

**Reliability** and **validity** are related, but mean different things. Both are concepts used to evaluate the suitability of methods and equipment to particular situations.



## RELIABILITY

Refers to how consistently a method or a piece of equipment measures something. If results using the same method and same equipment under the same circumstances are consistently repeated, then the measurements are considered to be reliable.

VS

## VALIDITY



Refers to how accurately a method measures what it is intended to measure. If a method is considered to be valid, that means it produces results that are similar to established or known values.

**Accuracy** and **precision** are two measures of observational error. **Accuracy** is considered the degree of veracity, while **precision** is considered the degree of reproducibility.

## ACCURACY

Refers to the correctness of a single measurement. Accuracy is determined by comparing a measurement, calculation or specifications against the true or accepted value, or a standard. The closer a set of measurements are to the accepted value (such as the centre of a bullseye), the more accurate the system is considered to be.

VS

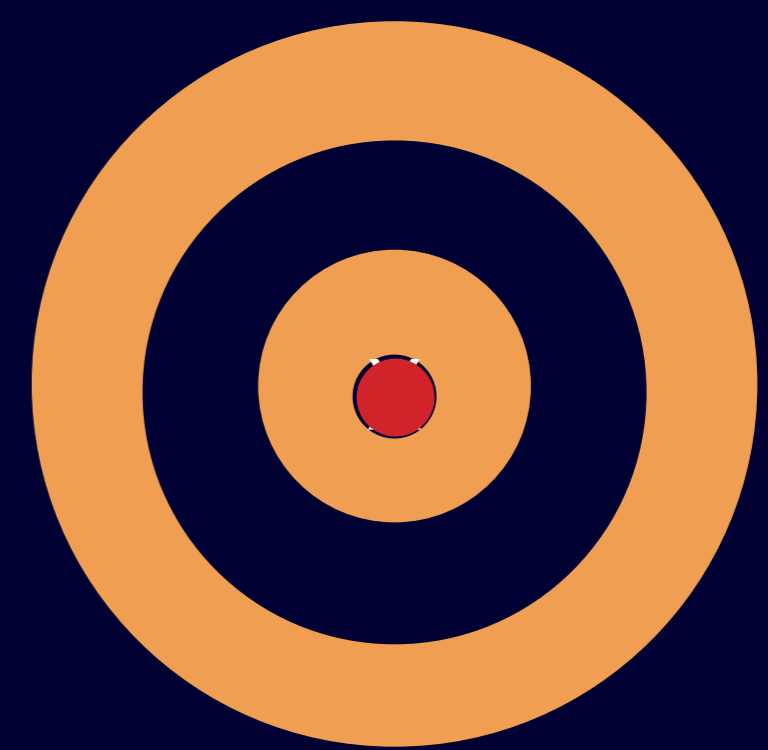
## PRECISION

Refers to the degree to which an instrument or process will repeat the same value. Precision is how close or dispersed the measurements are to each other, regardless of whether or not any of them are close to the true value. A test or protocol, or piece of equipment producing a repeat set of results is considered precise if the standard deviation is relatively small.

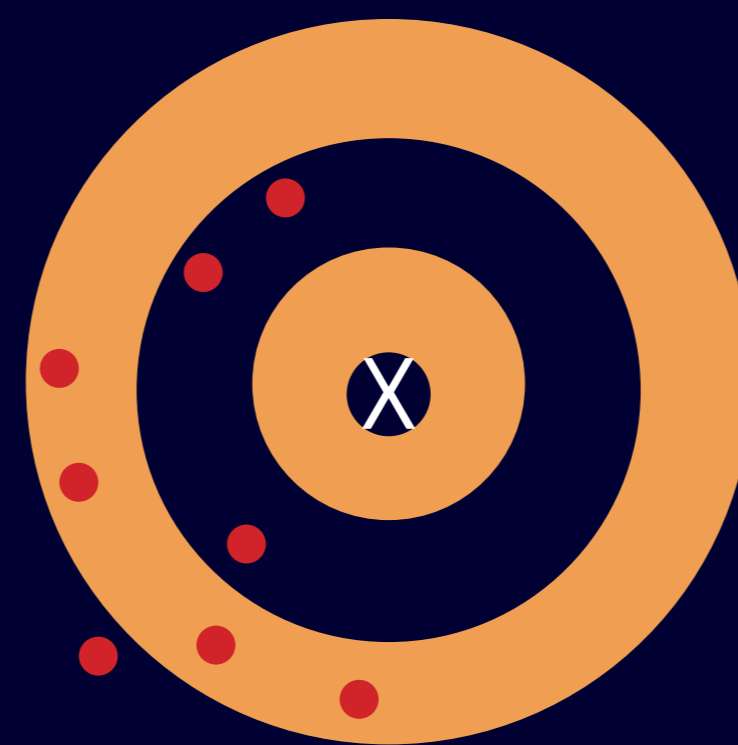
PRECISION



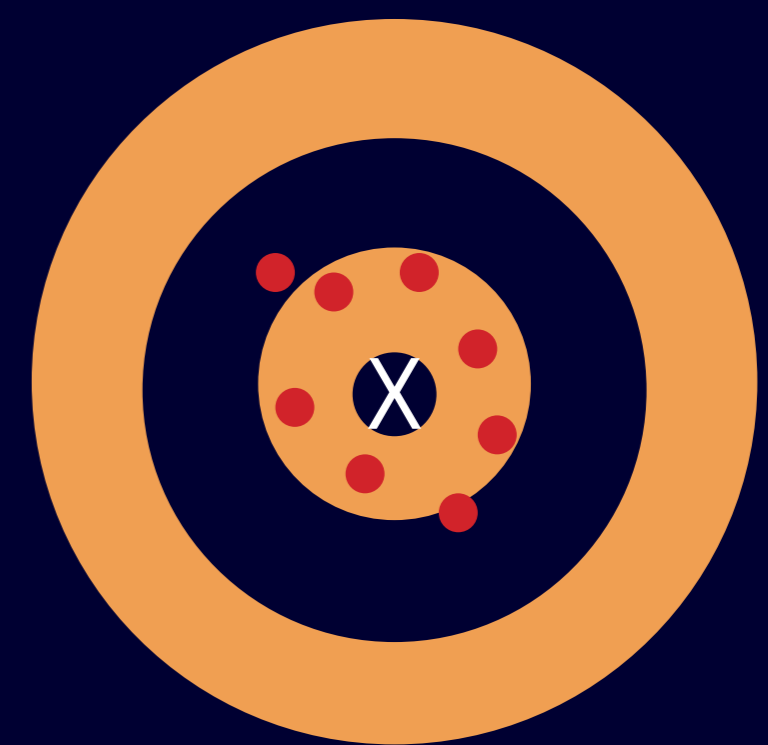
High Precision  
Low Accuracy



High Precision  
High Accuracy



Low Precision  
Low Accuracy



Low Precision  
High Accuracy

ACCURACY

