Using the *CogAT*
Ability X Achievement Tool

CogAT®

Using the *CogAT* Ability X Achievement (AXA) Tool

- The following pages explain how to view and use the data analysis provided in the *CogAT* Ability by Achievement Excel file

- Please note that the analysis tools only works with Excel in MS 365
  - o Earlier versions of Excel (such as Excel 2019 Professional Plus) will allow you to load data but will not complete the macro-enabled data analysis
  - o The macro functionality on the charting and analysis pages relies on the dynamic array feature, found only in MS Office 365 and later

To view the charted data, click on *CogAT* **vs Score Dashboard**

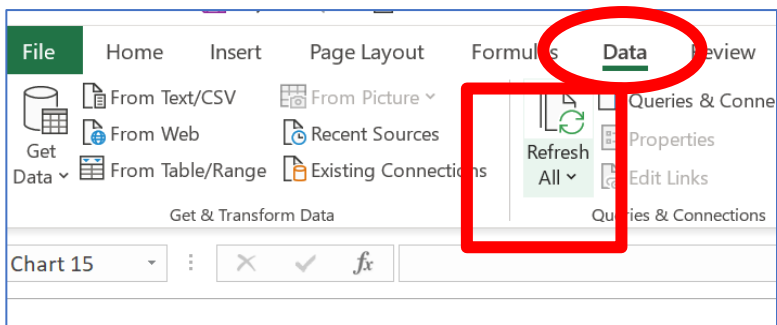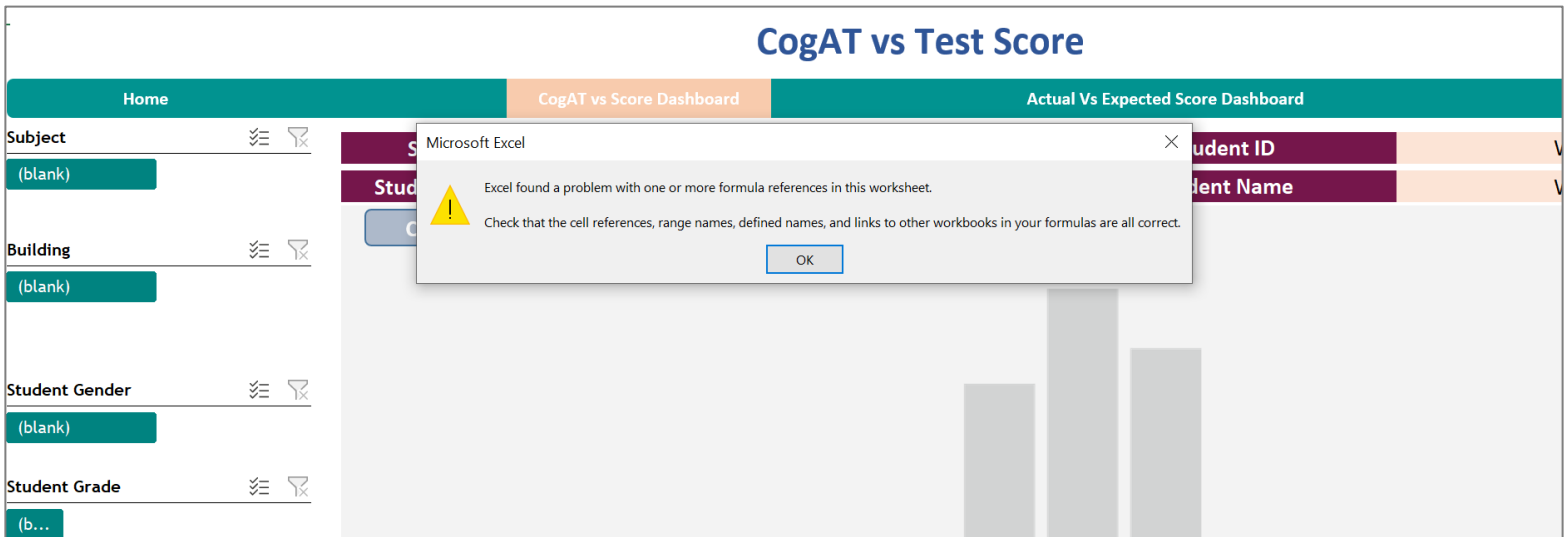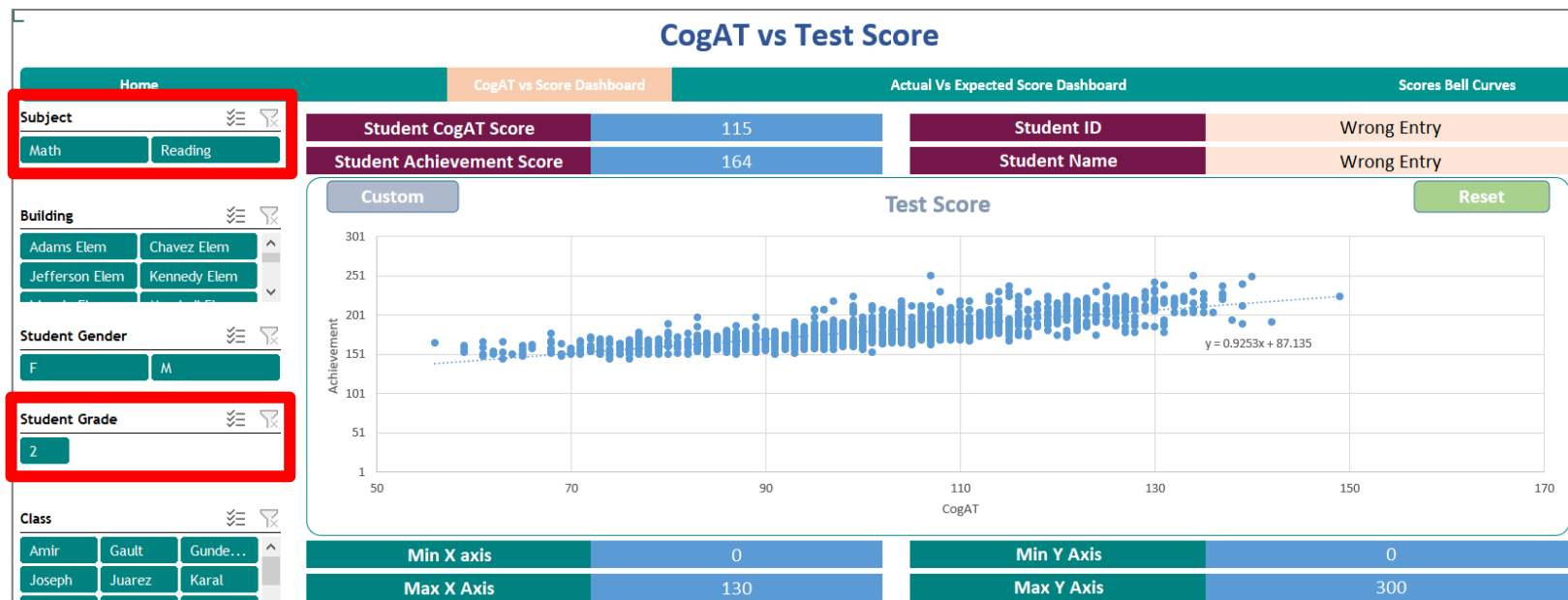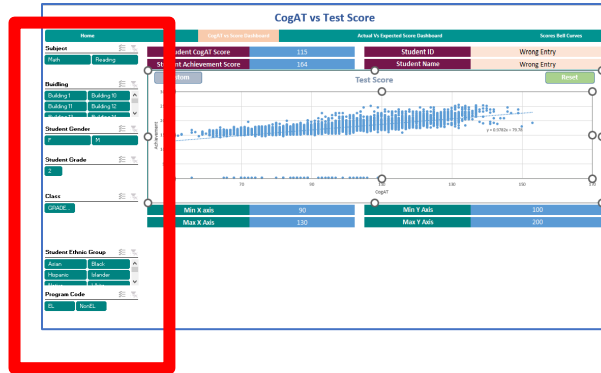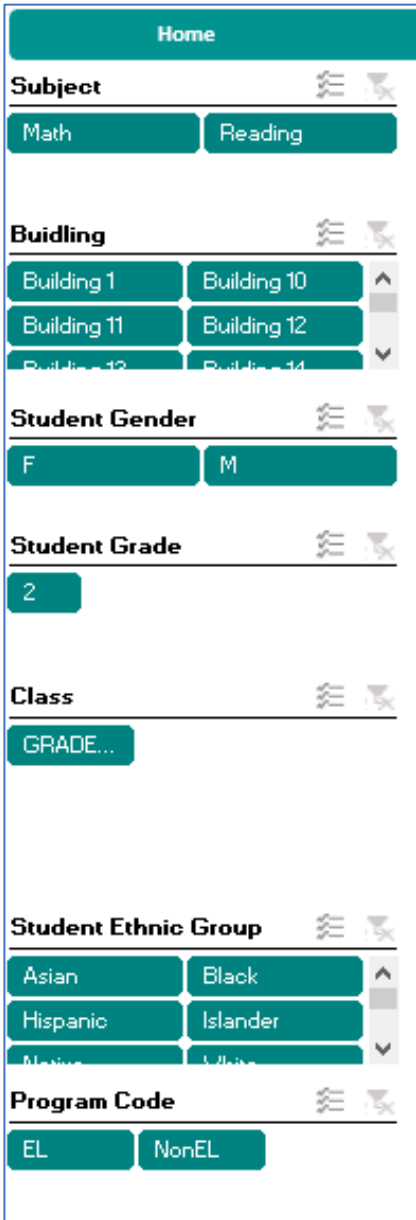|												
			Clean Raw Data									
Home			**CogAT vs Score Dashboard**			**Actual Vs Expected Score Dashboard**				**Scores Bell Curves**		
Raw Data		**CogAT Data**										
Student ID	Student First Name	Student Last Name	Buidling	Class	Student Grade	Student Gender	Program Code	Student Ethnic Group	Subject	Test Score	CogAT Sco
100001	FName1	LName1	Building 3	GRADE 2	2	F	EL	Black	Reading	177	86
100002	FName2	LName2	Building 33	GRADE 2	2	F	NonEL	White	Reading	218	115
100003	FName3	LName3	Building 18	GRADE 2	2	M	EL	Black	Reading	181	101
100004	FName4	LName4	Building 12	GRADE 2	2	M	NonEL	Black	Reading	189	100
100005	FName5	LName5	Building 15	GRADE 2	2	M	NonEL	Asian	Reading	178	90
100006	FName6	LName6	Building 29	GRADE 2	2	F	EL	Black	Reading	173	93
100007	FName7	LName7	Building 3	GRADE 2	2	F	NonEL	Black	Reading	178	95
100008	FName8	LName8	Building 16	GRADE 2	2	M	NonEL	White	Reading	187	116
100009	FName9	LName9	Building 4	GRADE 2	2	F	NonEL	Black	Reading	191	125
100010	FName10	LName10	Building 40	GRADE 2	2	F	NonEL	White	Reading	168	95
100011	FName11	LName11	Building 21	GRADE 2	2	M	NonEL	Hispanic	Reading	191	114
100012	FName12	LName12	Building 33	GRADE 2	2	M	NonEL	Hispanic	Reading	185	106
100013	FName13	LName13	Building 10	GRADE 2	2	F	EL	Hispanic	Reading	165	82
100014	FName14	LName14	Building 17	GRADE 2	2	M	EL	Asian	Reading	161	72
100015	FName15	LName15	Building 2	GRADE 2	2	F	NonEL	Black	Reading	189	98
100016	FName16	LName16	Building 33	GRADE 2	2	F	NonEL	Hispanic	Reading	173	109
100017	FName17	LName17	Building 28	GRADE 2	2	M	EL	Hispanic	Reading	154	79
100018	FName18	LName18	Building 33	GRADE 2	2	M	NonEL	Black	Reading	169	113
100019	FName19	LName19	Building 19	GRADE 2	2	F	NonEL	Hispanic	Reading	158	94
100020	FName20	LName20	Building 38	GRADE 2	2	M	NonEL	Hispanic	Reading	181	106
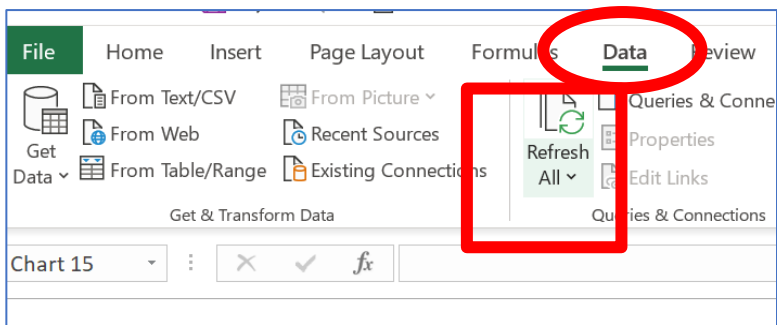
Click on **Data** and **Refresh All** in the Excel menu

