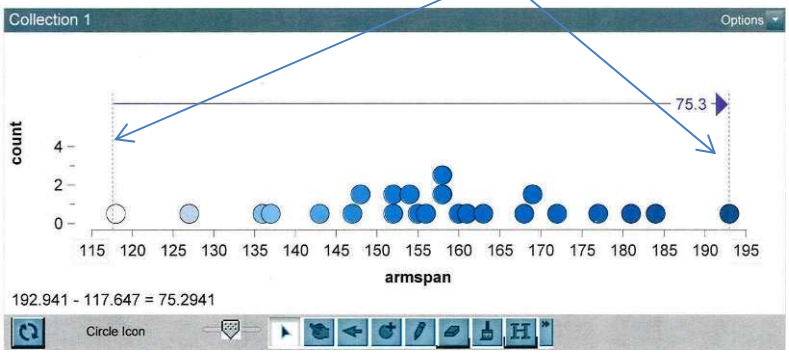
Unit 3 Tinkerplot Instructions

Ruler Tool

- To use the ruler, click the Ruler button in the upper plot toolbar.

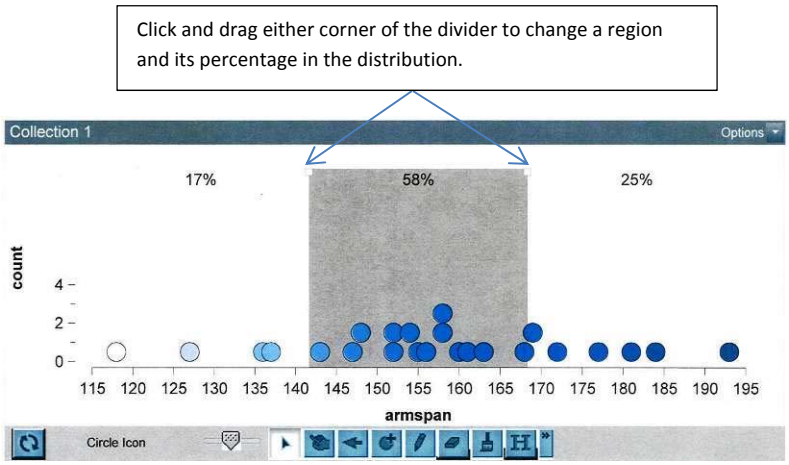
- Drag the dashed lines on the ends of the ruler to the locations you want to measure between (assuming you have a fully-separated numeric axis). The distance between locations is displayed on the arrow end of the ruler.
- Change the location of the ruler by click and dragging the solid purple part of the ruler.
- In the Ruler **Options** menu (found by clicking to the right of the Ruler button) are commands for flipping the ruler (moving the arrow to the opposite end), and changing between vertical and horizontal orientations



Dividers

You can use dividers on graphs with fully separated numeric attributes to divide the graph into sections. You can also use dividers along with counts or percents to see the number or proportion of cases in each section.

- Click the small triangle to the right of **Div.** button to open the **Dividers Options** menu.
- Choose **Number of Divisions** or **Equal Width Dividers**.
- In the dialog box, enter the number of divisions you'd like and click **OK**. Note that if you ask for five divisions, you'll get four dividers.
- To attribute each of the divisions with percentages, click on the % button on the toolbar.
- To change the area of a shaded region simply click along the border and drag it in either direction. You will notice the percentage change as you change the size of the region.



Hat Plot

Hat plots divide a numeric attribute into three sections that look somewhat like a hat. There is a central “crown” and, on either side of the crown, two “brims.” The brims extend out to the minimum and maximum values.

- In the upper plot toolbar, click the Hats button.
- In the **Hats Options** menu, you can select among four types of hat plots. Each type uses a different rule for constructing the central crown.

Hat plot type	Crown edges
Percentile (default)	25th and 75th percentiles
Range	1/3 and 2/3 of the range
Average Deviation*	-1 and +1 average deviations
Standard Deviation*	-1 and +1 standard deviations

* The *average deviation* and *standard deviation* are measures that tell you how far, on average, each score is from the mean. You can find the formula for the standard deviation in most statistics books. You hear less often of the average deviation, but it is easier to understand. Suppose you had the heights of 20 males and that the mean of the 20 heights was 65 inches. To compute the average deviation, you'd start by subtracting the mean of 65 from each of the 20 scores. So if the first male in the collection was 63 inches tall, you'd get a difference of -2 after subtracting the mean. You'd ignore the sign and just call the difference 2. The next height might be 65.5 inches, and you'd get a value of 0.5 inch after subtracting the mean. After computing this difference for each score, you'd add all the differences. Finally, you'd divide this sum of differences (say it was 30) by the number of cases, 20. This would give you an average deviation (in this example) of 1.5 inches, which would tell you that on average each score is 1.5 inches from the mean.

The default locations of the crown edges of each type of hat plot are somewhat arbitrary, but you can adjust them by dragging either crown edge once the plot appears. In this way, you could make percentile hat plots that included 90% of the cases in the center part, or standard deviation hat plots that included all the values between -2 and +2 standard deviations.

Reference Lines

You can add one or more reference lines to any kind of plot. You can use these to help you sight to an axis, mark a critical cutoff point, or call attention to a particular part of the graph or case. Here we describe how to add, move, split, and get rid of reference lines. For some purposes, you may find that dividers are more useful.

To add a single reference line to a plot,

- In the upper plot toolbar, click one of the **Ref.** line buttons.
- Using the buttons, you can add one vertical reference line and one horizontal reference line.

To add more than one reference line in the same direction,

- Click the small triangle to the right of the **Ref.** line buttons. This opens the Reference Line options menu.
- Choose Add Vertical Line or Add Horizontal Line.

To remove a reference line,

- Click the **Ref.** line button to turn it off.

If you have several vertical reference lines, clicking the **Ref. Vertical** button will remove all of them. There isn't a way to remove them one at a time.