



Weather Excel Final Project

MEGAN STAMER

EDTC 633: TOOLS & CONCEPTS FOR
DATA ANALYSIS

FEBRUARY 19, 2016

INTRO & TARGET AUDIENCE

Students are asked to research, in groups, the weather for a seven day time period for four different areas of the United States. Their objective is to understand patterns of temperature and weather in order to determine climate areas.

- ▶ 4th and 5th grade Science
- ▶ Private, Catholic School in Central NJ
- ▶ All levels of students
- ▶ Ages 9-11
- ▶ *Time Line: 1 week → 5 total classes (45 minute periods)*

GOALS AND OBJECTIVES

Standards:

NGSS: 3-ESS2-1, 3-ESS2-2, 3-ESS2-3 NJCGCS Technology: 8.1.4.A.4

▶ Objectives:

- ▶ SWBAT read and interpret a Weather Forecast for a week.
- ▶ SWBAT use Excel to graph averages.
- ▶ SWBAT use Excel to manipulate the data.

▶ Goal:

- ▶ To be able to interpret and analyze weather data for a given area of the United States.

TIMELINE FOR PROJECT

- ▶ Class 1: Introduce weather terminology and how to read/interpret a weather forecast.
- ▶ Class 2: Model Excel skills and practice group work.
- ▶ Class 3: Continue group practice and begin independent practice.
- ▶ Class 4: Continue independent practice
- ▶ Class 5: Begin classroom independent practice comparisons.

ACTIVITIES & LESSON PLANS

- ▶ Group instruction
 - ▶ Excel basics
 - ▶ Weather collection
- ▶ Individual practice
 - ▶ Excel
 - ▶ Weather collection
 - ▶ Graphing
- ▶ Cooperative learning

EXAMPLES OF SPREADSHEETS

Trenton, NJ	2/8/2016	2/9/2016	2/10/2016	2/11/2016	2/12/2016	2/13/2016	2/14/2016	Average
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
High Temperature (degrees Fahrenheit)								0.00
Low Temperature (degrees Fahrenheit)								0.00
Range								0.00
Weather								
Percent Chance of Precipitation								0.00%
Direction of Wind								
Speed of Wind (miles per hour [mph])								0.00
Humidity Percentage								0.00%
Olympia, WA	2/8/2016	2/9/2016	2/10/2016	2/11/2016	2/12/2016	2/13/2016	2/14/2016	Average
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
High Temperature (degrees Fahrenheit)								0
Low Temperature (degrees Fahrenheit)								0
Range								
Weather								
Percent Chance of Precipitation								0.00%
Direction of Wind								
Speed of Wind (miles per hour [mph])								0
Humidity Percentage								0.00%

Example of Student/Group Weather Spreadsheet

EXAMPLES OF SPREADSHEETS

Write Your Capital Here	2/8/2016	2/9/2016	2/10/2016	2/11/2016	2/12/2016	2/13/2016	2/14/2016	Average
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
High Temperature (degrees Fahrenheit)								0.00
Low Temperature (degrees Fahrenheit)								0.00
Range								0.00
Weather								
Percent Chance of Precipitation								0.00%
Direction of Wind								
Speed of Wind (miles per hour [mph])								0.00
Humidity Percentage								0.00%

Example of Student/Group Weather Spreadsheet-Independent Capital Work

EXAMPLES OF SPREADSHEETS

<u>Trenton, NJ</u>	2/8/2016	2/9/2016	2/10/2016	2/11/2016
	Day 1	Day 2	Day 3	Day 4
High Temperature (degrees Fahrenheit)				
Low Temperature (degrees Fahrenheit)				
Range				
Weather				
Percent Chance of Precipitation				
Direction of Wind				
Speed of Wind (miles per hour [mph])				
Humidity Percentage				

Notes to explain how to fill categories

Hyperlink to Data from Weather Channel

Drop down menus with speed options and/or descriptions for Weather

Fill series to put in dates into table.

EXAMPLES OF SPREADSHEETS

Trenton, NJ	2/8/2016 Day 1	2/14/2016 Day 7	Average
High Temperature (degrees Fahrenheit)			0.00
Low Temperature (degrees Fahrenheit)			0.00
Range			0.00
Weather			
Percent Chance of Precipitation			0.00%
Direction of Wind			
Speed of Wind (miles per hour [mph])			0.00
Humidity Percentage			0.00%

