

In Exercises 9–12, use the sign test for the data consisting of matched pairs.



9. Oscar Winners Listed below are ages of actresses and actors at the times that they won Oscars. These 10 matched pairs are the first 10 from Data Set 11 in Appendix B. The data are paired according to the years that they won. Use a 0.05 significance level to test the claim that there is no difference between the ages of best actresses and the ages of best actors at the time that the awards were presented.

Best Actresses	22	37	28	63	32	26	31	27	27	28
Best Actors	44	41	62	52	41	34	34	52	41	37

In Exercises 13–16, use the sign test for the claim involving nominal data.



13. Gender Selection The Genetics & IVF Institute conducted a clinical trial of its methods for gender selection. As of this writing, 239 of 291 babies born to parents using the YSORT method were boys. Use a 0.01 significance level to test the claim that the YSORT method has no effect.

5. Arrival Delay Times Use the sample data given in Exercise 1 and test the claim that arrival delay times for Flight 19 and Flight 21 have the same median. Use a 0.05 significance level.

Flight 19	-5	-32	-13	-9	-19	49	-30	-23	14	-21	-32	11
-----------	----	-----	-----	----	-----	----	-----	-----	----	-----	-----	----

Flight 21	-23	28	103	-19	-5	-46	13	-3	13	106	-34	-24
-----------	-----	----	-----	-----	----	-----	----	----	----	-----	-----	-----

Appendix B Data Sets. *In Exercises 9–12, refer to the indicated data set in Appendix B and use the Wilcoxon rank-sum test.*

-  **9. IQ and Lead Exposure** Data Set 5 in Appendix B lists full IQ scores for a random sample of subjects with medium lead levels in their blood and another random sample of subjects with high lead levels in their blood. Use a 0.05 significance level to test the claim that subjects with medium lead levels have full IQ scores with a higher median than the median full IQ score for subjects with high lead levels. Does lead level appear to affect full IQ scores?

Identify the efficiency of the

Using the Wilcoxon Signed-Ranks Test. *In Exercises 5–8, refer to the sample data for the given exercises in Section 13-2. Use the Wilcoxon signed-ranks test to test the claim that the matched pairs have differences that come from a population with a median equal to zero. Use a 0.05 significance level.*



5. Exercise 9



6. Exercise 10



7. Exercise 11



8. Exercise 12

Best Actresses	22	37	28	63	32	26	31	27	27	28
Best Actors	44	41	62	52	41	34	34	52	41	37

 **11. Nicotine in Cigarettes** Refer to Data Set 10 in Appendix B and use the amounts of nicotine (mg per cigarette) in the king-size cigarettes, the 100-mm menthol cigarettes, and the 100-mm nonmenthol cigarettes. The king-size cigarettes are nonfiltered, nonmenthol, and nonlight. The 100-mm menthol cigarettes are filtered and nonlight. The 100-mm nonmenthol cigarettes are filtered and nonlight. Use a 0.05 significance level to test the claim that the three categories of cigarettes yield the same median amount of nicotine. Given that only the king-size cigarettes are not filtered, do the filters appear to make a difference?