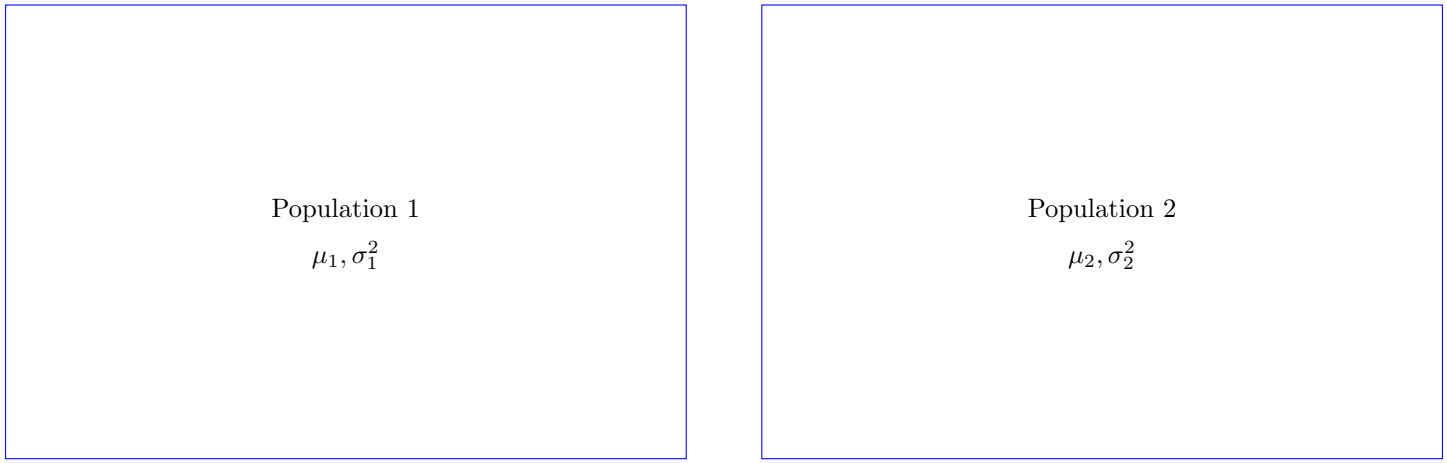
A Note On Two Sample Tests

What we want to test

Given two populations,



Is $\mu_1 = \mu_2$?

Obviously, μ_1 and μ_2 are not known to us. Typically, σ_1^2 and σ_2^2 are not known to us as well.

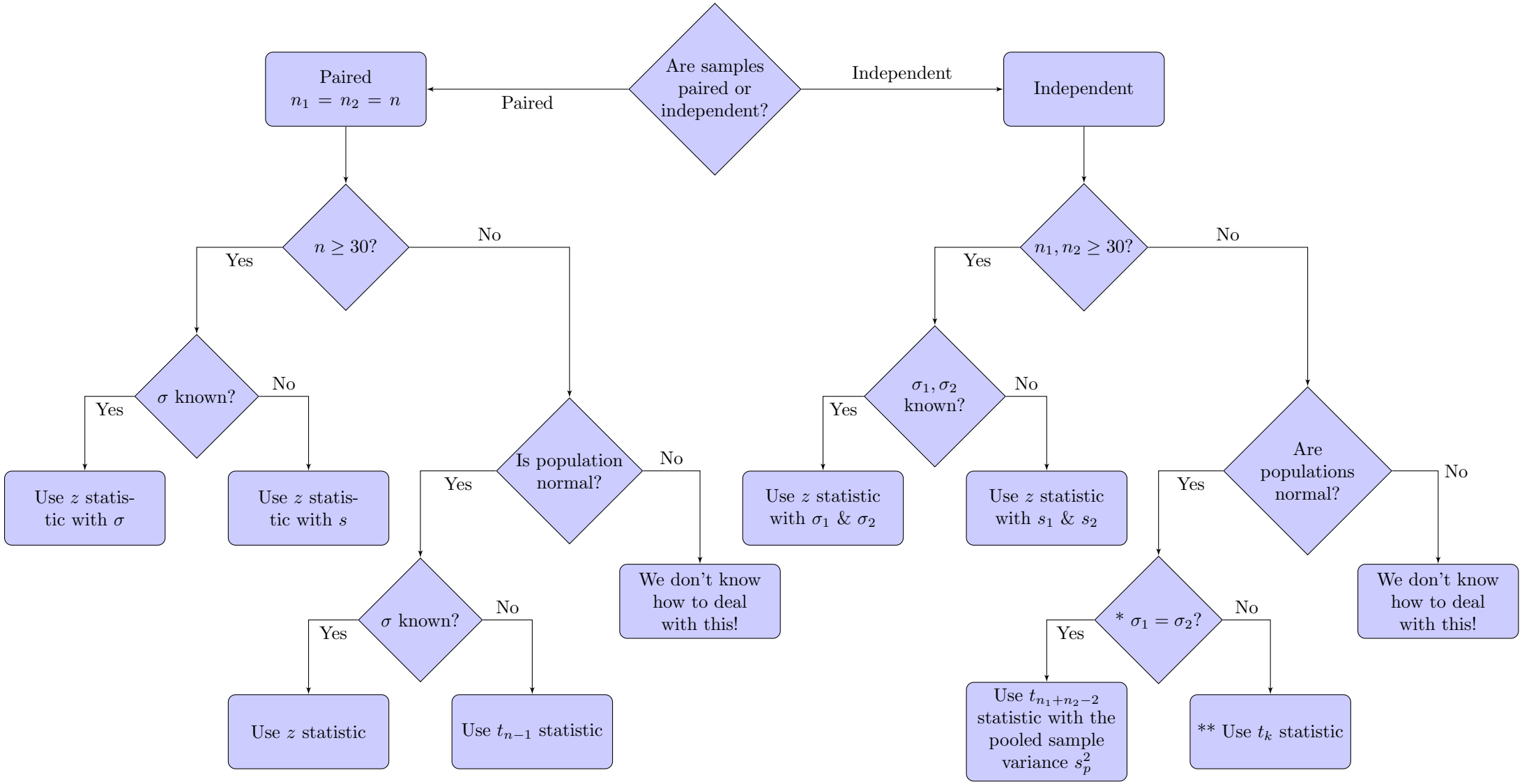
What we have

Sample 1 drawn from population 1, and sample 2 drawn from population 2.

By comparing $\overline{x}$ with $\overline{y}$, check if $\mu_1 = \mu_2$, say.

What we do

Use one of the two sample tests depicted in the following flow chart.



Notes

***** In practice, to check if $\sigma_1^2 = \sigma_2^2$, we use the F-test as outlined in Section 7.6.

****** *This is not covered in this course.* We use a t-statistic with degree of freedom k estimated by the integer part of $\dfrac{\left(\frac{s_1^2}{n_1}+\frac{s_2^2}{n_2}\right)^2}{\frac{(s_1^2/n_1)^2}{n_1-1}+\frac{(s_2^2/n_2)^2}{n_2-1}}$.