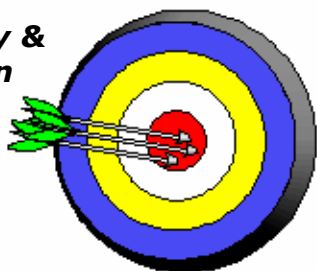
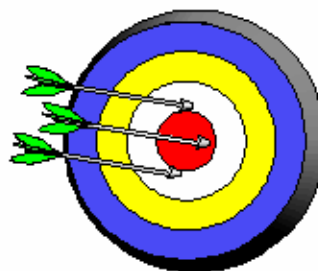


Precision vs. Accuracy

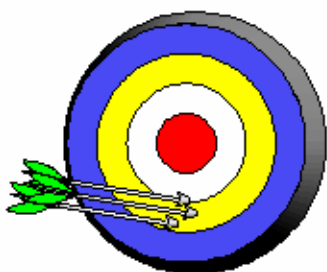
**Good Accuracy &
Good Precision**



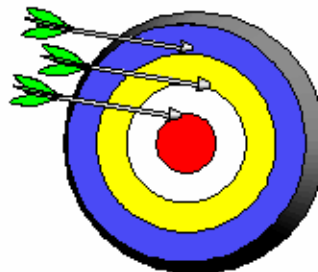
**Good Accuracy
Poor Precision**



**Poor Accuracy
Good Precision**



**Poor Accuracy &
Poor Precision**



Precision	Accuracy
<ul style="list-style-type: none">• Reproducibility	<ul style="list-style-type: none">• Correctness
<ul style="list-style-type: none">• Check by repeating measurements	<ul style="list-style-type: none">• Check by using a different method
<ul style="list-style-type: none">• Poor precision results from poor technique	<ul style="list-style-type: none">• Poor accuracy results from procedural or equipment flaws
<ul style="list-style-type: none">• Poor precision is associated with 'random errors'<ul style="list-style-type: none">○ Error has random sign and varying magnitude.○ Small errors more likely than large errors.	<ul style="list-style-type: none">• Poor accuracy is associated with 'systematic errors'<ul style="list-style-type: none">○ Error has a reproducible sign and magnitude.

To Quantify Precision: $\% \text{ Range} = \left(\frac{\text{Highest Value} - \text{Lowest Value}}{\text{Average Value}} \right) \times 100\%$

To Quantify Accuracy: $\% \text{ Error} = \left(\frac{|\text{Average Measured Value} - \text{Accepted Value}|}{\text{Accepted Value}} \right) \times 100\%$