Formulas for Averages and Range Using an absolute reference

EXAMPLES OF SPREADSHEETS

Trenton, NJ	2/8/2016	2/9/2016	2/10/2016	2/11/2016	2/12/2016	2/13/2016	2/14/2016	Average
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
High Temperature (degrees Fahrenheit)	39	38	40	33	37	31	29	35.29
Low Temperature (degrees Fahrenheit)	28	27	21	17	19	10	18	20.00
Range	11	11	19	16	18	21	11	15.29
Weather	Rainy	Snowy	Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy	Sunny	
Percent Chance of Precipitation	40.00%	50.00%	20.00%	0.00%	20.00%	20.00%	10.00%	22.86%
Direction of Wind	NE	NE	W	WNW	W	NW	WNW	
Speed of Wind (miles per hour [mph])	11	11	11	18	14	15	8	12.57
Humidity Percentage	70.00%	70.00%	70.00%	45.00%	50.00%	50.00%	50.00%	57.86%
Olympia, WA	2/8/2016	2/9/2016	2/10/2016	2/11/2016	2/12/2016	2/13/2016	2/14/2016	Average
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
High Temperature (degrees Fahrenheit)	61	64	57	57	53	53	53	56.857
Low Temperature (degrees Fahrenheit)	38	43	46	46	42	42	43	42.857
Range	23	21	11	11	11	11	10	
Weather	Partly Cloudy	Partly Cloudy	Thunder storms	Thunder storms	Thunder storms	Thunder storms	Thunder storms	
Percent Chance of Precipitation	0.00%	0.00%	60.00%	60.00%	60.00%	50.00%	40.00%	38.57%
Direction of Wind	NE	SSW	SSW	SSE	SSW	SSW	SSW	
Speed of Wind (miles per hour [mph])	5	0	5	5	10	10	10	6.4286
Humidity Percentage	80.00%	80.00%	85.00%	90.00%	90.00%	90.00%	90.00%	86.43%

Example of Student/Group Weather Spreadsheet-with data

EXAMPLES OF SPREADSHEETS

Trenton, NJ	2/8/2016	2/9/2016	2/10/2016	2/11/2016	2/12/2016	2/13/2016	2/14/2016	Average
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Direction of Wind	NE	NE	W	WNW	W	NW	WNW	
Speed of Wind (miles per hour [mph])	11	11	11	18	14	15	8	12.57
Humidity Percentage	70.00%	70.00%	70.00%	45.00%	50.00%	50.00%	50.00%	57.86%

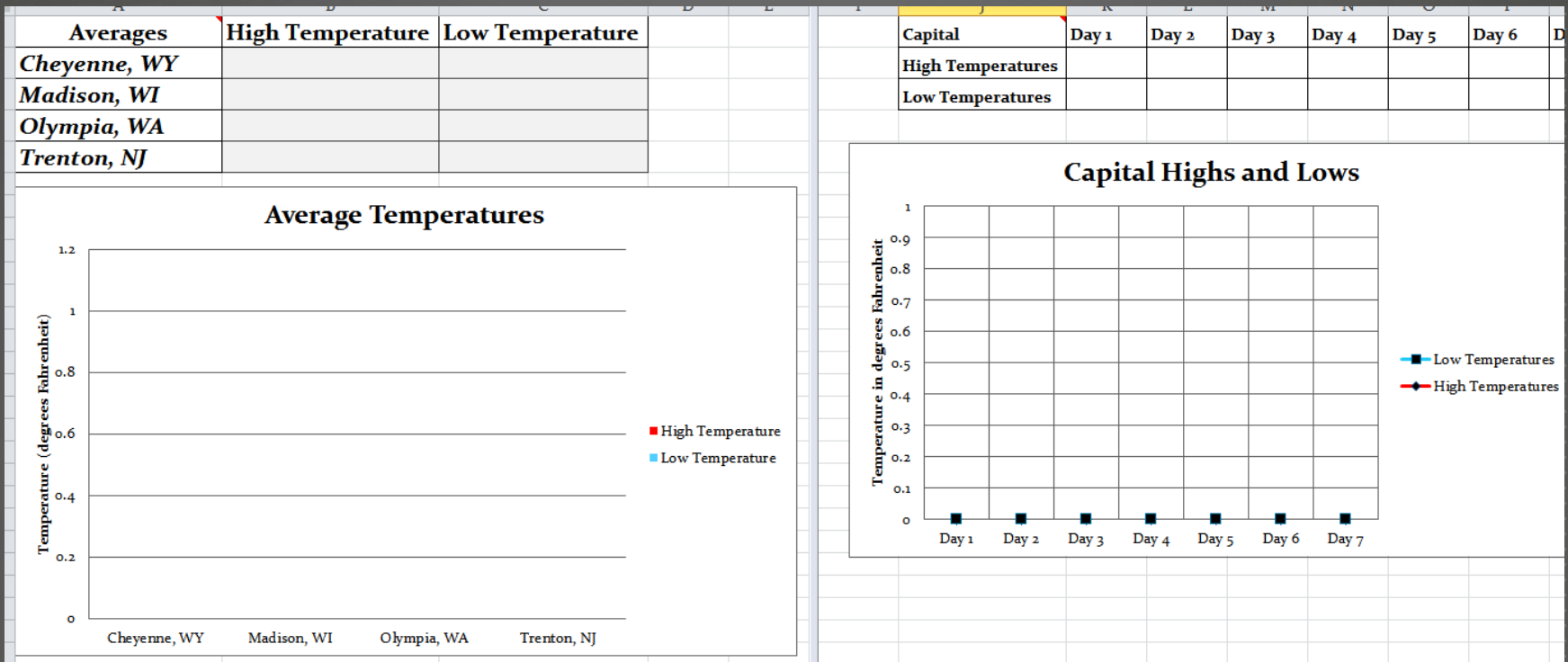
Conditional formatting:
3-Color Scale
Lowest point-blue
Midpoint-50-yellow
Highest point-red

Conditional formatting:
3-Color Scale
Lowest point-red
Midpoint-50-white
Highest point-blue

Conditional Formatting:
Data Bar with solid fill

Page Protected to secure data
and formulas.