If you get a message about "Formula References", simply click **OK**

CogAT vs Test Score

| Home | CogAT vs Score Dashboard | Actual Vs Expected Score Dashboard |

Subject
(blank)

Building
(blank)

Student Gender
(blank)

Student Grade
(b…

Microsoft Excel

⚠ Excel found a problem with one or more formula references in this worksheet.

Check that the cell references, range names, defined names, and links to other workbooks in your formulas are all correct.

[OK]

udent ID
dent Name

Click on **Data** and **Refresh All** in the Excel menu

- Data will initially chart for all students, all subjects, all grades, and all buildings that were loaded in your data – it must be filtered down for the analysis to have meaning.

- Use the filter pane on the lefthand side to restrict your analyses to a <u>single subject</u> area within a <u>single grade</u> to review the trends and differences in student ability and achievement

- Due to differences in scaling, multiple grades and subjects should not be charted together

Configure your data view by using the filter pane on the left:

- **Subject* (Achievement score)**

- Building
- Gender
- **Grade***

- Class
- Ethnic Group
- Program Code

* Use the filter pane to choose <u>only ONE Grade</u> and <u>ONE Subject </u>to display at a time

This chart now displays the trend line* for Reading score (Y axis) by *CogAT* Verbal score (X axis) for all 2nd graders included in the analysis
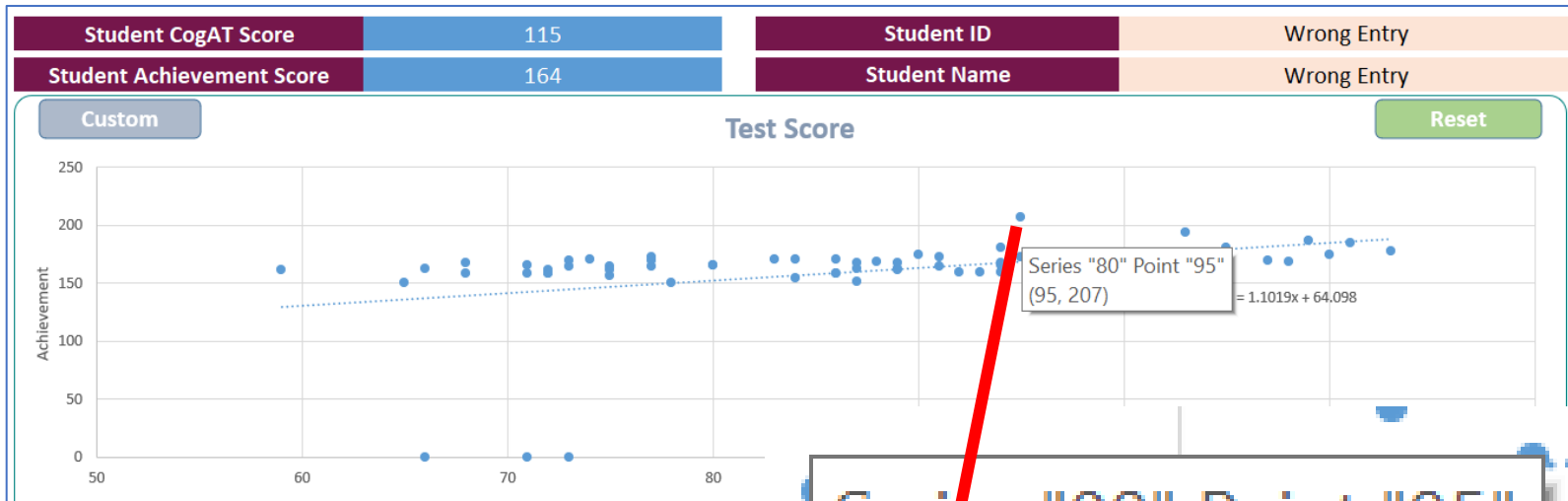
* The trend line is based only on the students included in your sample and filter selections and does not reflect the national distribution of scores
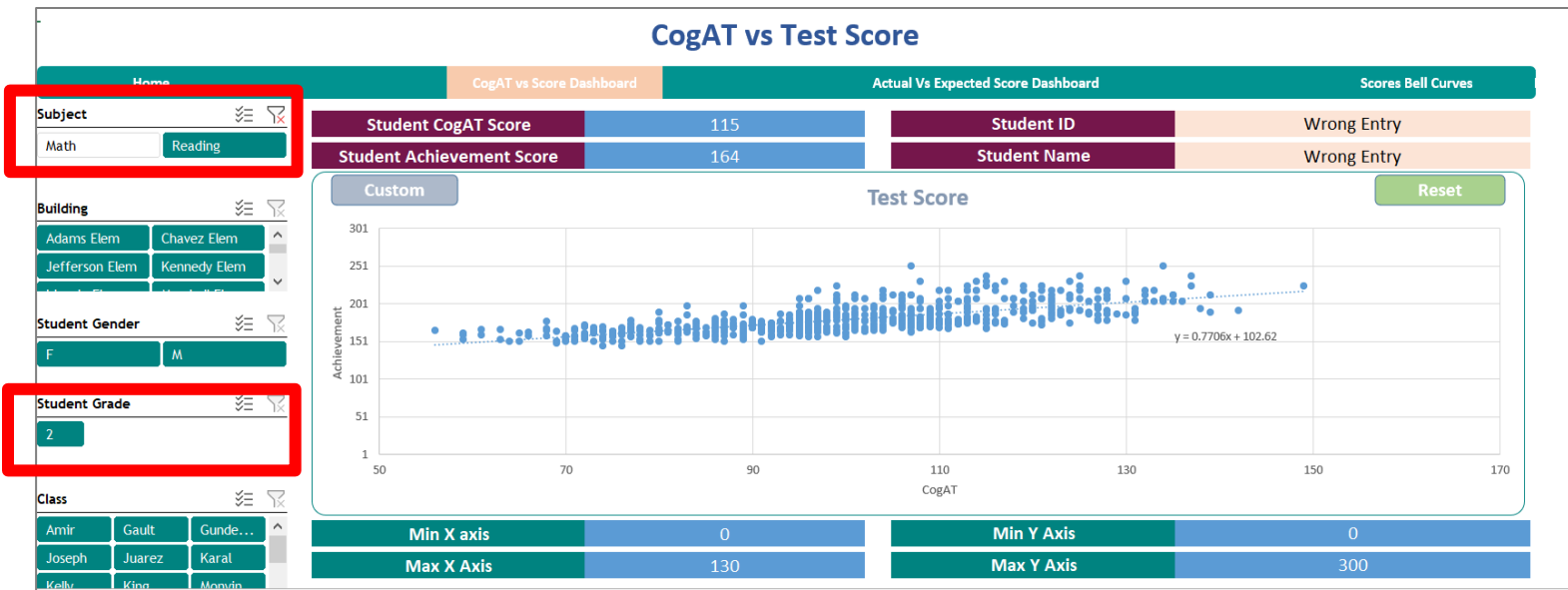
Reading by *CogAT* Verbal is determined by the subject area typed into the *CogAT* data sheet
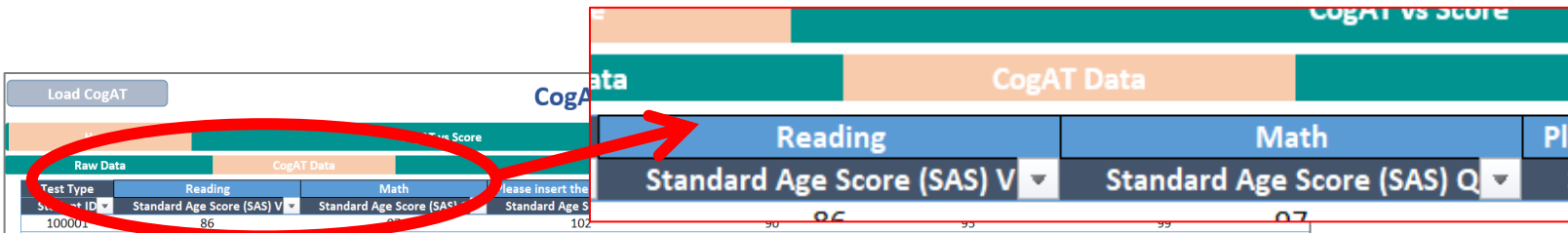
- Achievement is charted on the vertical Y axis and *CogAT* ability scores are shown on the horizontal X axis

