Application of the Data Cycle

According to the 2023 VA Math SOLs

Early Elementary

Grade Level	Number of data points/ categories	Collecting/ Displaying Data	Questioning
K	25 or fewer data points; no more than 4 categories	sorting into groups; object graphs; picture graphs (vertically or horizontally)	*Pose questions, given a predetermined context,* that require the collection of data
1st	25 or fewer data points; no more than 4 categories; one or two attributes	tallying; T-charts; object graphs; picture graphs; tables	*Pose questions, given a predetermined context,* that require the collection of data
2nd	25 or fewer data points; No more than 6 categories	lists; tables; charts; tallying; pictographs (Symbols can represent up to 2 data points); bar graphs; graphs with title and labeled axes (increments increase by 1 or 2)	*Pose questions, given a predetermined context,* that require the collection of data

Upper Elementary

Grade Level	Number of data points/ categories	Collecting/ Displaying Data	Questioning
3rd	30 or fewer data points; No more than 8 categories	Polls; observations; tallying; pictographs (Symbols can represent 1,2,5 or 10 data points); bar graphs; graphs with title and labeled axes (increments increase by 1, 2, 5, or 10)	*Formulate questions* that require the collection or acquisition of data
4th	No more than 10 data points on line graphs	Line graphs; graphs with title and labeled axes (whole number increments)	*Formulate questions* that require the collection or acquisition of data
5th	30 or fewer data points	stem-and-leaf plot	*Formulate questions*

Developed by Blandy Experimental Farm PK-12 Education programs 2025.

		(stems and leaves listed in ascending order); Line plot/ dot plot (may include whole numbers, fractions, or decimals); find mean, median, mode, and range; include keys	that require the collection or acquisition of data

Middle School

Grade Level	Number of data points/ categories	Collecting/ Displaying Data	Questioning
6th	*Determine factors* that ensure that the data collected is *a sample that is representative of a larger population*	Circle graphs (denominators of 12 or less or those that are factors of 100); justify which graphical representation best represents the data	*Formulate questions* that require the collection or acquisition of data
7th	*Determine how sample size and randomness* will ensure that the data collected is a sample that is *representative of a larger population*	Histograms; justify which graphical representation best represents the data	*Formulate questions* that require the collection or acquisition of data
8th	20 or fewer items in plots; Determine whether two events are *independent or dependent*	Box plots; scatterplots; describe how outliers affect data distribution; justify which graphical representation best represents the data	*Formulate questions* that require the collection or acquisition of data;*Identify components of graphical displays that can be misleading*