

SENSITIVITY, SPECIFICITY, ACCURACY, PRECISION (1)

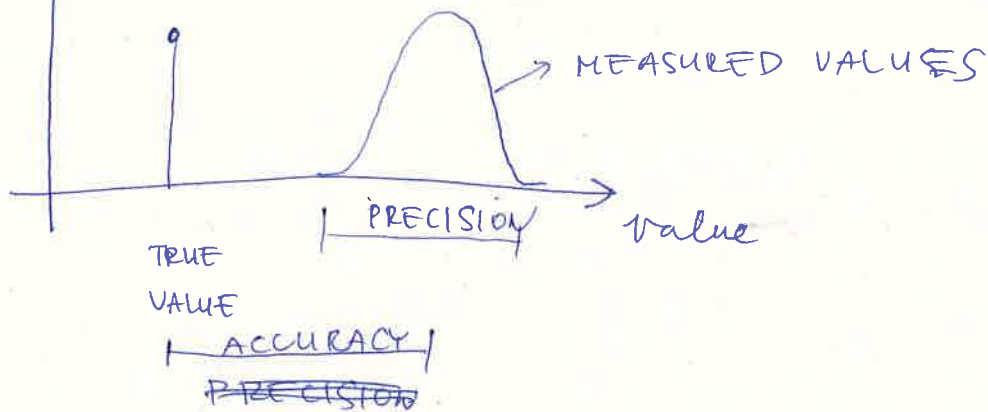
→ Used statistics to describe the measurement test.

→ They are used to quantify how good and reliable test is.

ACCURACY : The measurement method is accurate, if measured what is to supposed to measure

PRECISION : The measurement method is precise when repeated measurements give similar results

Probability density (PDF)



SENSITIVITY : Measures the proportion of actual positive cases that got predicted as positive (TP)

SPECIFICITY : proportion of actual negatives which got predicted as negative (TN)

TP TRUE POSITIVE
FP FALSE POSITIVE

TN TRUE NEGATIVE (2)
FN FALSE NEGATIVE

		MEASURED VALUE IN RANGE (PREDICTION)	
		POSITIVE	NEGATIVE
TRUTH (REALITY)	TRUE	TP	TN
	FALSE	FP	FN

ACCURACY: $\frac{TP + TN}{TP + TN + FP + FN}$

PRECISION: $\frac{TP}{TP + FP}$

SENSITIVITY: $\frac{TP}{TP + FN}$

SPECIFICITY: $\frac{TN}{TN + FP}$

EXAMPLE length of the measured piece must be in range
: [98 - 102]

REALITY	98	99	103	105	96	98	100
MEASURED	100	103	99	103	98	99	103
IN RANGE? REALITY	T	T	F	F	F	T	T
IN RANGE? MEASUR.	T	F	T	F	T	T	F

TP: 2

TN: 1

FN: 2

FP: 2

CLASS TP FN FP TN FP TP FN

$\Sigma = 7$

ACCURACY: $\frac{2+1}{7} = 42\%$

PRECISION: $\frac{2}{2+2} = 50\%$

SENSITIVITY: $\frac{2}{2+2} = 50\%$

SPECIFICITY: $\frac{1}{1+2} = 33\%$