- A trend line* is calculated based on the scores included in your sample and your filter selections – Reading and Verbal for all buildings, in this example

* The trend line is based only on the students included in your sample and filter selections and does not reflect the national distribution of scores

$$y = 0.7706x + 102.62$$

A
c
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v
e
m
e
n
t
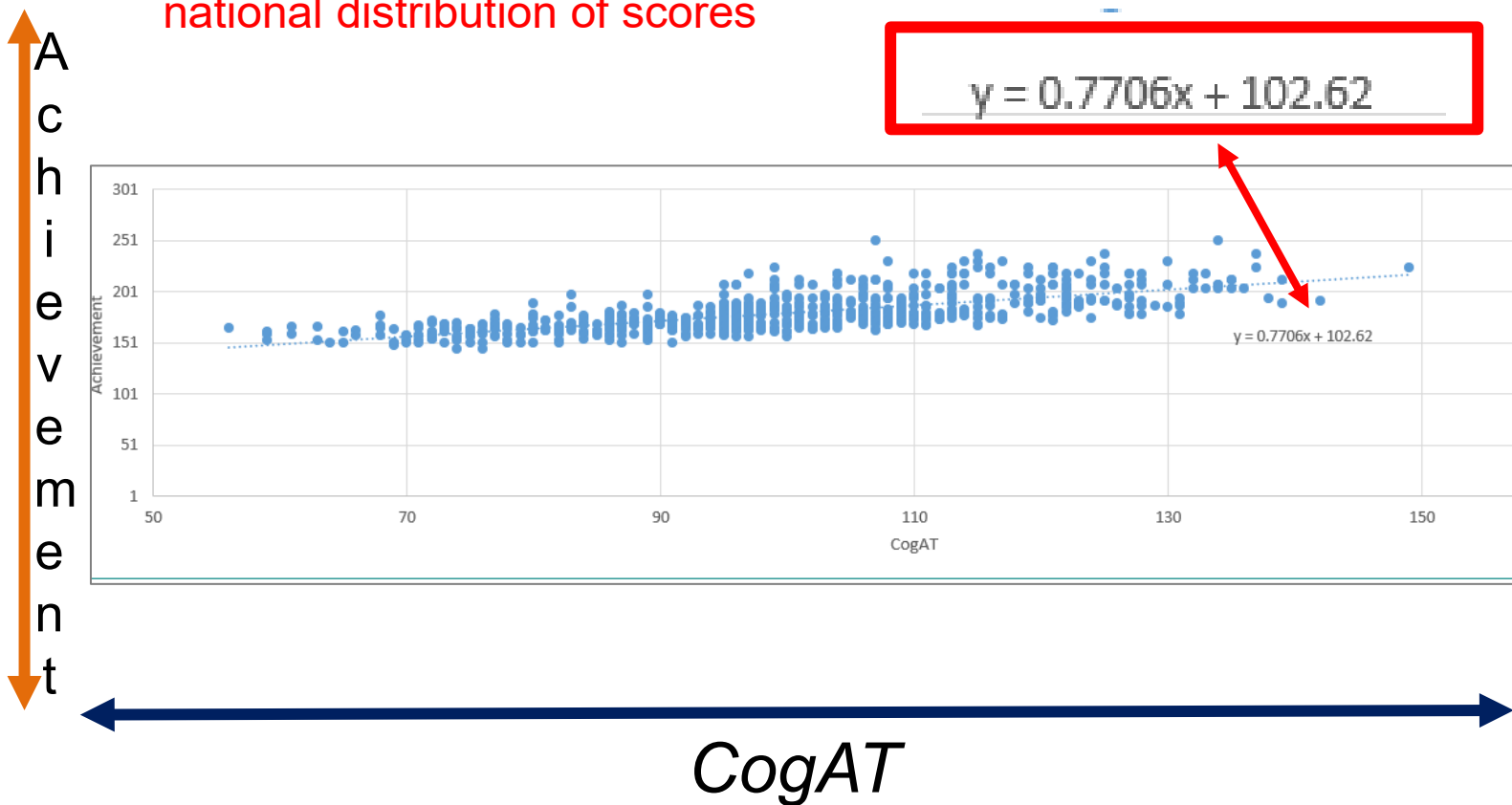
CogAT

- Change the subject area by choosing another option on the filter pane
- Choose a single building – or multiple buildings – by clicking on the building name(s) in the filter pane
- This example shows Math and *CogAT* Quantitative at Adams Elementary
- A new trend line is calculated based only to Math in the Adams Elementary building


$$y = 0.8504x + 89.891$$
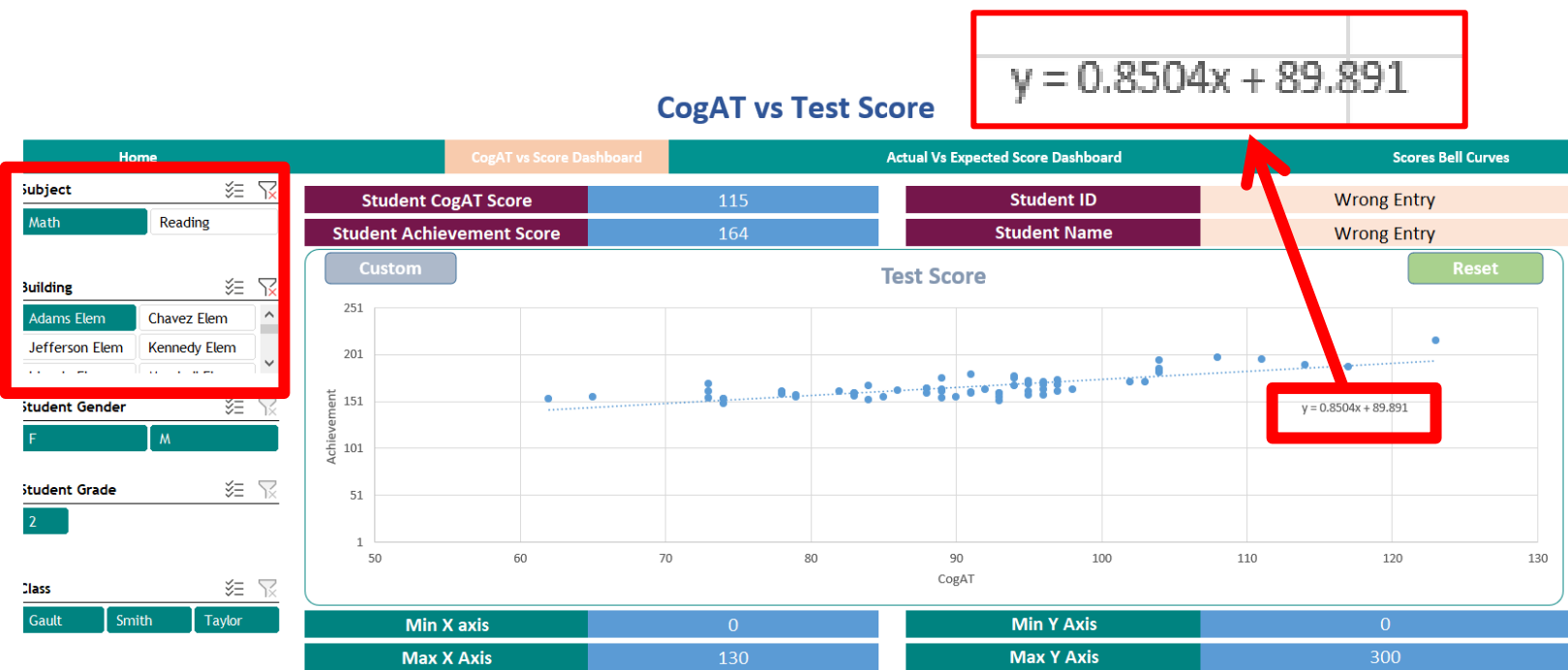
Find a specific student by hovering over a dot

Student CogAT Score	115	**Student ID**	Wrong Entry
Student Achievement Score	164	**Student Name**	Wrong Entry

Custom — Test Score — Reset

Series "80" Point "95"
(95, 207)   = 1.1019x + 64.098

Series "80" Point "95"
(95, 207)

The student's scores are
shown in parentheses
(Ability, Achievement)

- The student's *CogAT* Verbal ability score
  is shown first in the parentheses – 95
- The student's Reading achievement score
  is shown second – 207