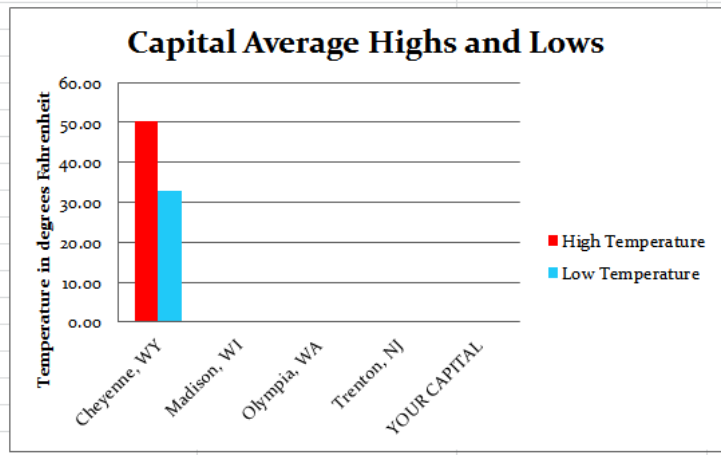
EXAMPLES OF ADVANCED FEATURES



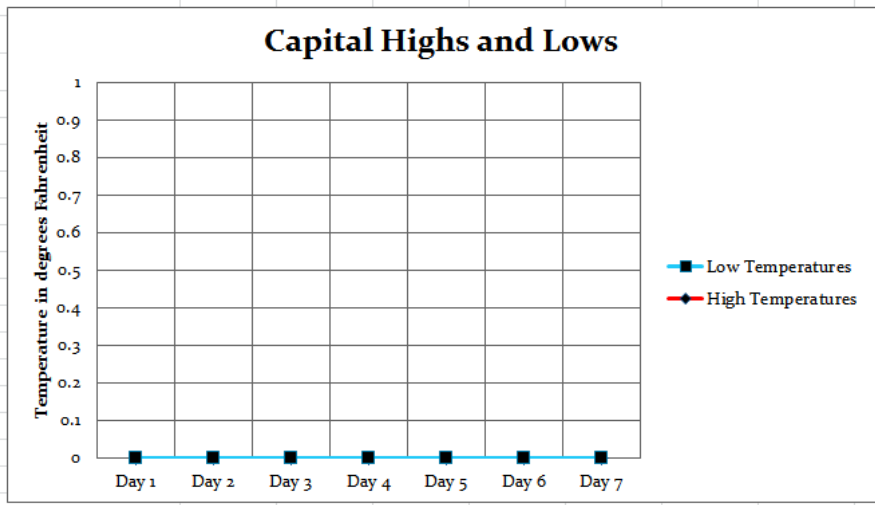
Example of Student/Group Weather Graph

EXAMPLES OF ADVANCED FEATURES

Averages	High Temperature	Low Temperature
<i>Cheyenne, WY</i>	50.29	32.71
<i>Madison, WI</i>		
<i>Olympia, WA</i>		
<i>Trenton, NJ</i>		
<i>YOUR CAPITAL</i>		



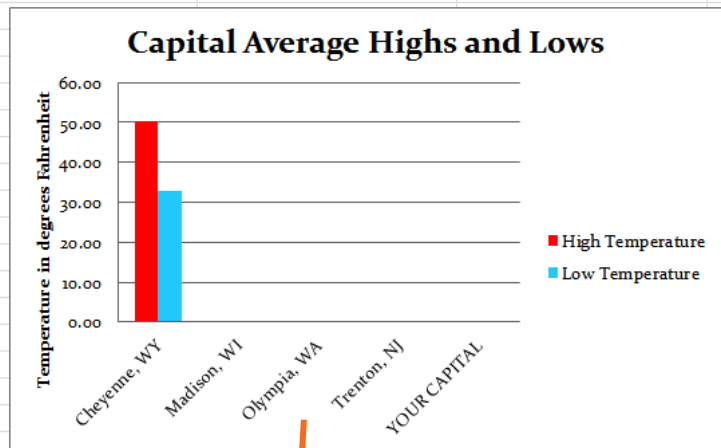
YOUR Capital	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
High Temperatures							
Low Temperatures							



