

Data and Analysis Vertical Articulation Chart

SOL	Standard	Notes:
K.9	The student will gather and display data and organize it in a chart or graph in order to answer questions about the data, with or without a computing device.	
1.11	The student will identify and interpret data and organize it in a chart or graph in order to make a prediction, with or without a computing device.	
2.11	The student will construct and analyze data and organize it in a chart or graph in order to make a prediction, with or without a computing device.	
2.12	The student will create a model of a physical object or process in order to show relationships with or without a computing device (e.g. water cycle, butterfly life cycle, seasonal weather patterns).	
3.12	The student will use a computer to observe and analyze data in order to draw conclusions and make predictions.	
3.13	The student will create an artifact using computing systems to model the attributes and behaviors associated with a concept (e.g. day and night, animal life cycles, plant life cycles).	
4.12	The student will use a computer to observe, analyze, and manipulate data in order to draw conclusions and make predictions.	
4.13	The student will create an artifact using computing systems to model the attributes and behaviors associated with a concept (e.g. solar system).	
4.14	The student will use numeric values to represent non-numeric ideas in the computer (binary, ASCII, pixel attributes such as RGB).	
5.11	The student will use a computer to observe, analyze and manipulate data in order to draw conclusions and make predictions.	

5.12	The student will create an artifact using computing systems to model the attributes and behaviors associated with a concept (e.g. plate tectonics).	
5.13	The student will use numeric values to represent non-numeric ideas in the computer (e.g. binary, ASCII, pixel attributes such as RGB).	
6.7	The student will explain how binary sequences are used to represent digital data. <i>Exclusion: Conversions between binary and base-ten numbers are beyond the scope of these standards.</i>	
6.8	The student will collect data using computational tools then clean and organize to make it more useful and reliable.	
6.9	The student will explain the insight and knowledge gained from digitally processed data by using appropriate visualizations.	
6.10	The student will use models and simulations to formulate, refine, and test hypotheses.	
7.8	The student will discuss the correctness of a model representing a system by comparing the model's generated results with data that were observed in the system being modeled.	
7.9	The student will refine computational models based on the data they have generated.	
8.8	The student will A. explain the difference between a model and simulation; and B. create computational models to conduct simulations.	
MSCSE.13	The student will collect data using computational tools and transform the data to make it more useful and reliable.	
MSCSE.14	The student will refine computational models based on the data they have generated.	
MSCSE.15	The student will represent data using multiple encoding schemes.	
CSF.9	The student will evaluate the tradeoffs in how data elements are organized and where data is stored.	

CSF.10	The student will create interactive data visualizations using software tools to help others better understand real-world phenomena.	
CSF.11	The student will use data analysis tools and techniques to identify patterns in data representing complex systems.	
CSP.6	The student will discuss the methods and tradeoffs of collecting and analyzing data elements on a large scale.	
CSP.7	The student will select data collection tools and techniques to generate data sets that support a claim or communicate information. Implement a relational database to work with data.	
CSP.8	The student will discuss how data representations can be interpreted in a variety of forms, convert between data representations, and analyze the representation tradeoffs among various forms of digital information.	
PRG.2	The student will create programs that model the relationships among different elements in collections of real-world data.	
PRG.3	The student will translate numbers between machine representations and human-accessible representations.	