Enter the corresponding scores (95, 207) in the **blue** boxes above the graph
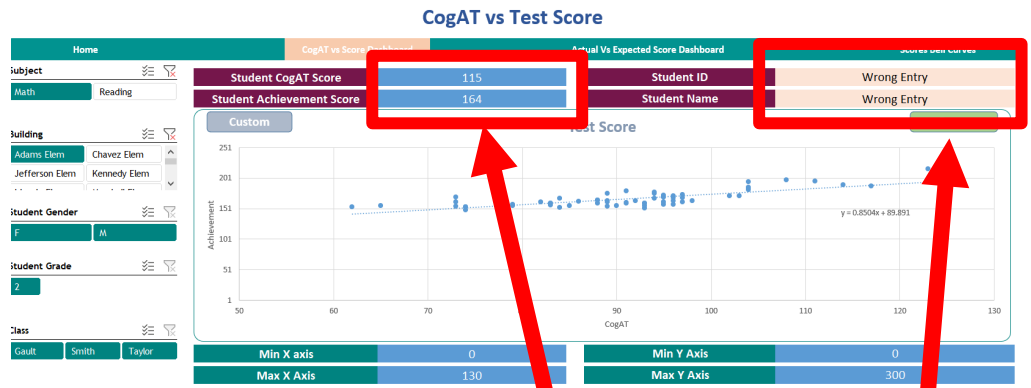
Student CogAT Score	95
Student Achievement Score	207

The student's ID number and name will populate in the **pink** boxes to the right

Student ID	101855
Student Name	FName1855 LName1855

View score distributions by clicking on the **Score Bell Curves*** tab

- Data will initially chart for all students, all subjects, all grades, and all buildings that were included in your data – it must be filtered down for the chart to have meaning

- Due to differences in scaling, multiple grades and subjects should not be charted together
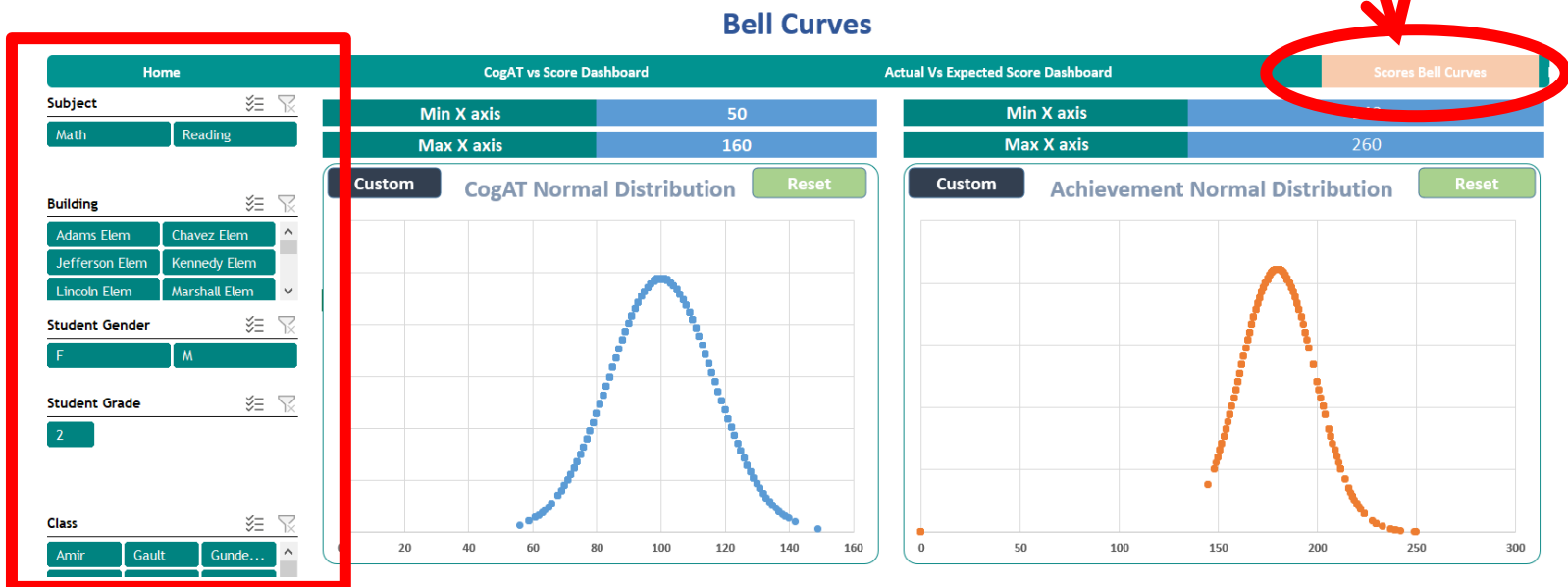
***** The charted distributions are based on the students and filter selections included in your analysis and do not reflect the national distribution of scores
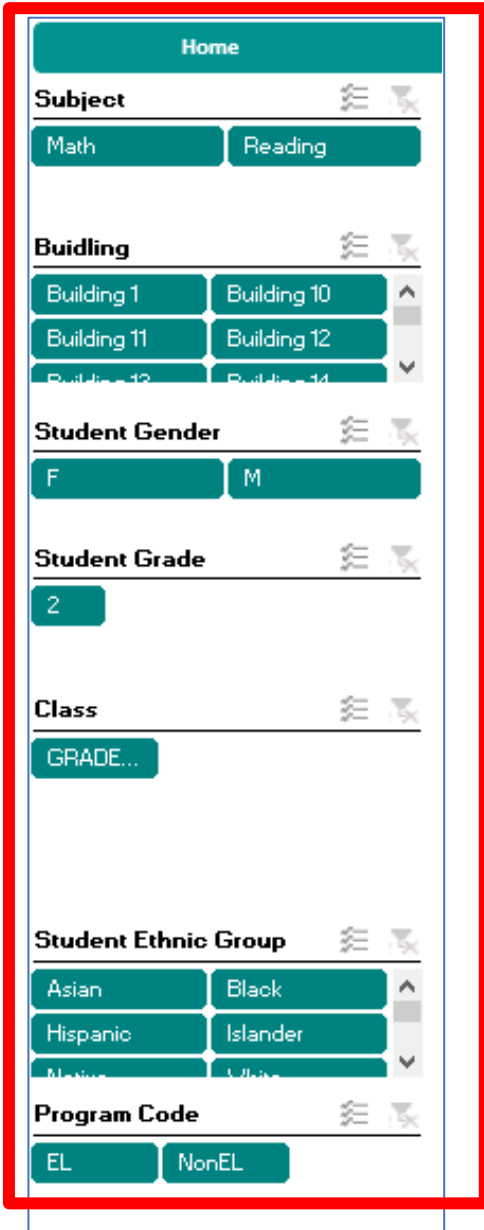
- Use the filter pane on the lefthand side to restrict your distributions to a single subject area within a single grade to review the distributions of student ability and achievement

- **Subject* (Achievement score)**

- Building
- Class
- Gender
- Ethnic Group
- **Grade***
- Program Code

* Use the filter pane to choose only ONE Grade and ONE Subject to display at a time

This view shows Grade 2 **Math**
for all buildings in the sample

Use the Min and Max Axis
boxes to configure your charts
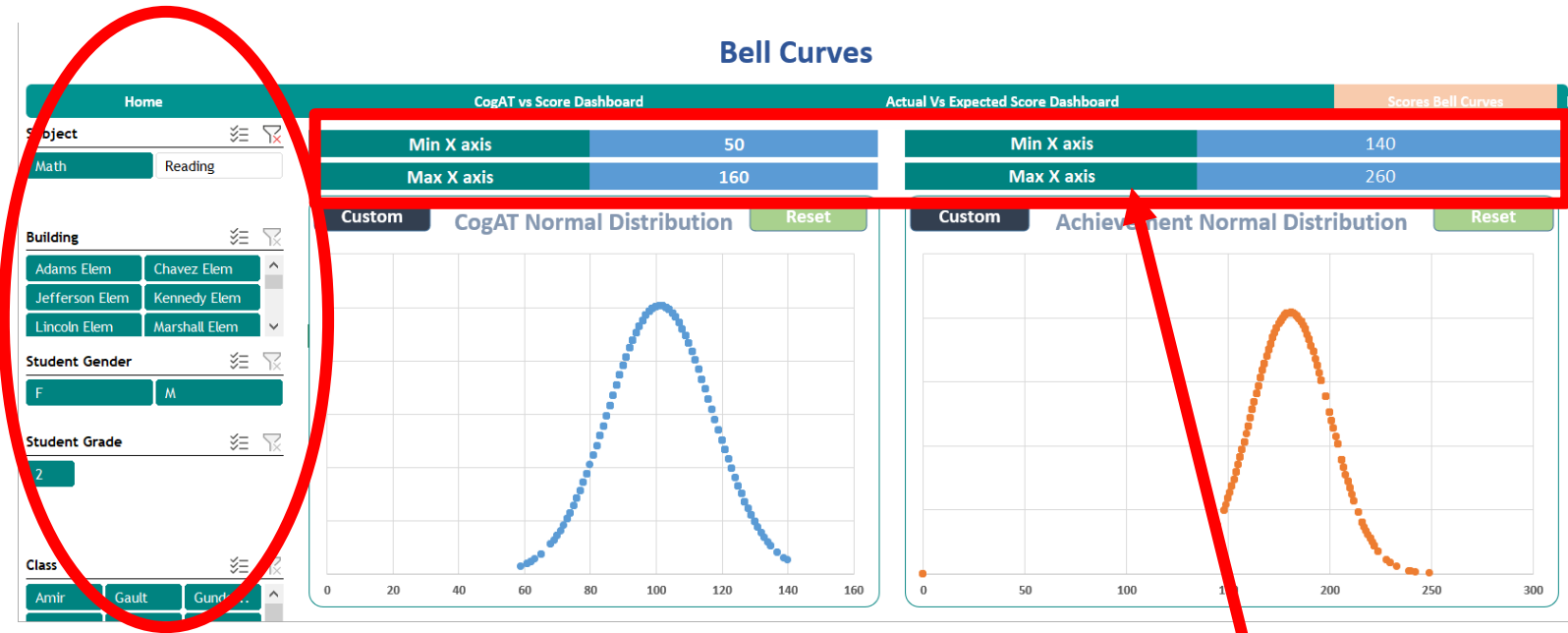
Each distribution graph has **blue** boxes
above it to input values for the Min X Axis to
bound the graph on the left and the Max X
Axis to bound the graph on the right