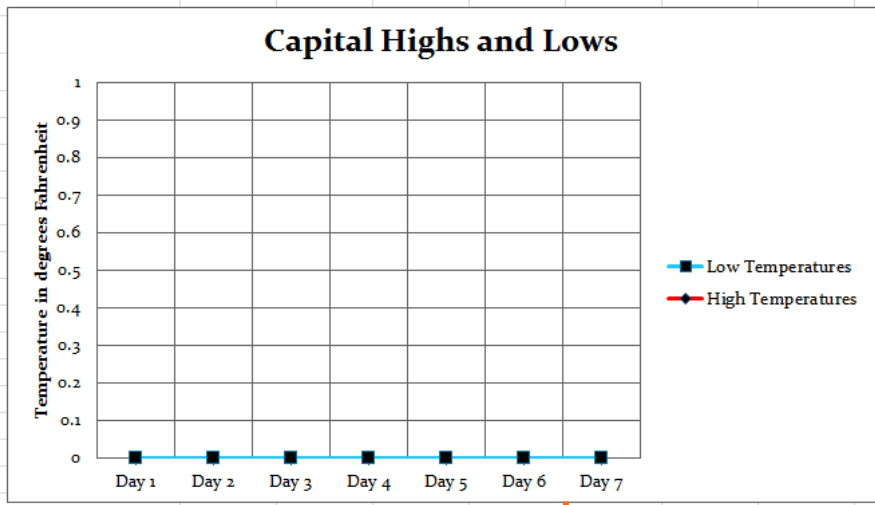
Example of Independent Capital Weather Graph

EXAMPLES OF ADVANCED FEATURES

Averages	High Temperature	Low Temperature
<i>Cheyenne, WY</i>	50.29	32.71
<i>Madison, WI</i>		
<i>Olympia, WA</i>		
<i>Trenton, NJ</i>		
<i>YOUR CAPITAL</i>		



YOUR Capital	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
High Temperatures							
Low Temperatures							

