Week 10 — Probability as risk and diagnosis: Wednesday exit ticket

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Name: _____ **Date:** _____

Instructions

Work through each item below. Write your final response in the space provided. Show enough work that another reader can follow your reasoning.

1. Imagine **100,000** women are screened with a mammogram. Breast-cancer prevalence is **0.35%**. The test has **sensitivity 0.89** and a **false-positive rate of 0.07** (so specificity $= 0.93$).

   (a) How many of the 100,000 women have cancer, and how many do not?

   (b) Fill in the 2×2 table of counts (you may keep one decimal): **true positives**, **false negatives**, **false positives**, **true negatives**.

   (c) From your table, compute **sensitivity** ($\frac{\text{TP}}{\text{TP+FN}}$) and **specificity** ($\frac{\text{TN}}{\text{TN+FP}}$) to confirm they match the given values.