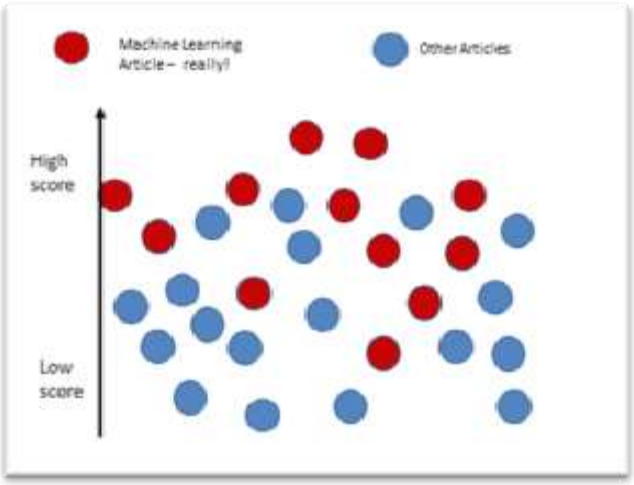
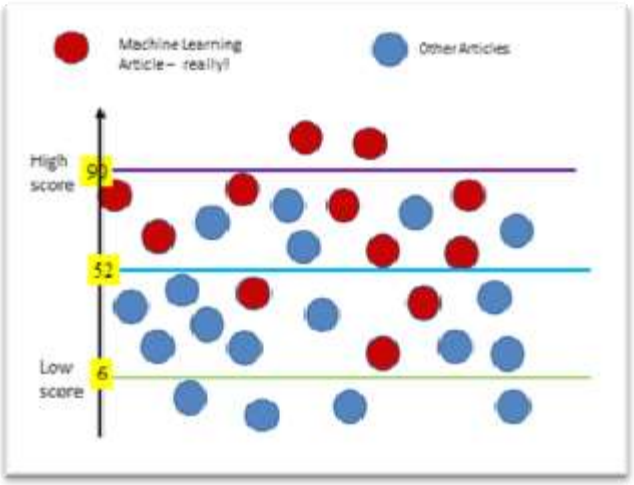
Exercise: Recall, Precision and the Confusion Matrix

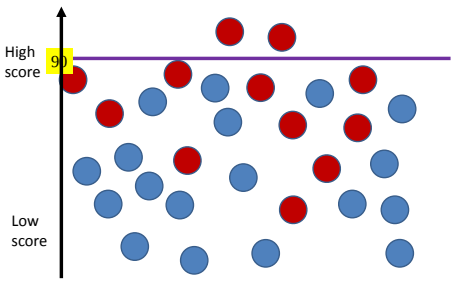
We have a library of articles with a sample of 30 articles altogether;
12 red - about machine learning; 18 blue - about other topics
We have a classifier which gives each article a score from 1 to 100. High score = lots of words relevant to machine learning.
Our question is = what score should an article get before we return it in response to a search?





Look at 3 settings – purple (score 90), blue (score 52) and green (score 6)

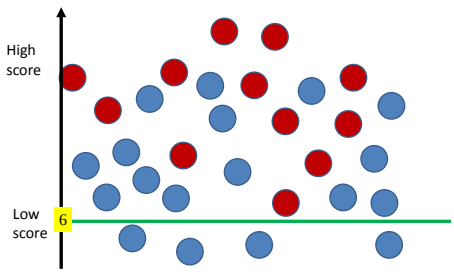
Recall = True Positives / (True Positives + False Negatives)
Precision = True Positives / (True Positives + False Positives)

1.		Suppose we return all the articles with a score more than 90 (above the purple line) • Is that 100% Recall or 100% Precision or both or something else? • Only return good answers - 100% precision • Precision = 2/2+0 = 100% • Recall = 2/2+10 = 2/12= 17% (don't get many good answers)

- If you're not sure – fill in the Confusion Matrix and use the definitions above

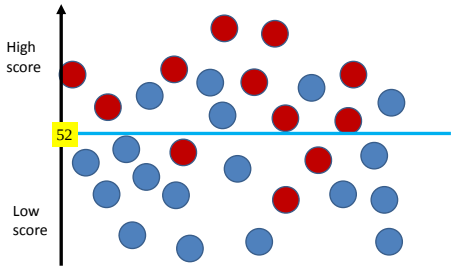
	Returned	Not returned
Machine learning	TP 2	FN 10
Other topic	FP 0	TN 18

Exercise: Recall, Precision and the Confusion Matrix

2.		Suppose we return all the articles with a score more than 6 (above the green line) • Is that 100% Recall or 100% Precision or both or something else? • 100% Recall - we get ALL the good answers • Recall = 12/12 • But we get lots of bad answers • Precision = 12/(12+14) = 12/26= 46%

- If you're not sure – fill in the Confusion Matrix and use the definitions

	Returned	Not returned
Machine learning	TP 12	FN 0
Other topic	FP 14	TN 4

3.		Suppose we return all the articles with a score more than 52 (above the blue line) 1. Fill in the Confusion Matrix below. 2. What is the Recall? 9/12 = 75% 3. What is the Precision? 9/9+6 = 60% 4. Is 52 a good setting?

	Returned	Not returned
Machine learning	TP 9	FN 3
Other topic	FP 6	TN 12