

Mean as Balance Point

Mark Rohlfing

Verona Middle School

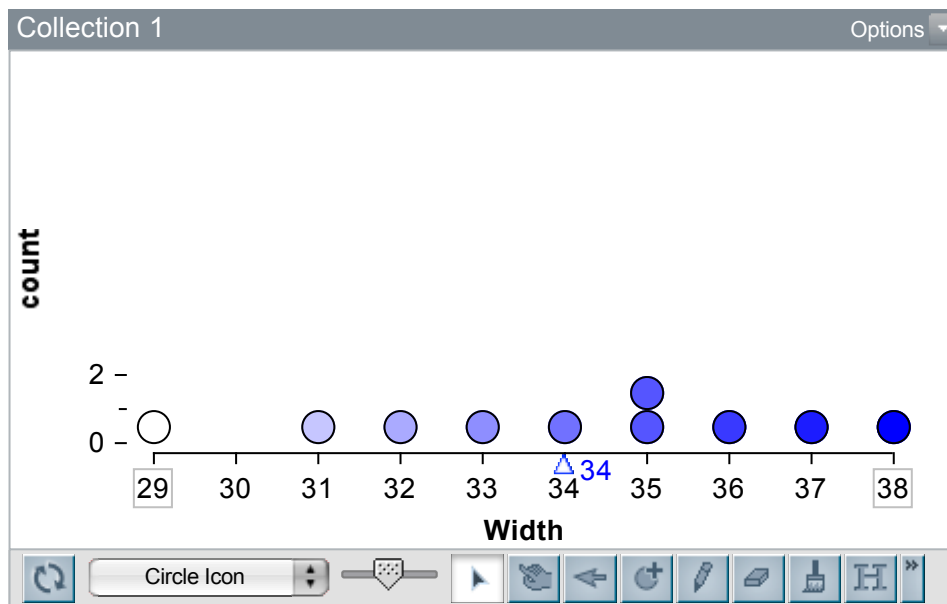
Verona, WI

The mean has a variety of interpretations and the primary ones featured in Unit 2 are mean as a fair share and mean as a balance point. This activity helps to clarify the mean as a balance point. It can be done with TinkerPlots as a whole-class discussion.

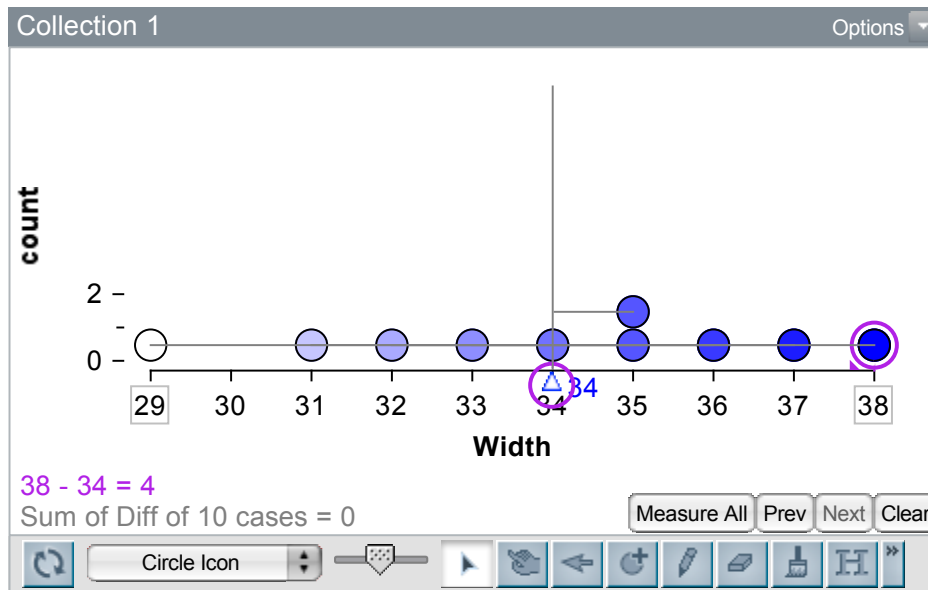
Begin by having students consider a small collection of measurements of the width of a table. Ten measures (in inches) were: 29, 31, 32, 33, 34, 35, 35, 36, 37, 38.

