Attribute measurement systems produce categorical responses (ex: pass or fail, classification into multiple categories, and ordinal ratings). This page provides information on attribute measurement systems analysis (MSA), including between and within rater (or appraiser) agreement studies, and standard (or expert) agreement studies. For these studies, rater results are stored in separate columns.

### Attribute Measurement Systems Analysis

1. Select **Analyze > Quality and Process > Variability / Attribute Gauge Chart**.
2. Select categorical variables (usually raters) from **Select Columns**, and click **Y, Response** (categorical variables have red or green bars).
3. Select a grouping variable (often part), and click **X, Grouping**.
4. For an expert agreement study, select the standard (expert or reference) and click **Standard**.
5. Ensure **Attribute** is displayed under **Chart Type** (it will change by default) then click **OK**.

JMP displays a **Gauge Attribute Chart** and several reports to assess agreement:

- The **Gauge Attribute Chart** (bottom, left) displays the percent agreement within each part (top) and within each rater. Here we see that parts 6 and 14 were problematic for the raters (low agreement), and that raters A and B had slightly higher overall agreement than rater C. The **Agreement Report** (not shown) summarizes rater and overall agreement.

- The **Agreement Comparisons** report (bottom, middle) provides **Kappa** statistics for each pair of raters and for each rater against the standard. Kappa is a measure of non-chance agreement. Generally, Kappa values of 0.6 or higher indicate acceptable agreement.

- The **Effectiveness** report (bottom, right) summarizes rater agreement with the standard. It includes a **Misclassification Matrix** and a **Conformance Report**, which provides the probabilities of false alarms (Type I errors) and misses (Type II errors) for each rater.

### Notes:

For more details, search for “Kappa” in the JMP Help, or refer to the “Variability Charts” chapter of the *Quality and Process Methods* book (under **Help > Books**).