Math 485 HW 1 Spring 2026. Due Friday, Jan. 23.

Place your solutions on a separate sheet of paper. DO NOT place solutions side by side.

YOU ARE BEING GRADED FOR WORK NOT JUST THE FINAL ANSWER. As a rule of thumb, you should have some idea of what you were doing, even without the book or notes. You are encouraged to form groups to discuss ideas and HW problems, but do not copy.

1) The magazine *Time* had a web site that asked who was the most important person of the 20th century. Before a software crash, the leading vote getter was Ronnie O'Brien, an Irish soccer player. Do you think that a probability sample such as a simple random sample (SRS) was used to obtain this result? If not, what kind of sample was used. Explain briefly.

2) The US government regularly conducts surveys to estimate unemployment. Suppose a simple random sample of 200 Carbondale residents is taken. Chicago has roughly 100 times as many people as Carbondale. In order to have the same accuracy as the Carbondale sample, how large should a simple random sample of Chicago residents be? Explain.

3) Using table B, line 104, draw a SRS of size 4 from the following 9 people (use the labels shown).

1 Carroll, 2 Collin, 3 Crawford, 4 Halverson, 5 Lawes, 6 Stach, 7 Wayman,
8 Wenslow, 9 Xumong

4) Computers can be used to draw a SRS. Consider problem 3. In R, the command

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> sample(1:9,4)
[1]  6  2  8  5
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corresponds to what sample? (Give the 4 names.)

5) Suppose that $N = 484$ and a SRS of size $n = 9$ is used. Assume that $\overline{y} = 40.89$ and $S^2 = 35.67$.

a) Find $SE(\hat{\mu})$.

b) Find an approximate 95% confidence interval for μ.