNumber may use the Count function to display how students contained in each grade level by ethnicity and gender.

- To add a Tabulation Data, either drag and drop it to the **Tabulation Data** panel or click the **Add Tabulation Data** button (➕ ▦).
- Click the Formula Editor button (*fx*) to insert a formula into the Tabulation Data.
- Click the Edit Tabulation button (✎) to open the **Tabulation Options** menu. In the **Tabulation Options** menu, you can:
    - o Set a **Label** for the Tabulation Row to display at the beginning of each row.
    - o Use the **Method** drop-down list to select the summary function to be applied to the Tabulation Data.
        - ▪ **Sum** – Totals the Tabulation Data.
        - ▪ **Count** – Counts the Tabulation Data.
        - ▪ **Average** – Take the mean of the Tabulation Data.
        - ▪ **Minimum** – Displays the lowest value in the Tabulation Data.
        - ▪ **Maximum** – Displays the highest value in the Tabulation Data.
        - ▪ **None** – Displays the value of the Tabulation Data without applying any formula.
    - o Use the **Value** drop-down list to select how the Tabulation Data should be displayed.
        - ▪ **Aggregate** – Display the result of the selected Method.
        - ▪ **Percent of Row** – Display the result of the selected method as a percentage of the row total.
        - ▪ **Percent of Colum** – Display the result of the selected method as a percentage of the column total.
- Use the ∧∨ (up/down) and ↕ (up/down) arrows to indicate the sort priority.
- To remove a sort, click the delete button (✕).

Tabulation Data Source					
StudentDemographicCore.StudentNumber	*fx*		∧	∨	✕

6.7 CROSSTAB OPTIONS

Settings that affect the entire CrossTab are controlled in the CrossTab **Options** menu. Open the CrossTab **Options** menu by clicking the **Options** button (☰ Options). Using this menu, you can adjust the following settings:

6.7.1 General
- Use the **Row Headers Placement** drop-down list to determine how the Row Headers are displayed.
  - o **Columns** – Display the Row Headers in columns from left to right in the order they are in the **Row Header Source** panel.
  - o **Hierarchical** – Display Row Headers in a hierarchical structure using indentation to display their order.
- Select the **Repeat CrossTab Header every new page** check box to repeat Row Header labels and Column Headers on each new page.

6.7.2 Grand Total Row
- To get a total for each column, select **Top** or **Bottom** from the **Placement** drop-down list in the **Grand Total Row** section and provide a label in the **Label** text box.

6.7.3 Grand Total Column
- To get a total for each row, select **Top** or **Bottom** from the **Placement** drop-down list in the **Grand Total Column** section and provide a label in the **Label** text box.

6.7.4 Preview
At the bottom of the **Layout** tab, a preview shows how the Crosstab displays based on the fields that have been added. You can increase the size of the preview by dragging up and down in the area between **Theme** drop-down list and the preview box.

New CrossTab Wizard

6.7.5   Final Report Design

7 TRAINING WORKSHOP DEMO

7.1 DEMO 1: STANDARD REPORT WITH GROUPING AND REPEATING GROUPS

The high school principal desires a mark breakdown by teacher for each class and the total count students for each mark in the classes that are taught. Create a report that filters by reporting term for a specific school and school year along with student grade level and status. Your Final Result will look like the following report.

Teacher Mark Breakdown
For Qtr1

Boshears, Robbie	A	B	C	D	Missing
0003: 51 - LITERATURE & FILM(S1)	0	0	0	1	2
0011: 33 - ENGLISH 10(All)	2	1	5	1	1
0011: 73 - ENGLISH 10(All)	0	1	0	3	2
	2	2	5	5	5

Brose, Aaron	A	B	C	D	Missing
0400: 31 - COMPUTERS I(S1)	1	0	0	0	2
0117: 13 - GOVERNMENT(All)	0	0	0	0	1
	1	0	0	0	3

Carter, Geoffrey	A	B	C	D	Missing
0118: 63 - CP WORLD HISTORY(All)	0	0	0	0	1
	0	0	0	0	1

Corns, Jamie	A	B	C	D	Missing
0080: 33 - HONORS ALGEBRA II*(All)	8	0	2	0	4
0080: 63 - HONORS ALGEBRA II*(All)	4	3	3	0	1
	12	3	5	0	5

Fisse, Karen	A	B	C	D	Missing
0500: 71 - LEARNING LAB TUTOR(S1)	0	0	0	0	1
0229: 13 - FRENCH I(All)	1	1	0	0	0
0229: 43 - FRENCH I(All)	2	3	2	0	0
0232: 53 - FRENCH II(All)	4	1	0	0	1
0232: 63 - FRENCH II(All)	1	2	0	0	1
	8	7	2	0	3

Gadbury, Sarah	A	B	C	D	Missing
0243: 11 - ART II A(S1)	14	0	0	0	0
0240: 41 - DESIGN(S1)	3	0	0	0	0
0240: 51 - DESIGN(S1)	4	2	0	0	1
0240: 61 - DESIGN(S1)	1	2	1	0	2
	22	4	1	0	3

Gibson, Gabrea	A	B	C	D	Missing
0088: 33 - CP GEOMETRY(All)	2	1	1	1	3
0088: 63 - CP GEOMETRY(All)	1	4	2	0	2
0079: 13 - GEOMETRY(All)	1	6	1	3	2
0071: 73 - MATH TOPICS:CONS/FINANCIAL MGT(All)	1	0	0	0	0
	5	11	4	4	7

Hints:

- Use Group Header and Footer
- Use Repeating Group
- Use AggSum formula
- Use If Formula
- Use Concatenate Formulas