**Strategies and Tactics for Data Practices**

# **Creating: Generating data from tools or observation**

## ***Decomposition:*** *Identify Parts*

* What are we going to measure?
* How will we get a measurement?
* Should we take preliminary data/mess around with the materials?
* How do we differentiate between the independent and dependent variables? How will we control extraneous variables?

## ***Algorithm Building:*** *Identify Rules*

* How are the variables related?
* How can we ensure our data is replicable?
* What units will we use?

***Automation***

* What tools will we use to measure it?

# **Collecting: Gathering and recording data**

## ***Pattern Recognition:*** *Notice Pattern*

* Looking at preliminary data, are there patterns and/or consistency within the data?
* Should I go back if there is a pattern that does not make sense?
* Do I need to go back and collect more data?
* Are the numbers and units in scale?

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***Abstraction:*** *Notice Essentials*

* What do we want to compare?
* Write down the variables and units.
* What variables are measured and what variables are calculated?
* How will we organize our data (columns and rows)?
* Am I paying attention to each item we used?

***Algorithm Building:*** *Notice Rules*

* How do we use and read the tool properly?
* At what intervals will you collect the data?
* How many trials do we need?
* Are we observing and recording in a timely fashion?

***Automation***

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# **Manipulating: Sorting, filtering, cleaning, normalizing, and combining data sets**

***Decomposition:*** *Organize Parts*

***Pattern Recognition:*** *Organize Pattern*

***Abstraction:*** *Organize Essentials*

***Algorithm Building:*** *Organize Rules*

***Automation***

# **Visualizing: Communicating results with a representation such as a graph or chart**

***Decomposition:*** *Show Parts*

***Pattern Recognition:*** *Show Pattern*

***Abstraction:*** *Show Essentials*

***Automation***

# **Analyzing: Extracting meaning from a data set for the purpose of drawing conclusions**

***Decomposition:*** *Describe Parts*

***Pattern Recognition:*** *Describe Pattern*

***Abstraction:*** *Describe Essentials*

***Algorithm Building:*** *Describe Rules*

***Automation***