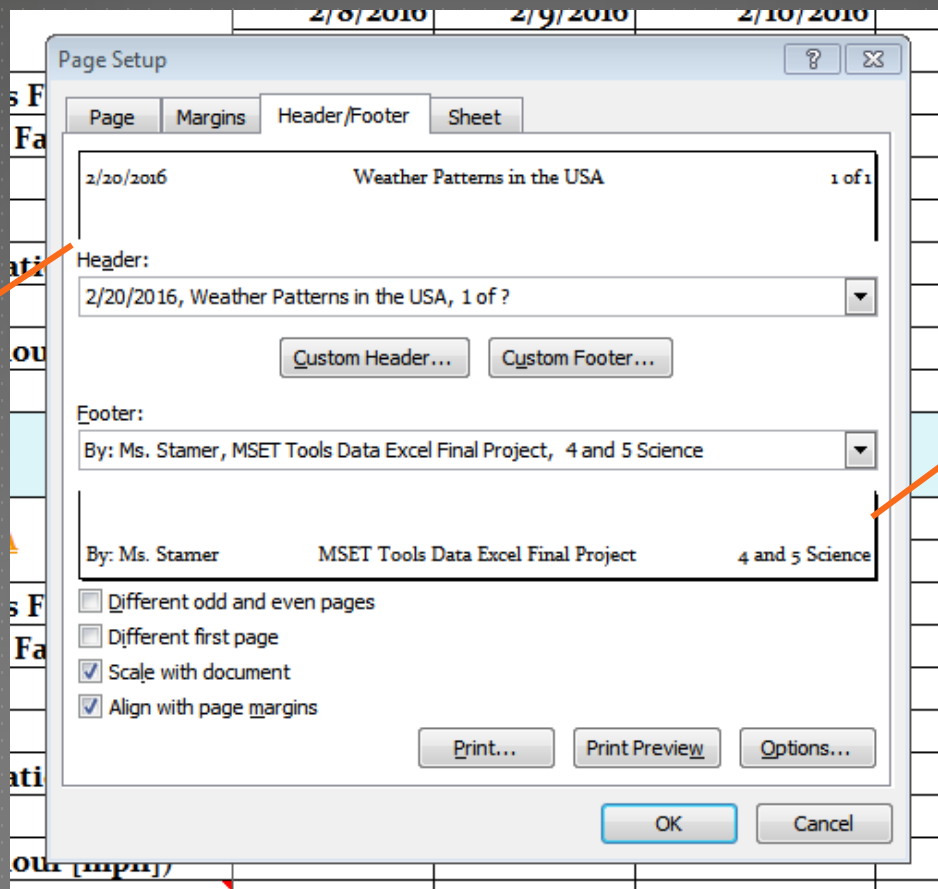


Colors to differentiate between high and low temperature

Spilt screen for easy viewing

Line graph to show daily changes in high and low temperatures

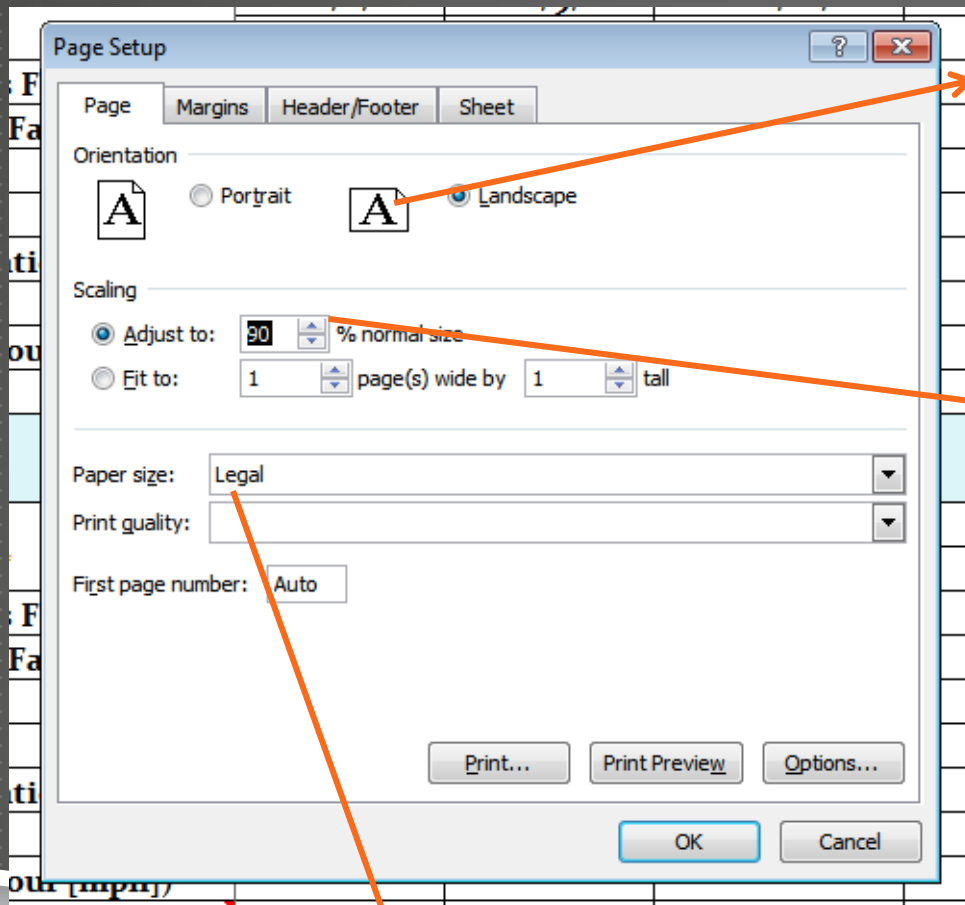
EXAMPLES OF ADVANCED FEATURES



Custom Header:
Date printed,
Title, and
page Number

Custom Footer:
Author Name,
Class Title
and Grade

EXAMPLES OF ADVANCED FEATURES

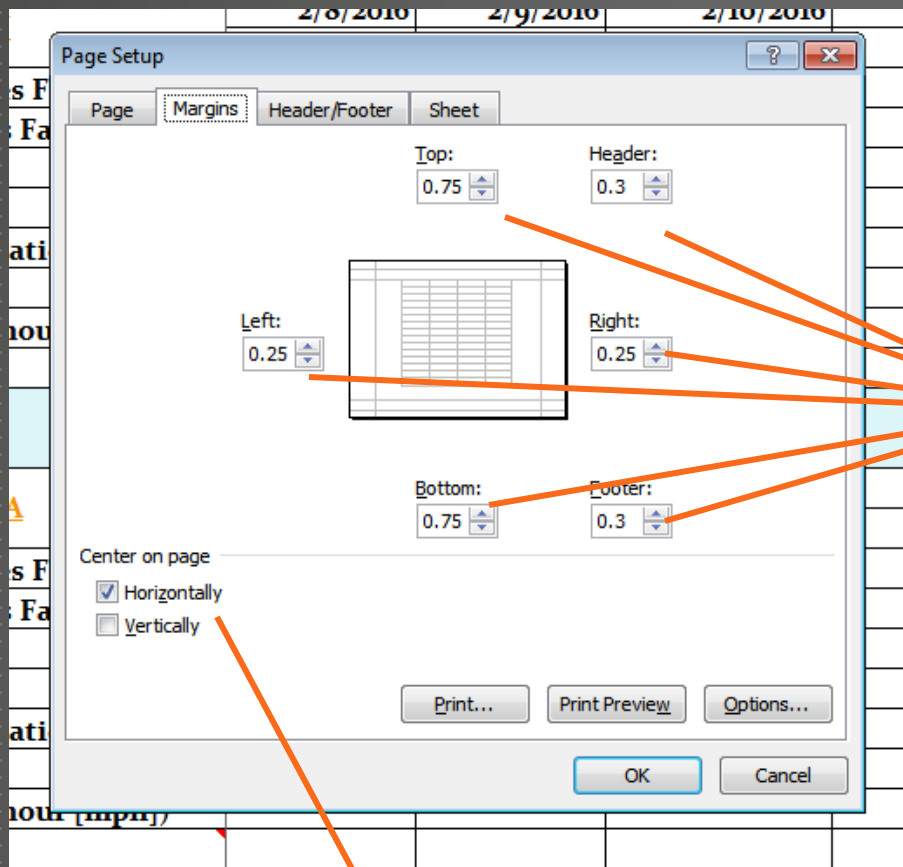


Landscape orientation

Adjust to 90% of normal size

Adjusted paper size to Legal

EXAMPLES OF ADVANCED FEATURES



Adjust to custom margins

Center on page
Horizontally

EXAMPLES OF ADVANCED FEATURES

2/20/2016 Weather Patterns in the USA 1 of 2

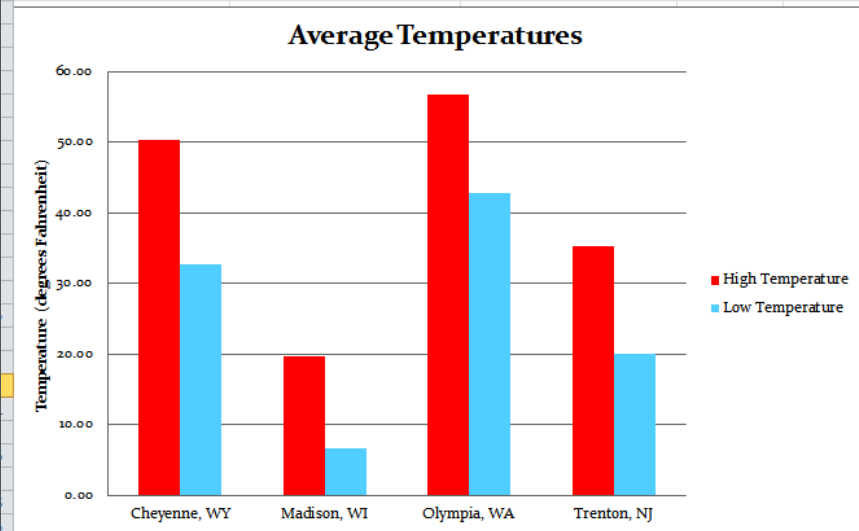
Trenton, NJ	2/8/2016	2/9/2016	2/10/2016	2/11/2016	2/12/2016	2/13/2016	2/14/2016	Average
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Weather								