- The *CogAT* distribution for all scores is best represented by a **minimum of 50** and **maximum of 160**
- Enter these values in the **blue** boxes and click **CUSTOM**

This Math Achievement distribution is centered around 170 with a minimum near 140 and a maximum at 250

- For this example, we will input 130 as the Min X Axis and 260 as the Max X Axis in the **blue** boxes

- Enter the new values and click **CUSTOM** to edit the chart view
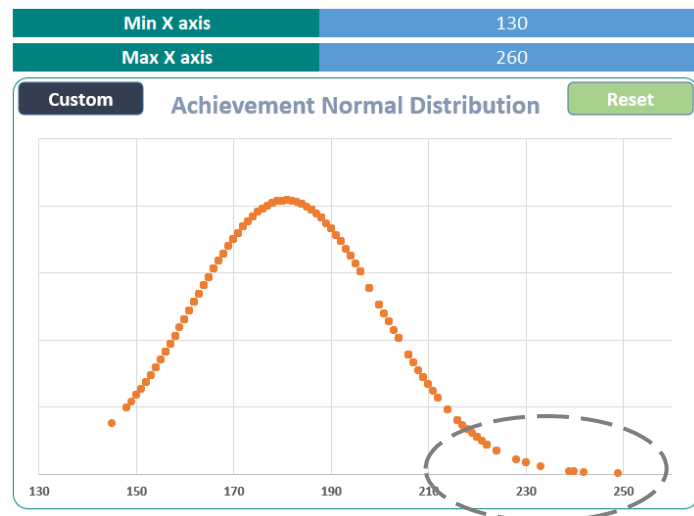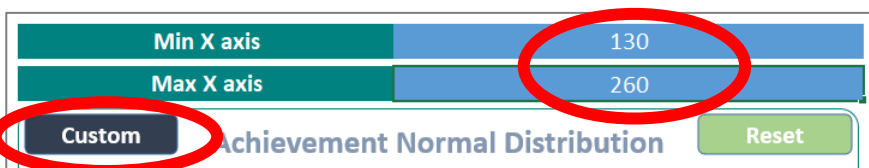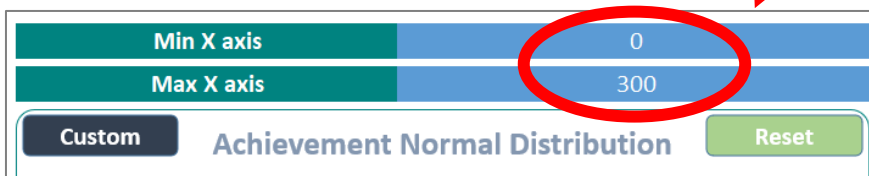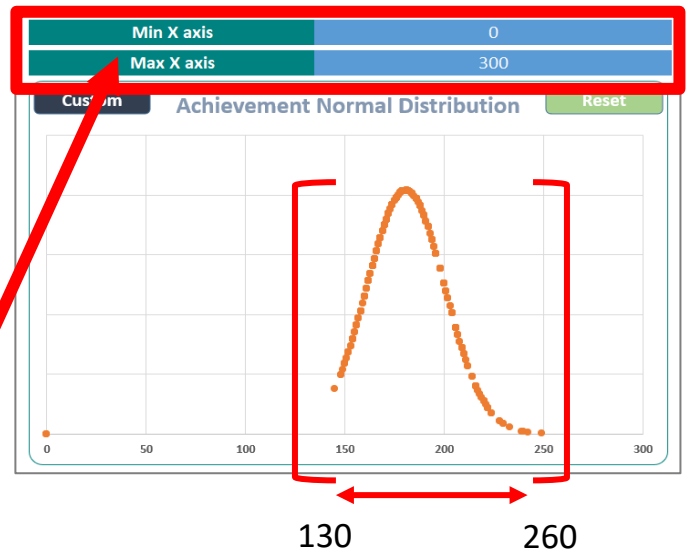
- The revised chart provides a more interpretable view of the distribution

- Several students have achieved high math scores

The shape of the distributions is more balanced and after adjusting the Min and Max axes for each chart

Before adjustment

Min X axis	0
Max X axis	160

Custom — **CogAT Normal Distribution** — Reset

Min X axis	0
Max X axis	300

Custom — **Achievement Normal Distribution** — Reset

After adjustment

Min X axis	50
Max X axis	160

Custom — **CogAT Normal Distribution** — Reset

Min X axis	130
Max X axis	260
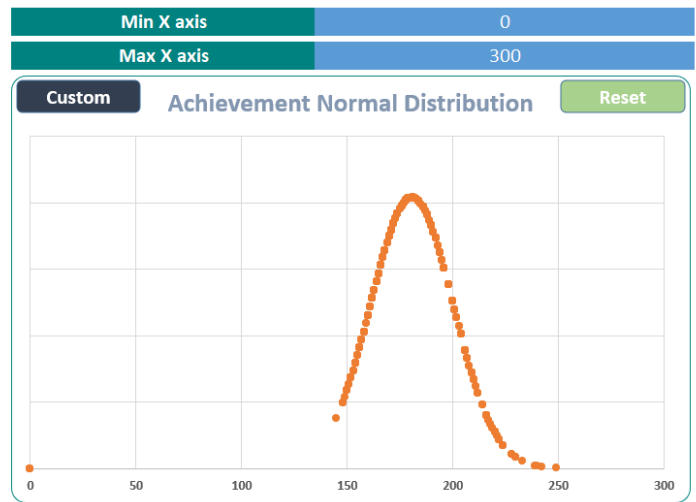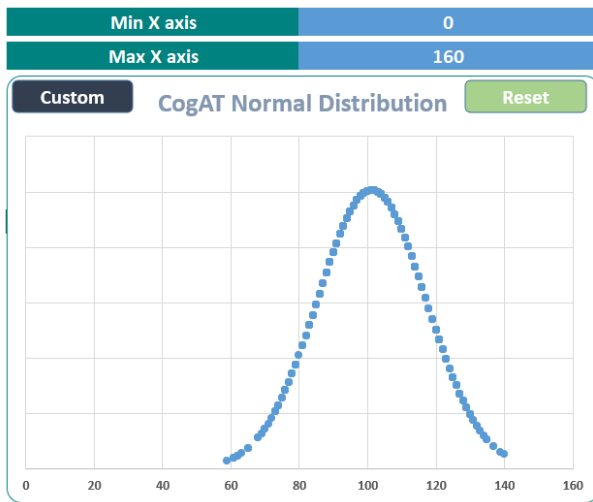
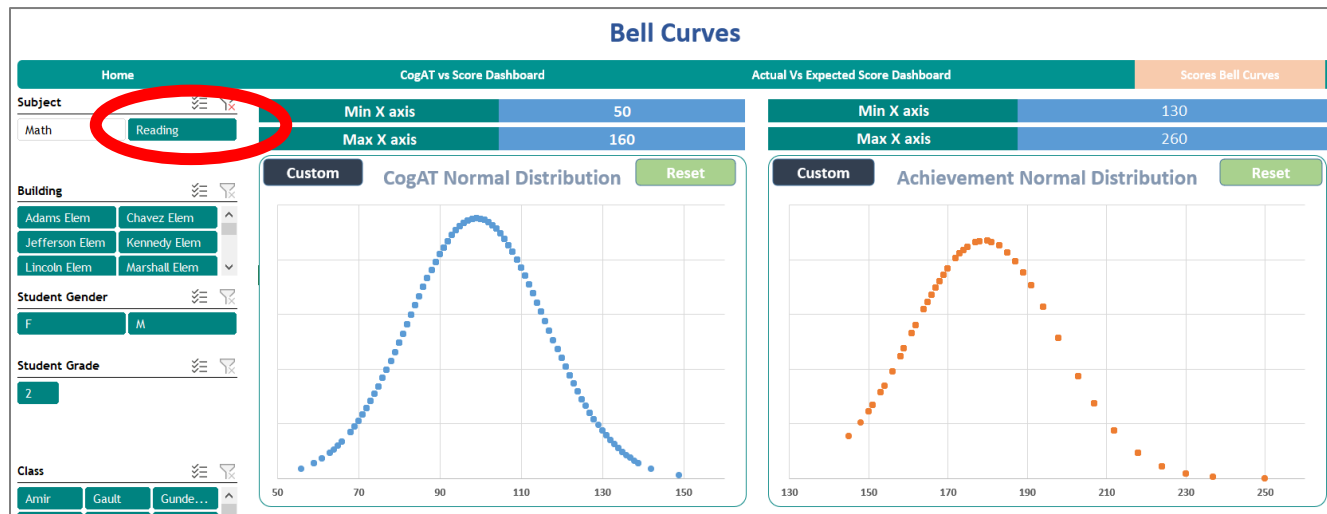Custom — **Achievement Normal Distribution** — Reset
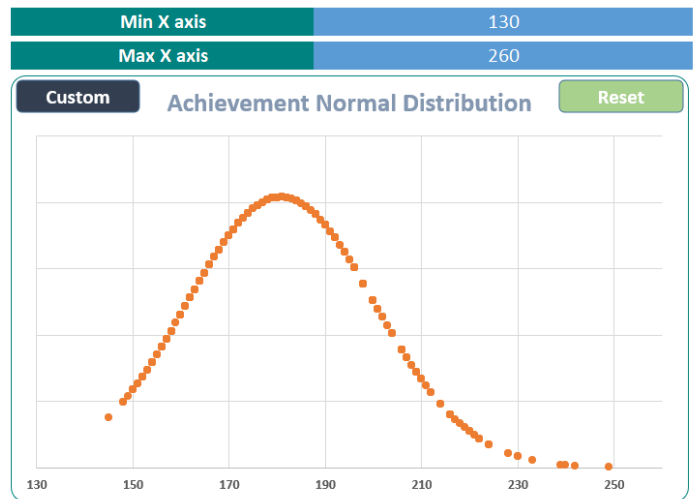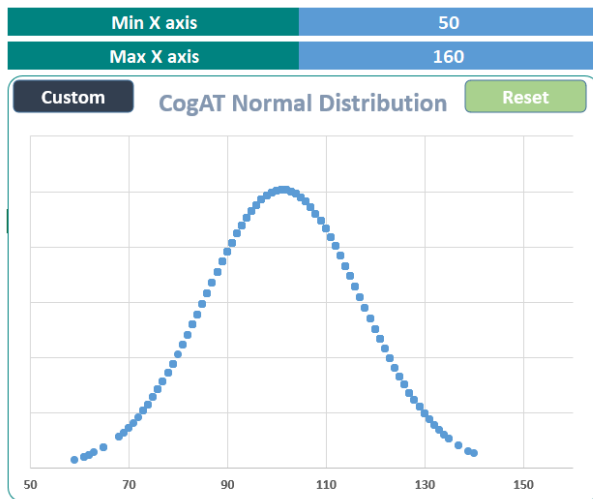
Examine distributions for different scores, buildings, and groups of students by using the filter pane on the left

