to test the claim that the samples are from populations with the same standard deviation. Does the background color appear to have an effect on the variation of word recall scores?

Red Background: $n = 35, \bar{x} = 15.89, s = 5.90$

Blue Background: $n = 36, \bar{x} = 12.31, s = 5.48$

Number of Words Spoken in a Day

Men	Women
$n_1 = 186$	$n_2 = 210$
$\bar{x}_1 = 15{,}668.5$	$\bar{x}_2 = 16{,}215.0$
$s_1 = 8632.5$	$s_2 = 7301.2$

8. Men and Women Talking The accompanying table gives results from a study of the words spoken in a day by men and women, and the original data are in Data Set 17 in Appendix B (based on "Are Women Really More Talkative Than Men?" by Mehl, et al., *Science,* Vol. 317, No. 5834). Use a 0.05 significance level to test the claim that the numbers of words spoken in a day by men vary more than the numbers of words spoken in a day by women.

9. Testing Effects of Alcohol Researchers conducted an experiment to test the effects of alcohol. The errors were recorded in a test of visual and motor skills for a treatment group of 22 people who drank ethanol and another group of 22 people given a placebo. The errors for the treatment group have a standard deviation of 2.20, and the errors for the placebo group have a standard deviation of 0.72 (based on data from "Effects of Alcohol Intoxication on Risk Taking, Strategy, and Error Rate in Visuomotor Performance," by Streufert, et al., *Journal of Applied Psychology,* Vol. 77, No. 4). Use a 0.05 significance level to test the claim that the treatment group has errors that vary more than the errors of the placebo group.

Men	Women
$n_1 = 11$	$n_2 = 59$
$\bar{x}_1 = 97.69°F$	$\bar{x}_2 = 97.45°F$
$s_1 = 0.89°F$	$s_2 = 0.66°F$

10. Body Temperatures of Men and Women If we use the body temperatures from 8 A.M. on Day 2 as listed in Data Set 3 in Appendix B, we get the statistics given in the accompanying table. Use these data with a 0.05 significance level to test the claim that men have body temperatures that vary more than the body temperatures of women.

11. Magnet Treatment of Pain Researchers conducted a study to determine whether magnets are effective in treating back pain, with results given below (based on data from "Bipolar Permanent Magnets for the Treatment of Chronic Lower Back Pain: A Pilot Study," by Collacott, Zimmerman, White, and Rindone, *Journal of the American Medical Association*, Vol. 283, No. 10). The values represent measurements of pain using the visual analog scale. Use a 0.05 significance level to test the claim that those given a sham treatment (similar to a placebo) have pain reductions that vary more than the pain reductions for those treated with magnets.

Reduction in Pain Level After Sham Treatment: $n = 20, \bar{x} = 0.44, s = 1.4$

Reduction in Pain Level After Magnet Treatment: $n = 20, \bar{x} = 0.49, s = 0.96$

12. Skull Measurements from Different Times Researchers measured skulls from different time periods in an attempt to determine whether interbreeding of cultures occurred. Results are given below (based on data from *Ancient Races of the Thebaid*, by Thomson and Randall-Maciver, Oxford University Press). Use a 0.05 significance level to test the claim that the variation of maximal skull breadths in 4000 B.C. is the same as the variation in A.D. 150.

4000 B.C. (Maximal Skull Breadth): $n = 30, \bar{x} = 131.37$ mm, $s = 5.13$ mm

A.D. 150 (Maximal Skull Breadth): $n = 30, \bar{x} = 136.17$ mm, $s = 5.35$ mm

13. Radiation in Baby Teeth Listed below are amounts of strontium-90 (in millibecquerels, or mBq, per gram of calcium) in a simple random sample of baby teeth obtained from Pennsylvania residents and New York residents born after 1979 (based on data from "An Unexpected Rise in Strontium-90 in U.S. Deciduous Teeth in the 1990s," by Mangano, et al., *Science of the Total Environment*, Vol. 317). Use a 0.05 significance level to test the claim that amounts of strontium-90 from Pennsylvania residents vary more than amounts from New York residents.

Pennsylvania:	155	142	149	130	151	163	151	142	156	133	138	161
New York:	133	140	142	131	134	129	128	140	140	140	137	143