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Direction of Wind								
Speed of Wind (miles per hour [mph])								0.00
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	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
High Temperature (degrees Fahrenheit)								0
Low Temperature (degrees Fahrenheit)								0
Range								
Weather								
Percent Chance of Precipitation								0.00%
Direction of Wind								
Speed of Wind (miles per hour [mph])								0
Humidity Percentage								0.00%
Madison, WI	2/8/2016	2/9/2016	2/10/2016	2/11/2016	2/12/2016	2/13/2016	2/14/2016	Average
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
High Temperature (degrees Fahrenheit)								0
Low Temperature (degrees Fahrenheit)								0
Range								
Weather								

By: Ms. Stamer MSET Tools Data Excel Final Project 4 and 5 Science

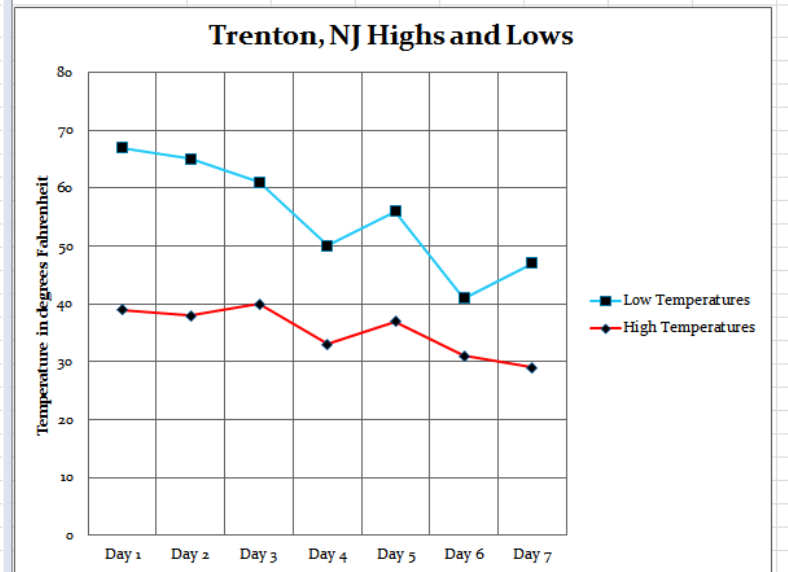
Print preview of worksheet for those to fill out manually, if needed.

