

**Name:**

**Statistics Quiz 5, Fall 2024**

1: Consider an industrial process in the textile industry in which strips of a particular type of cloth are being produced. These strips can be defective in two ways, length, and nature of the texture. Suppose 10% of the strips fail the length test, 5% fail the texture test, and 0.8% fail both tests. Let  $L$  = a strip fails the length test, and  $T$  = a strip fails the texture test.

1: Draw a Venn diagram with four pieces, and fill in the appropriate probabilities in these pieces. (the pieces 1, 2, 3 and 4 are  $L \cap T^c$ ,  $L \cap T$ ,  $L^c \cap T$  and  $L^c \cap T^c$ , respectively.)

2: Find the probability that a strip fails either test.

3: Find the probability that a strip fails neither test.