CogAT **Quantitative** and **Math** for all 2nd grade students in all buildings in our sample data
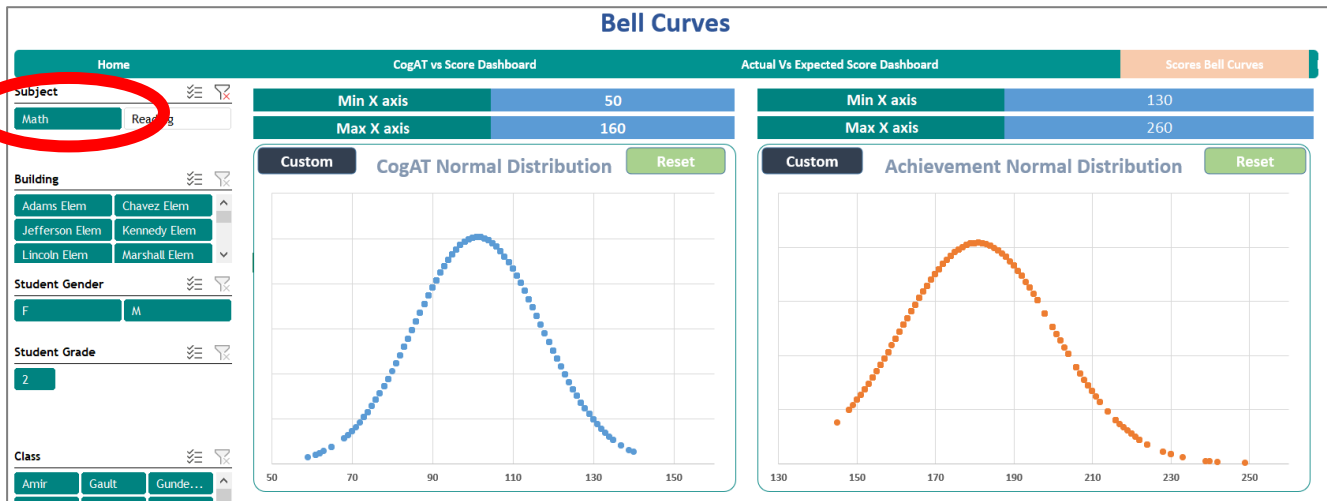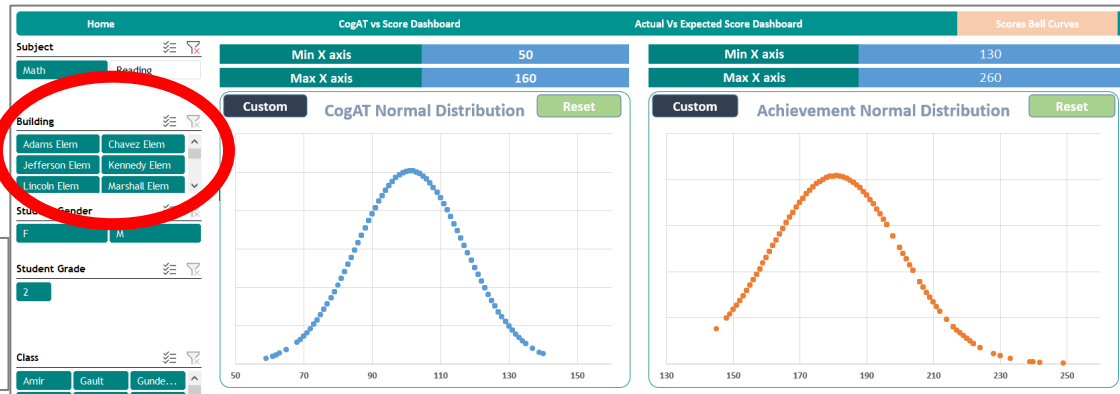

CogAT **Verbal** and **Reading** for all 2nd grade students in all buildings in our sample data

Using the same Axis settings determined based on all students, now use the filter pane to compare distributions in different buildings
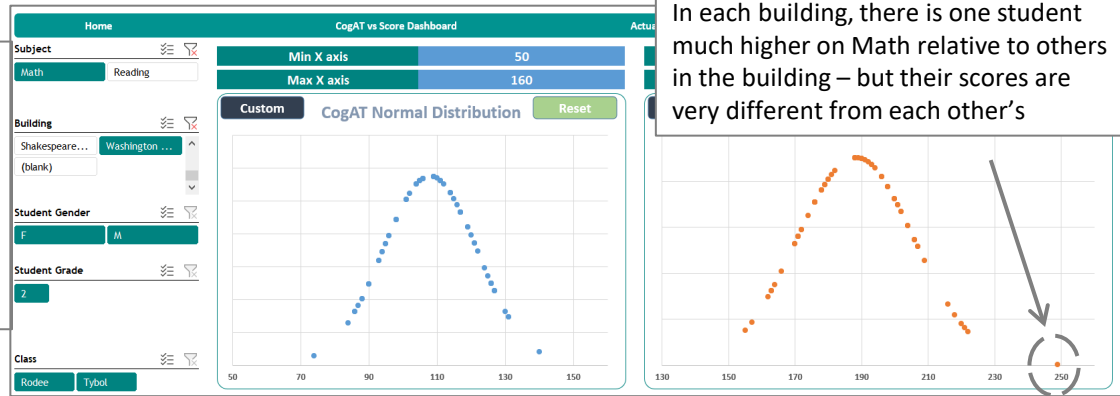

CogAT **Quantitative** and **Math** for all 2nd grade students in the sample

CogAT **Quantitative** and **Math** for 2nd graders in the ADAMS building – this building performs slightly worse than the district average as shown by the leftward shift of the distributions
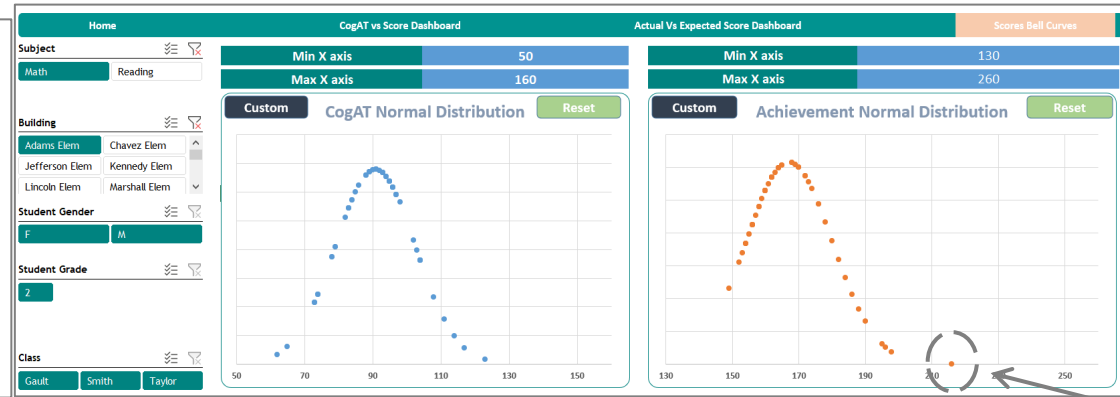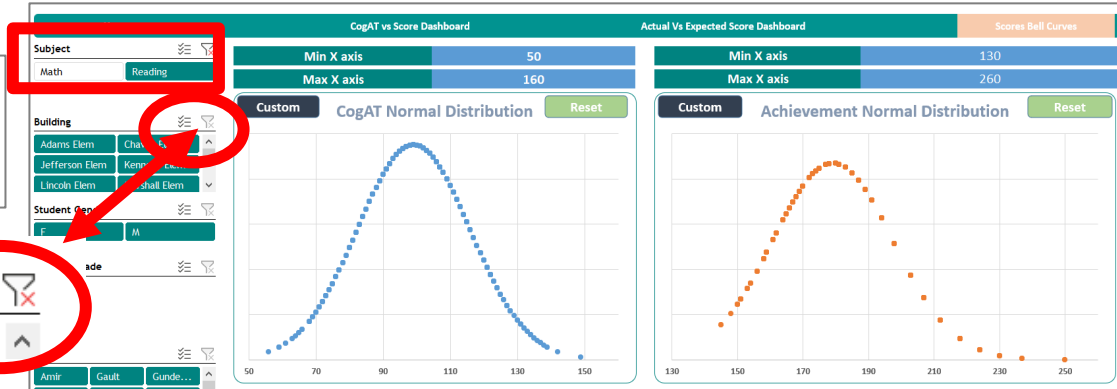
CogAT **Quantitative** and **Math** for 2nd graders in the WASHINGTON building – this building has a similar distribution to the district distribution
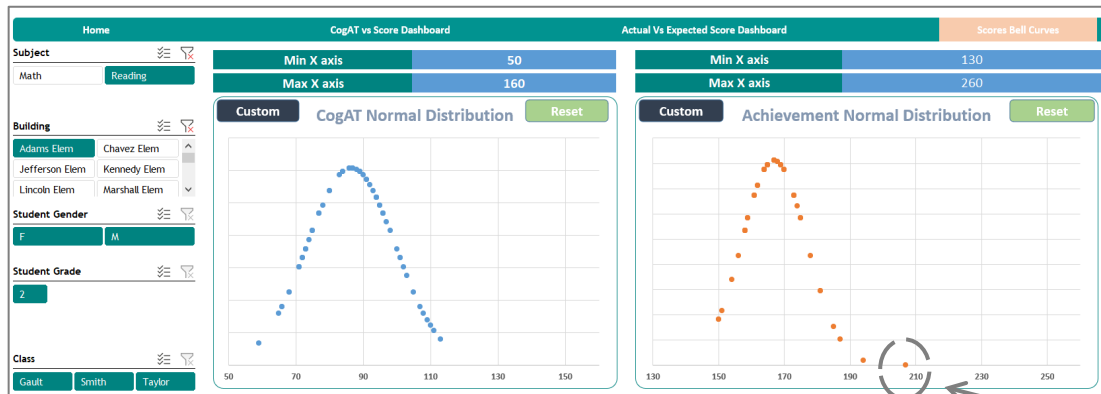
In each building, there is one student much higher on Math relative to others in the building – but their scores are very different from each other's