EXAMPLES OF ADVANCED FEATURES

Averages	High Temperature	Low Temperature
<i>Cheyenne, WY</i>	50.29	32.71
<i>Madison, WI</i>	19.71	6.57
<i>Olympia, WA</i>	56.86	42.86
<i>Trenton, NJ</i>	35.29	20.00



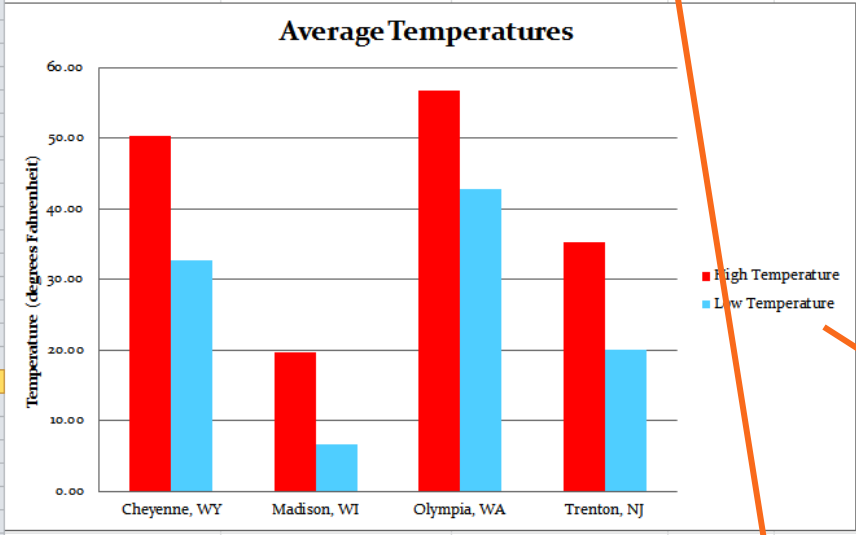
Trenton, NJ	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
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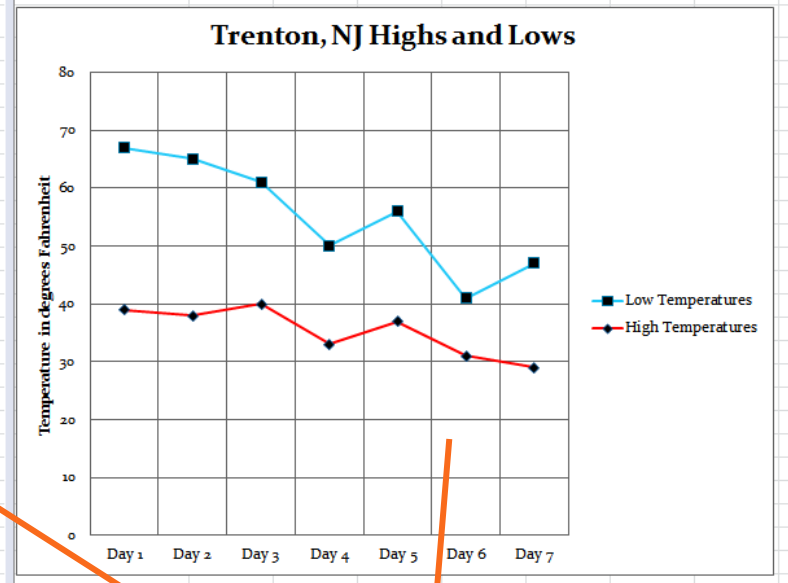
Example of Student/Group Weather Graph-
with data

EXAMPLES OF ADVANCED FEATURES

Averages	High Temperature	Low Temperature
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<i>Trenton, NJ</i>	35.29	20.00



Trenton, NJ	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
High Temperatures	39	38	40	33	37	31	29
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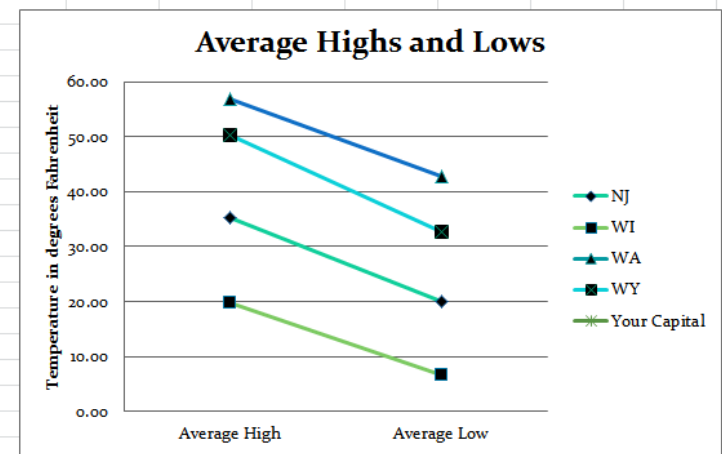
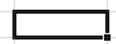
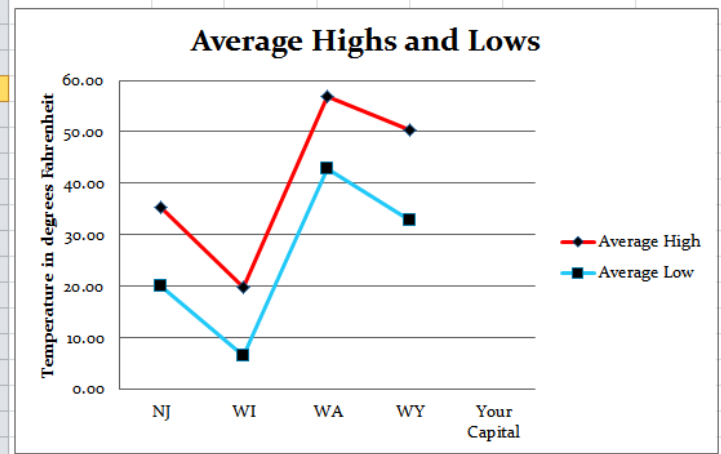


Cell reference in table to eliminate copying and pasting.

