Hot Dog or Not a Hot Dog Classification Quiz Name:

A barbeque classification algorithm is going to classify hot dogs and hamburgers. It will classify the image as a hot dog if the length of the item in the image is **at least** three times as wide as its height. Below is a table summarizing the images in the dataset:

|  |  |  |  |
| --- | --- | --- | --- |
| Length:Height | Hamburger | Hot Dog | Total |
| Less than 3:1 | 9760 | 140 | 9900 |
| 3:1 | 25 | 40 | 65 |
| Greater than 3:1 | 15 | 20 | 35 |
| Total | 9800 | 200 | 10,000 |

1. Create a condensed table where the threshold is exactly 3:1 and the table is summarized by images that have a length:height ratio a.) **strictly less than** 3:1 or b.) **greater than or equal to** 3:1.
2. What percent of your predictions were correct?
3. What percent of the hot dogs did you find?
4. What percent of the images that you classified as hot dogs were actually hot dogs?
5. Of all the hamburgers, what percentage did you correctly predict?
6. Of all the hamburgers, what percentage did you incorrectly predict?
7. What would be the point on your ROC curve corresponding to a threshold of 3:1?
8. Suppose you lower the threshold to 2:1 and obtain the ROC point (0.5, 0.8). In what ways is this threshold better for your predictions? In what ways is it worse?
9. If your raise the threshold instead to 5:1 instead of 3:1, do you expect the FPR to increase or decrease? What about the TPR? Explain why.
10. Fill in the blank by choosing items from the following list of terms: precision, accuracy, recall, support:

If the threshold is raised from 3:1 to 5:1, then the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ decreases.

1. Fill in the blanks: When an email spam filter returns 30 emails, only 20 of which were

non-spam, while filtering out 40 additional non-spam emails, its precision is \_\_\_\_\_\_\_\_ %

while its recall is \_\_\_\_\_\_\_\_\_ %. So, in this case, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is "how relevant the

results are", and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is "how complete the results are".