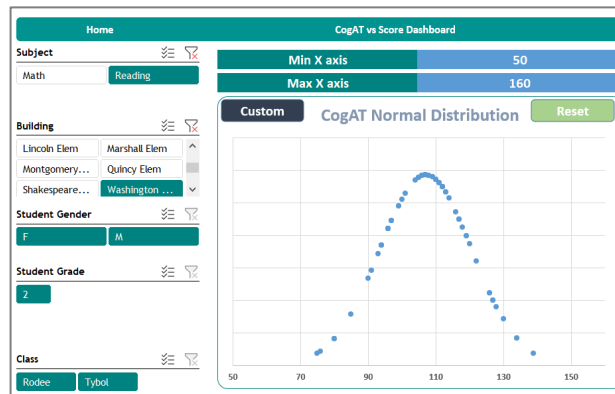*CogAT* **Verbal** and **Reading** for all 2nd grade students in the sample

Click the filter funnel to return to ALL Buildings

CogAT **Verbal** and **Reading** for 2nd graders in the ADAMS building – this building also performs slightly worse than the district average here as shown by the leftward shift of the distributions

In each building, there is one student much higher on Reading relative to others in the building – but their scores are very different from each other's

*CogAT* **Verbal** and **Reading** for 2nd graders in the WASHINGTON building – this building has a similar distribution to the district distribution
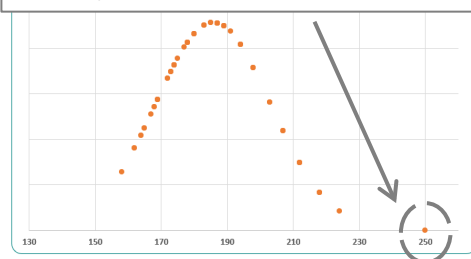
- To find out who those high performing students are in each building, return to the *CogAT* vs Score Dashboard tab
- Filter for **Math** in the **Adams** building and hover over the point corresponding to the student with the highest score in Math
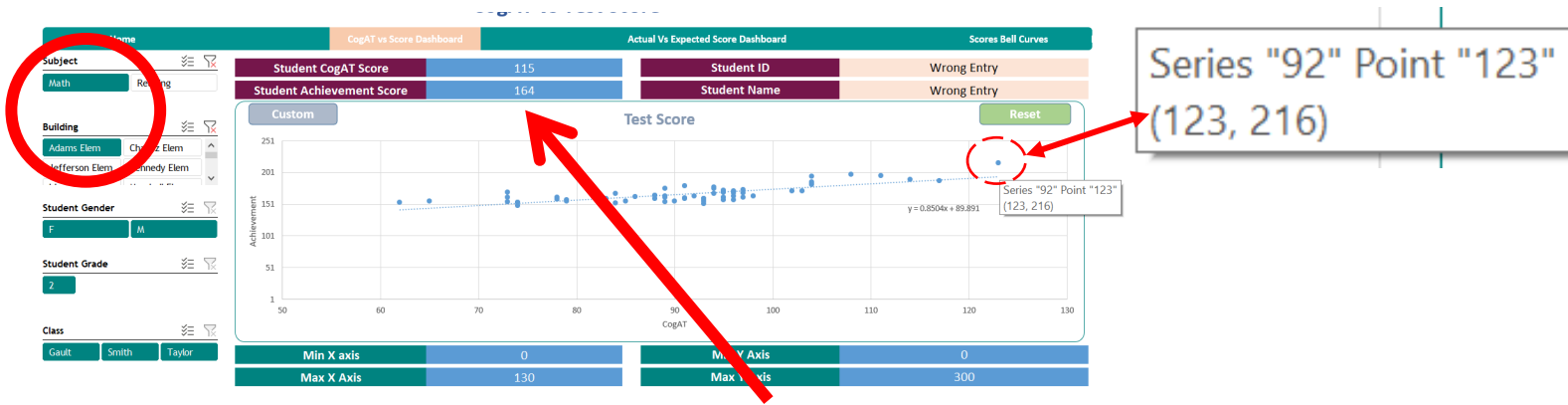

- Enter the student's scores into the **blue** boxes in the upper lefthand side and the student's name and ID will populate in the **pink** boxes to the right
- Ability is the first score in the parentheses – 123
- Math Achievement is the second score in the parentheses – 216

Student CogAT Score	123	Student ID	101855
Student Achievement Score	216	Student Name	FName1855 LName1855

- The high scoring Math student in the Adams building is ID 101855 and has a pretend first and last name in the sample, corresponding to their ID number
- This student also had the highest *CogAT* Quantitative score, 123, as shown on the trend line chart

The same student, #101855, scored highest in **Reading** in the **Adams** building, but their *CogAT* Verbal score was not the highest in the building
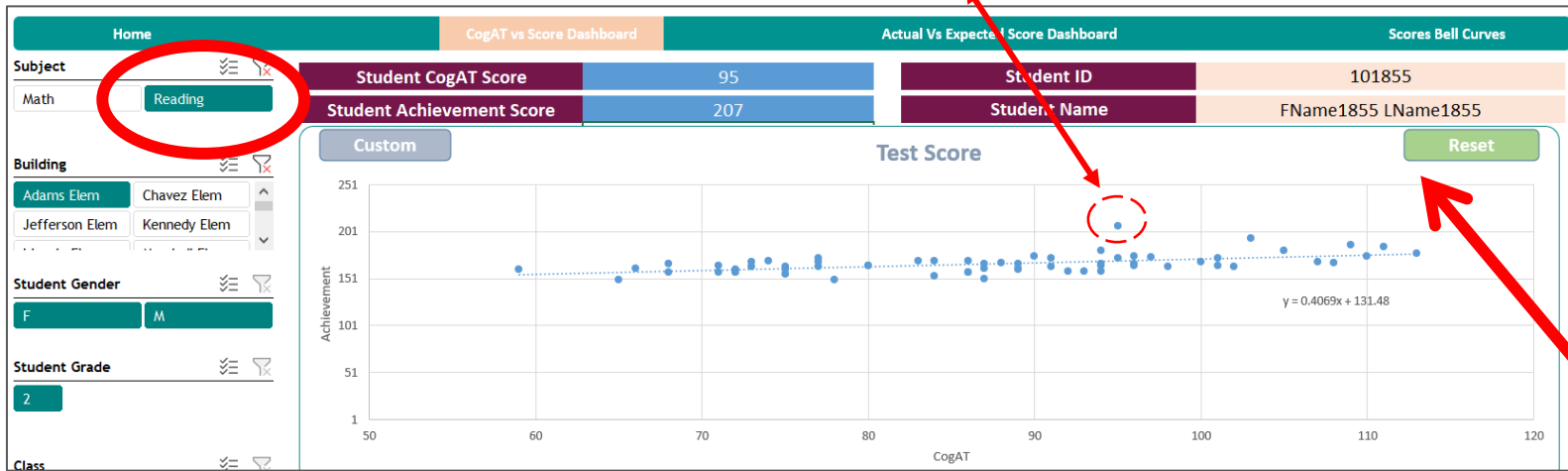
In the **Washington** building, student # 101001 achieved the highest scores for both Math and Reading and on the *CogAT* Verbal and Quantitative sections