Graphs set up so students can easily see the data "pop" up as they input it.

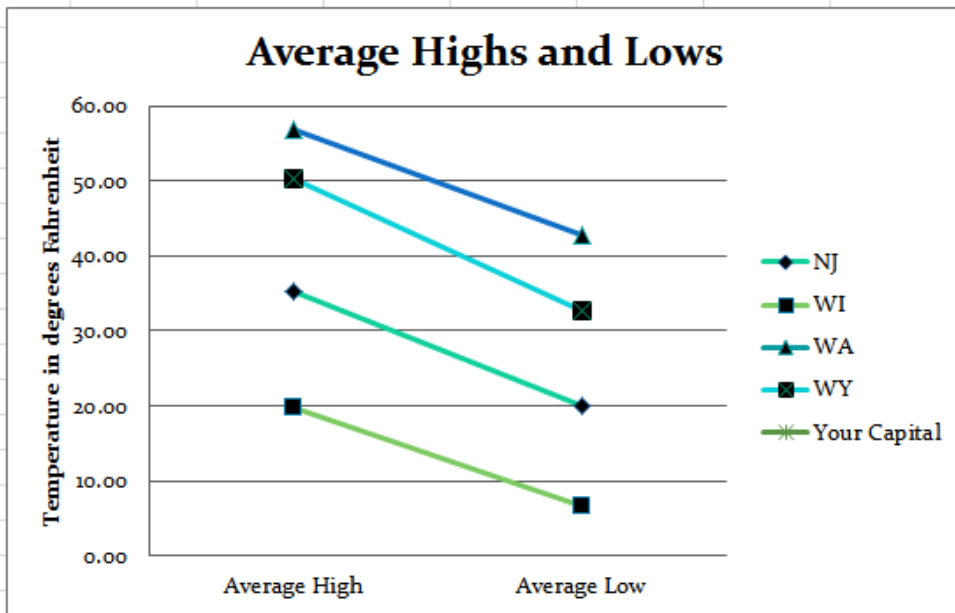
EXAMPLES OF ADVANCED FEATURES

	NJ	WI	WA	WY	Your Capital
Average High	35.29	19.71	56.86	50.29	
Average Low	20.00	6.57	42.86	32.71	



Example of Independent Capital Weather Graph-with data

EXAMPLES OF ADVANCED FEATURES



Changing axes of graph to show trends across capitals in the USA

HOW WILL I HELP THEM EVALUATE DATA?

- ▶ Students will be able to evaluate the data by:
 - ▶ Observing the teacher's Excel skills
 - ▶ Completing group work on Excel
 - ▶ Completing independent work on Excel
 - ▶ Comparing independent work of entire country to determine patterns within weather.

METHOD OF EVALUATION

- ▶ Classroom participation
- ▶ Evaluation of self
- ▶ Evaluation of peers
- ▶ Virtual Gallery walk of graphs
- ▶ Teacher evaluation of students

METHOD OF EVALUATION

Excel Weather Project Total Rubric					
Name	25	25	25	25	100
	Completion of Group Excel Data Table	Completion of Group Graph	Completion of Independent Data Table	Completion of Independent Graph	Total
J.Bara	25	20	25	25	95
D.Carlucci	20	20	20	20	80
C.Doria	15	15	15	15	60
A.Fitzharris	10	5	10	25	50
A.Gonzalez	15	20	10	15	60
C.Gonzalez	0	0	0	0	
M.Higgins	10	0	0	5	15
M.Imhoff	25	20	10	10	65
A.Jordan	5	25	25	0	55
G.Meloni	10	16	5	20	51
L.Orange	5	13	10	25	53
S.Peurto	0	18	16	16	50
E.Ruela	20	0	13	13	46
E.Sarozza	25	10	18	18	71
K.Troczynski	16	25	0	0	41
P.Woodham	13	5	10	10	38
S.Yorke	18	10	25	25	78

Auto Sum feature to calculate a grade

Concatenate names and utilize username.

Conditional formatting to highlight low and high scores

BRAINY BITS

▶ Multiple Intelligences

- ▶ Visual-graphs
- ▶ Interpersonal-working with groups
- ▶ Mathematical-calculating averages before excel
- ▶ Verbal-listening to instructions
- ▶ Intrapersonal-working independently to complete parts of the assignment.

▶ Sense & Meaning

- ▶ Students will make sense of their learning by understanding how to read the weather to determine how to dress in the morning.
- ▶ Students will make meaning of their learning by applying this knowledge to their hometown.

RESOURCES

<http://www.nextgenscience.org/3wc-weather-climate>

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.

Sousa, D. (2011). *How the brain learns (4th ed.)*. Thousand Oaks, Calif.: Corwin Press.