chapter problem

Does exposure to lead affect IQ score?

Data Set 5 in Appendix B includes full IQ scores from three groups of children who lived near a lead smelter. The children in Group 1 had *low* levels of measured lead in their blood (with blood levels less than 40 micrograms/100 mL in each of two years). Group 2 had *medium* levels of measured lead in their blood (with blood levels of at least 40 micrograms/100 mL in exactly one of two years). Group 3 had *high* levels of measured lead in their blood (with blood levels of at least 40 micrograms/100 mL in each of two years).

Let's consider the measured full IQ scores from Group 1 (low lead level) and Group 3 (high lead level), as listed in Table 2-1. It is an exceptionally rare person who can look at both lists of IQ scores and form meaningful conclusions. Almost all of us must work at describing, exploring, and comparing the two sets of data. ("Describing, Exploring, and Comparing Data" would be a great title for a chapter in a statistics book—see Chapter 3.) In this chapter we present methods that focus on summarizing the data and using graphs that enable us to understand important characteristics of the data, especially the *distribution* of the data. These methods will help us compare the two sets of data so that we can determine whether IQ scores of the *low* lead group are somehow different from the IQ scores of the *high* lead group. Such comparisons will be helpful as we try to address this important and key issue: Does exposure to lead have an effect on IQ score?

Table 2-1 Full IQ Scores of Low Lead Group and High Lead Group

Low Lead Level (Group 1)															
70	85	86	76	84	96	94	56	115	97	77	128	99	80	118	86
141	88	96	96	107	86	80	107	101	91	125	96	99	99	115	106
105	96	50	99	85	88	120	93	87	98	78	100	105	87	94	89
80	111	104	85	94	75	73	76	107	88	89	96	72	97	76	107
104	85	76	95	86	89	76	96	101	108	102	77	74	92		
High Lead Level (Group 3)															
82	93	85	75	85	80	101	89	80	94	88	104	88	88	83	104
96	76	80	79	75											