EXAMPLE **Conducting a sign test**

The following data constitute a random sample of 15 measurements of the octane rating of a certain kind of gasoline:

99.0	102.3	99.8	100.5	99.7	96.2	99.1	102.5
103.3	97.4	100.4	98.9	98.3	98.0	101.6	

Test the null hypothesis $\tilde{\mu} = 98.0$ against the alternative hypothesis $\tilde{\mu} > 98.0$ at the 0.01 level of significance.

To illustrate how the U test (also called the **Wilcoxon test** or the **Mann-Whitney test**, named after the statisticians who contributed to its development) is performed, suppose that in a study of sedimentary rocks, the following diameters (in millimeters) were obtained for two kinds of sand:

Sand I:	0.63	0.17	0.35	0.49	0.18	0.43	0.12	0.20
	0.47	1.36	0.51	0.45	0.84	0.32	0.40	
Sand II:	1.13	0.54	0.96	0.26	0.39	0.88	0.92	0.53
	1.01	0.48	0.89	1.07	1.11	0.58		

The problem is to decide whether the two populations are the same or if one is more likely to produce larger observations than the other. Let X_1 be a random

EXAMPLE **Conducting an H test to compare three methods**

An experiment, designed to compare three methods for preventing corrosion, yielded the following maximum depths of pits (in thousandths of an inch) in pieces of wire subjected to the respective treatments:

Method A:	77	54	67	74	71	66	
Method B:	60	41	59	65	62	64	52
Method C:	49	52	69	47	56		

Use the 0.05 level of significance to test the null hypothesis that the three samples come from identical populations.