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I agree that the terms are very non-intuitive and hard to correspond to their formulas. Here are some diagrams with the mnemonic tricks that I have developed, and now I have them all solidly memorized.

Classification matrix

First, here are the mnemonics summarized in two common variations of the classification matrix (also called confusion matrix). My mnemonics work for either variation, so just focus on the variation of the matrix with which you are more familiar.

		Real (Actual, Observed)		
		Real Negatives TN+FP	Real Positives TP+FN	
Predicted	Predicted Negatives TN+FN	↑ true negatives (TN)	↑ false negatives (FN)	Precision = true positives/PREdiCted positives TP/(TP+FP)
	Predicted Positives TP+FP	← false positives (FP)	true positives (TP)	
		Specificity SPIN (SPecificity Is Negative) true negatives/real negatives TN/(TN+FP)	Sensitivity SNIP (SeNsitivity Is Positive) true positives/real positives TP/(TP+FN)	Accuracy true predictions/all predictions (TP+TN)/(TP+TN+FP+FN)
		Recall true positives/REAL positives TP/(TP+FN) Recall = Sensitivity		

		Predicted		
		Predicted Positives TP+FP	Predicted Negatives TN+FN	
Real (Actual, Observed)	Real Positives TP+FN	true positives (TP)	false negatives (FN)	Sensitivity SNIP (SeNsitivity Is Positive) true positives/real positives $TP/(TP+FN)$
	Real Negatives TN+FP	false positives (FP)	true negatives (TN)	Specificity SPIN (SPecificity Is Negative) true negatives/real negatives $TN/(TN+FP)$
		Precision true positives/PREdiCted positives $TP/(TP+FP)$	Accuracy true predictions/all predictions $(TP+TN)/(TP+TN+FP+FN)$	
		Recall true positives/REAL positives $TP/(TP+FN)$ Recall = Sensitivity		

Note:

- TP = true positives
- TN = true negatives
- FP = false positives

- FN = false negatives

Short version of mnemonics

Here is the short form of my mnemonics; the details below explain the logic underlying them, which should help in memorizing what they mean:

- **Accuracy**: correct predictions divided by all predictions: $TP+TN/(TP+FP+FP+FN)$
- **Precision and Recall**: focus on true positives
 - **PRE**cision is TP divided by **PRE**dicted positive: $TP/(TP+FP)$
 - **RE**cAll is TP divided by **REA**l positive: $TP/(TP+FN)$
- **Sensitivity and Specificity**: focus on correct predictions
 - **SNIP** (**Se**Nsitivity Is **P**ositive): $TP/(TP+FN)$
 - **SPIN** (**SP**ecificity Is **N**egative): $TN/(TN+FP)$

Detailed explanation of logic underlying the mnemonics, corresponding to their intrinsic meaning

Accuracy: overall results

Accuracy is actually quite intuitive and usually presents no difficulty in memorization. It is simply the correct (true) predictions divided by all predictions, whether true or false.

$$Accuracy = \frac{\text{correct predictions}}{\text{all predictions}} = \frac{TP + TN}{TP + TN + FP + FN}$$

Precision and Recall: focus on true positives

The essence of precision and recall is that they both consider the proportion of **true positive** results; that is, they are two different ways of measuring how many times the model correctly guessed the class of interest (that is, the positive class). So, TP is always the numerator. The difference between them is in the denominator: whereas precision considers all the values that were predicted to be positive (whether correctly or not), recall considers all the values that actually are positive (whether correctly predicted or not).

Precision is the proportion of positive predictions that were correct:

$$Precision = \frac{\text{true positive}}{\text{PREdicted positive}} = \frac{TP}{TP + FP}$$

Recall is the proportion of real or actual positives that were predicted correctly:

$$Recall = \frac{\text{true positive}}{\text{REA}l positive} = \frac{TP}{TP + FN}$$

To differentiate them, you can remember:

- **PRE**cision is TP divided by **PRE**dicted positive

- **REcAll** is TP divided by **REAL** positive

Sensitivity and Specificity: focus on correct predictions

The essence of sensitivity and specificity is that they both focus on the proportion of **correct predictions**. So, the numerator is always a measure of true predictions and the denominator is always all the total of corresponding predictions of that class. Whereas sensitivity measures the proportion of correctly predicted positives out of all actual positive values, specificity measures the proportion of correctly predicted negatives out of all actual negative values.

Sensitivity is the proportion of actual positives that were correctly predicted:

$$Sensitivity = \frac{\text{true } \textbf{Positive}}{\text{real } \textbf{Positive}} = \frac{TP}{TP + FN}$$

(Note that the although the formulas for Recall and Sensitivity are mathematically identical, when recall is paired with precision and sensitivity is paired with specificity, the interpretations and applications of the two measures are rather different.)

Specificity is the proportion of actual negatives that were correctly predicted:

$$Specificity = \frac{\text{true } \textbf{Negative}}{\text{real } \textbf{Negative}} = \frac{TN}{TN + FP}$$

To remember which is which, remember "snip and spin", but note that the letters P and N are swapped (that is, they spin around and the ends of the long names are snipped):

- **SNIP** (SeNsitivity Is Positive)
- **SPIN** (SPecificity Is Negative)