precision

sys-out

	siren (malignant)	no-siren (benign)
siren (malignant)	1 TP	8 FN
no-siren (benign)	1 FP	90 TN

recall

ground true

- **Precision**
  What proportion of **positive predictions** is correct?

- **Recall**
  What proportion of **actual positives** is correct?

- **ROC** (Receiver Operating Characteristic) Curve
  Performance of a classification model **at all** classification **thresholds**

- **AUC (Area Under ROC curve)**

① accuracy

$$A = \frac{TP + TN}{TP + TN + FP + FN} = \frac{1 + 90}{1 + 90 + 1 + 8} = 0.91$$

② precision (positive predictions correct ?)

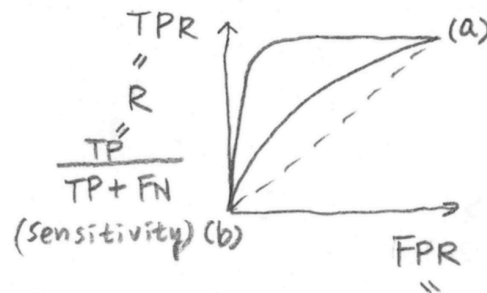$$P = \frac{TP}{TP + FP} = \frac{1}{1+1} = 0.5$$

✻ no FP → P = 1.0

③ recall (actual positives correct?)

$$R = \frac{TP}{TP + FN} = \frac{1}{1+8} = 0.11$$

✻ no FN → R = 1.0

④ F-score $= 2 \cdot \frac{P \cdot R}{P + R}$

TPR "R" $\frac{TP}{TP + FN}$ (Sensitivity) (b)

(a)

FPR " $\frac{FP}{FP + TN}$ (Specificity) = false alarm rate → FP

ben(N) TN   mal(P) TP   FN FP

(a) P=1 N=∅   (b) P=∅ N=1

8