As the highest scoring student in an already high scoring building, this student may need more challenge, especially in Math
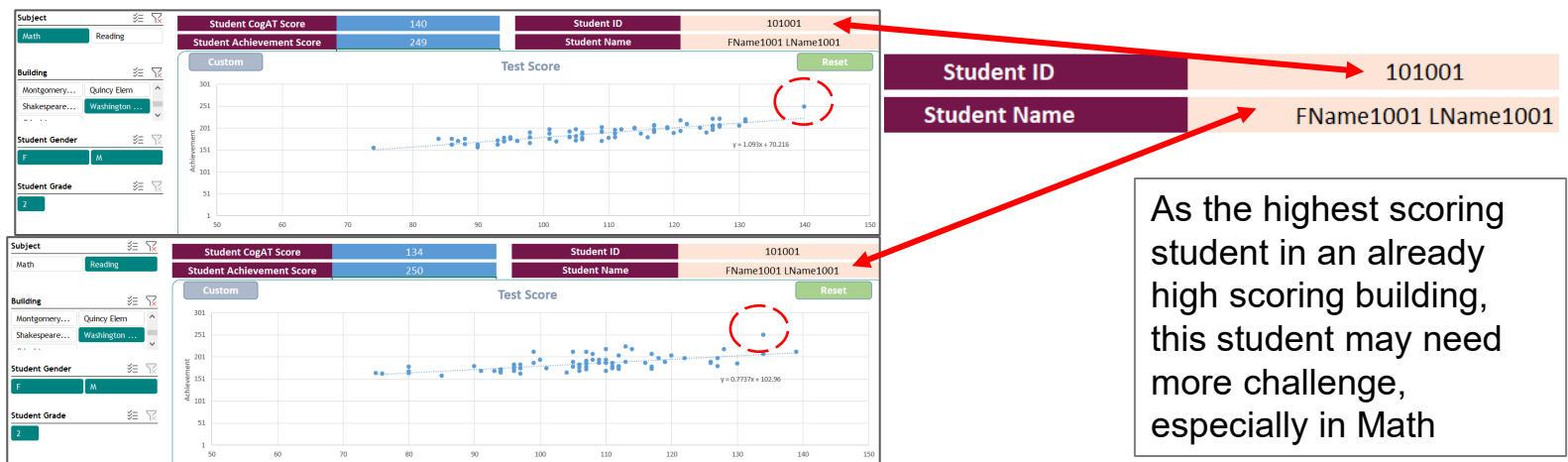
You can view tabled data by student by clicking on the **Actual vs Expected Score Dashboard**

- Change the percentage in the **blue** box to see which students are performing higher or lower than expected based on that group's trend line

- Expectations are created based on the group(s) included in your analysis, and not on national samples of *CogAT* and achievement

- Like every other display, this sheet will initially default to include data for all students, all subjects, all grades, and all buildings that were loaded in your data – it must be filtered down for the analysis to have meaning.

- Use the filter pane on the lefthand side to restrict your analyses to a <u>single subject</u> area within a <u>single grade</u> to review the trends and differences in student ability and achievement

- Due to differences in scaling, multiple grades and subjects should not be analyzed together

Actual Score Vs Expected Score

Home	CogAT vs Score Dashboard	Actual Vs Expected Score Dashboard	Scores Bell Curves

Target % Diff	-10.0%

The below list is for students who achieved an actual score less than expected score by target %

List of Sudents

Student Name	Student ID	CogAT Score	Actual Score	Expected Score	% Diff
FName66 LName66	100066	91	151	171	-12%
FName157 LName157	100157	124	175	202	-13%
FName187 LName187	100187	142	191	219	-13%
FName258 LName258	100258	115	168	194	-13%
FName289 LName289	100289	115	167	194	-14%
FName404 LName404	100404	107	164	186	-12%
FName532 LName532	100532	97	156	177	-12%
FName557 LName557	100557	127	178	205	-13%
FName610 LName610	100610	110	169	189	-11%
FName644 LName644	100644	131	187	208	-10%
FName699 LName699	100699	131	178	208	-15%
FName751 LName751	100751	96	156	176	-11%
FName869 LName869	100869	121	177	199	-11%
FName951 LName951	100951	121	172	199	-14%
FName998 LName998	100998	100	156	180	-13%
FName1105 LName1105	101105	117	175	195	-10%
FName1148 LName1148	101148	117	173	195	-11%
FName1157 LName1157	101157	108	168	187	-10%
FName1424 LName1424	101424	100	161	180	-10%
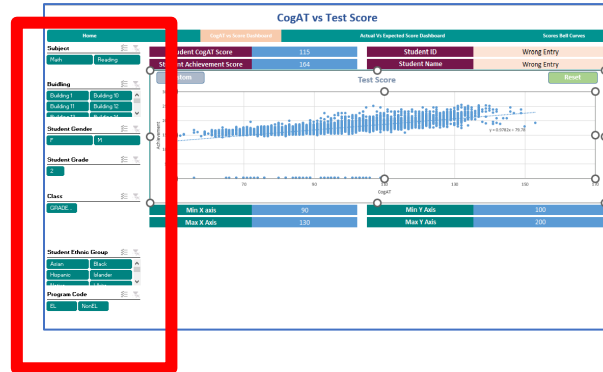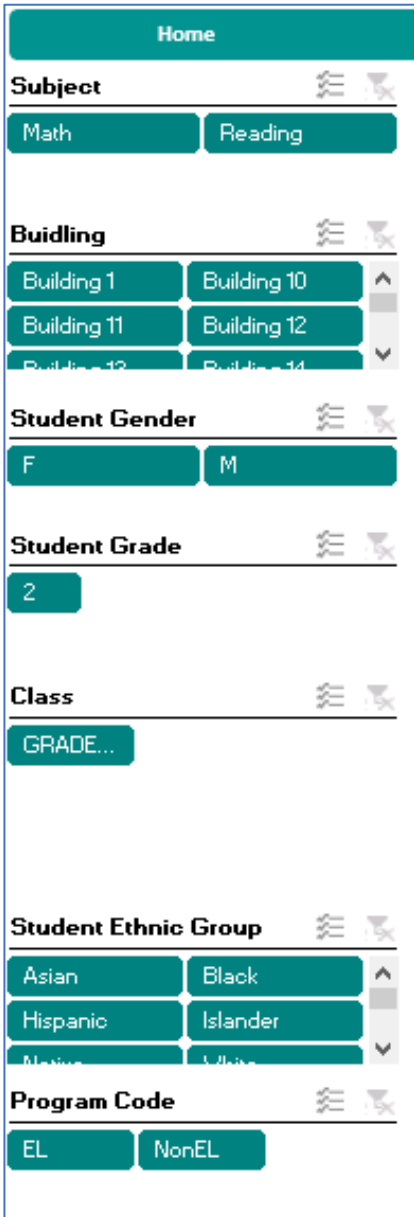
Configure your data view by using the filter pane on the left:

- **Subject* (Achievement score)**

- Building
- Class

- Gender
- Ethnic Group

- **Grade***
- Program Code

 *** Use the filter pane to choose only ONE Grade and ONE Subject to display at a time**

- Now that the sheet is filtered to one subject area and one grade level, student scores can be examined relative to the local trend

- Looking at 2nd grade Math across all buildings, the sheet produces a list of students whose Math scores are higher than the district trend predicts based on student *CogAT* Quantitative and Math scores

Now that the sheet is filtered to one subject area and one grade level, student scores can be examined relative to the local trend

Actual Score Vs Expected Score

Home	CogAT vs Score Dashboard	Actual Vs Expected Score Dashboard	Scores Bell Curves

Subject

Math	Reading

Target % Diff	10.0%

The below list is for students who achieved an actual score greater than expected score by target %

List of Sudents

Student Name	Student ID	CogAT Score	Actual Score	Expected Score	% Diff
FName154 LName154	100154	103	204	183	12%
FName307 LName307	100307	110	212	190	11%
FName355 LName355	100355	102	200	181	10%
FName744 LName744	100744	59	154	134	15%
FName834 LName834	100834	131	239	213	12%
FName1001 LName1001	101001	140	249	223	12%
FName1130 LName1130	101130	93	192	172	12%
FName1209 LName1209	101209	73	170	150	14%
FName1446 LName1446	101446	109	210	189	11%
FName1528 LName1528	101528	130	242	212	14%
FName2008 LName2008	102008	62	154	138	12%
FName2264 LName2264	102264	99	206	178	16%
FName2281 LName2281	102281	62	152	138	11%
FName2363 LName2363	102363	110	218	190	15%
FName2590 LName2590	102590	89	184	167	10%
FName2666 LName2666	102666	65	156	141	11%

Student Name	Student ID	CogAT Score	Actual Score	Expected Score	% Diff
FName125 LName125	100125	93	152	172	-11%
FName322 LName322	100322	105	162	185	-12%
FName1357 LName1357	101357	116	174	197	-12%
FName1712 LName1712	101712	101	153	180	-15%
FName1833 LName1833	101833	99	160	178	-10%
FName2106 LName2106	102106	100	161	179	-10%
FName2485 LName2485	102485	91	152	169	-10%
FName2527 LName2527	102527	105	164	185	-11%
FName2607 LName2607	102607	109	168	189	-11%

Building

Adams Elem	Chavez Elem
Jefferson Elem	Kennedy Elem
Lincoln Elem	Marshall Elem

Student Gender

F	M

Student Grade

2

Class

Amir	Gault	Gunde...

Building

Adams Elem	Chavez Elem
Jefferson Elem	Kennedy Elem
Lincoln Elem	Marshall Elem

Student Gender

F	M

Student Grade

2

- Inputting a positive percentage in the **blue** box displays students who had **higher** than expected achievement based on their *CogAT* score and the group's Math trend

20.0%

Target % Diff			20.0%		
The below list is for students who achieved an actual score greater than expected score by target %					
List of Sudents					
Student Name	Student ID	CogAT Score	Actual Score	Expected Score	% Diff
FName938 LName938	100938	68	167	139	20%
FName1855 LName1855	101855	95	207	169	23%
FName2666 LName2666	102666	59	161	129	25%

- Inputting a negative percentage in the **blue** box displays students who performed **lower** than expected based on their *CogAT* score and the group's Math trend

-15.0%

Target % Diff			-15.0%		
The below list is for students who achieved an actual score less than expected score by target %					
List of Sudents					
Student Name	Student ID	CogAT Score	Actual Score	Expected Score	% Diff
FName1712 LName1712	101712	101	153	181	-16%

- Don't forget to name your files carefully and save your work frequently

- Use file names that help you identify which data are contained therein

- Your comments and feedback are welcome!