With TinkerPlots

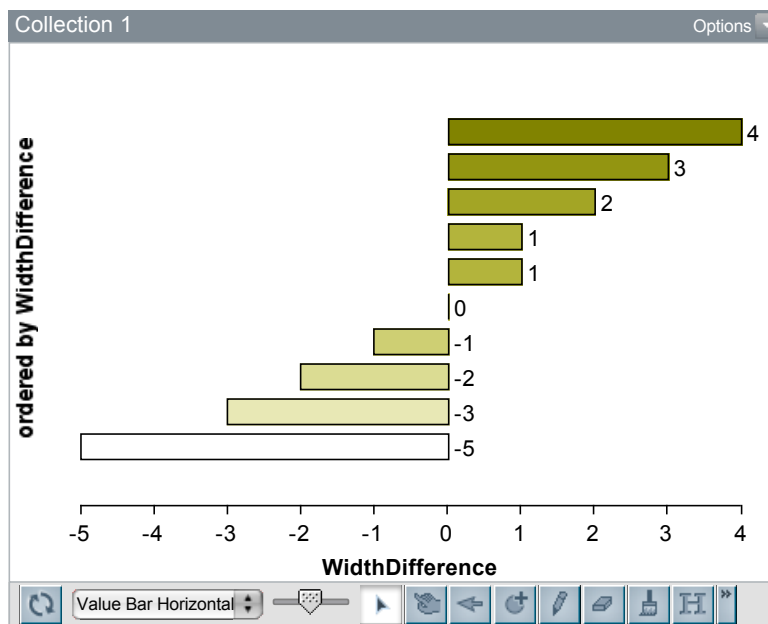
1. Use Cards or Table to enter the data. Create a dot display of the data and turn on the mean, with the value of the mean displayed:



2. Use the Ruler tool to find the difference between each value and the mean. On the Ruler options, be sure that the absolute difference is not checked and that the difference attribute is checked. When you are finished, the display should look like this:

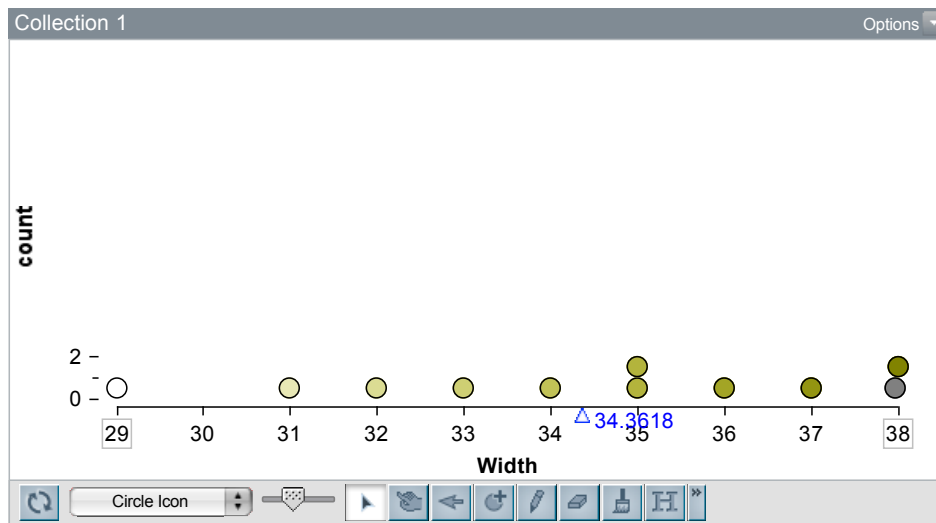


3. Plot the differences with as a horizontal value bar. This graph shows that the mean is a balance point—the differences between the case values that are less than the mean and the mean are balanced by the differences between the case values that are greater than the mean. Notice that the sum of these differences is zero. If the negative length segments were cut out and joined, the sum of the lengths would be identical to those of the positive length segments, also cut out and joined together.



4. Challenge activities

- A. Returning to the dot plot (turn off the ruler tool) and using the Add case tool to enter a new measurement of 38, ask the students: “What are some possible values for two new cases that will return the mean to 34? How about for one new case?” Look for students to use a balance strategy, not a guess and check.



- B. Tell students: Just thinking about the need to balance the distance and direction of each case from the mean, generate an imagined new sample of 10 measurements with a mean of 34 inches. Look for balance strategies, not just guess and check.

