Building a Data Factory

Name(s): _____

In this activity, you will build a data factory in TinkerPlots similar to the Cat Factory.

A.   Your factory should make 100 objects. For example, you could make 100 people, or 100 cars, or 100 toys.

B.   Each of the objects should have three to six characteristics, or *attributes.* For example, the cats made by the Cat Factory have four attributes: *Name, Gender, Eye Color,* and *Length.*

C.   At least one of your attributes should be *numeric* (have numbers as values). In the Cat Factory, the attribute *Length* is numeric because its values are numbers (17, 30, 25, and so on).

1.   Describe the objects your factory will make.

2.   Think of some ways in which your objects will differ from one another—these are the attributes. For example, some of the cats from the Cat Factory were male and some were female, so they differed in *Gender.* Some of the cats were 14 inches long and others were 21 inches long, so they differed in *Length.*

3.   List some ways your objects will differ from one another—their attributes.

When you run your factory, you will get a data card for each object the factory makes. Here are two data cards from the Cat Factory. On the left of the top card are the four attributes. On the right of each card are the values of those attributes for a cat.
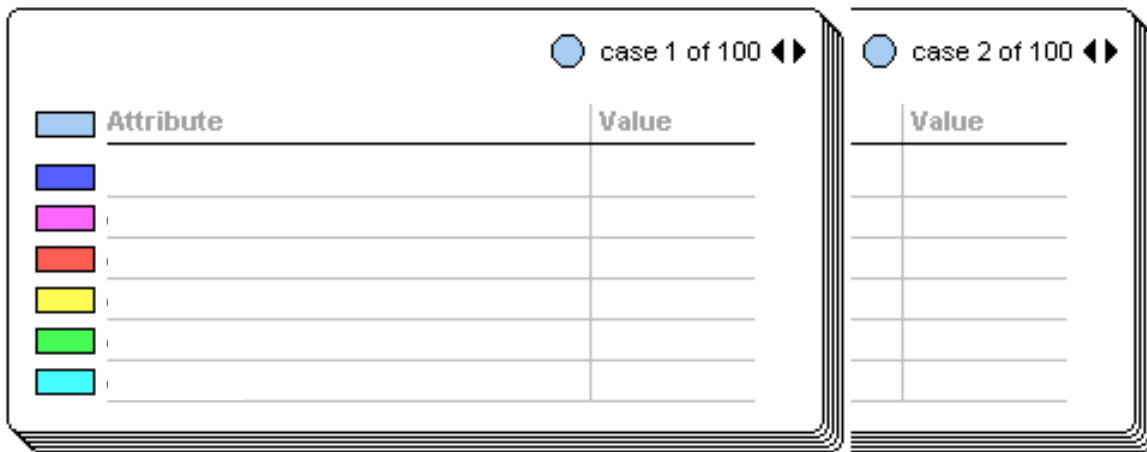
4. Here are two blank data cards. Fill in the names of the attributes of your objects along the left side of the top card.

5. On the right side of the top card, fill in possible values for the first object. Choose values you think your factory should be able to produce. On the bottom card, fill in possible values for the second object.

    Now you'll build your factory. As you do so, think about the order in which objects get their attributes. Try to design your factory so that the objects it produces closely resemble objects you would encounter in the real world. Open a new TinkerPlots document. Drag a sampler into your document. You'll see a **Mixer** device. Change *Attr1* to the name of your first attribute. If you'd like to change the sampling device to a spinner or something else, drag the device from the sampler tool shelf and drop it on top of the mixer.

6. Click *a* and *b* and type the values of your attributes. Click **+** or **–** to add or subtract elements.

7. To add another device for your next attribute, drag a device from the sampler tool shelf into the sampler—pink dots will indicate where you may add a device. Drop this device on the pink dot to the right of the existing device. Make sure a black rectangle is highlighted before you drop your new device.
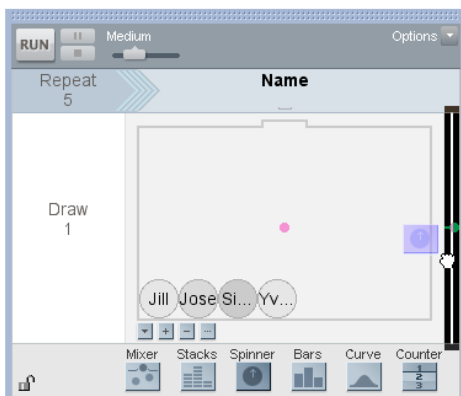
8.   Test your factory by clicking the **RUN** button, and observe the results. You can increase the number of objects by changing the Repeat number. You can adjust the speed of your factory by sliding the "thumb" of the slider near the **RUN** button.

9.   Did your factory produce the results you expected?

10. Is there anything you could do to improve your factory so the results seem more realistic?

11. Drag a plot into your document and plot the numeric attribute. (If you have more than one numeric attribute, just pick one.)

12. What is the range of your numeric data? Is this range what you expected? Explain.

13. What is the shape of the distribution of the numeric attribute (mound shaped, left wall, right wall, uniform)? Do you think this is how the distribution would look if you made a graph using data from real objects? Explain.

14. How could you change your sampler to make the results from running it seem even more realistic—more like what you would see if you plotted data collected from real objects?