Stat 280 - Hw 2 Key
Spring 02

**1.78** $\bar{x} = 108.92$ and $s = 13.17$. About 70.5% (55/78) of the IQs are in the range $\bar{x} \pm s = 95.75$ to 122.09 (96–122). About 93.6% (73/78) of the IQs are in the range $\bar{x} \pm 2s = 82.58$ to 135.26 (83–135). All (100%) of the IQs are in the range $\bar{x} \pm 3s = 69.41$ to 148.43 (70–148).

**1.86** **(a)** $12\% \pm 2(16.5\%) = -21\%$ to 45% (or $12\% \pm 1.96(16.5\%) = -20.34\%$ to 44.34%). **(b)** About 23%: $R < 0\%$ means $Z < \frac{0-12}{16.5} \doteq -0.7273$; the table gives 0.2327 for $Z < -0.73$. **(b)** About 21.5%: $R \geq 25\%$ means $Z \geq \frac{25-12}{16.5} \doteq 0.7879$; the table gives 0.2148 for $Z \geq 0.79$.

**1.88** **(a)** About 5.21%: $P(X < 240) = P(Z < \frac{240-266}{16}) = P(Z < -1.625) = 0.0521$. This software value is also halfway between the two table values 0.0516 (for $-1.63$) and 0.0526 (for $-1.62$). **(b)** About 54.7%: $P(240 < X < 270) = P(-1.625 < Z < \frac{270-266}{16}) = P(-1.625 < Z < 0.25) = 0.5987 - 0.0521 = 0.5466$. **(c)** 279 days or longer: The 80th percentile for a standard normal distribution is 0.8416 (or 0.84 from the table), so take $266 + 0.8416(16)$.

**1.96** **(a)** Software gives 1.2816 for the 90th percentile and $-1.2816$ for the 10th percentile. Using Table A, we would choose $\pm 1.28$. **(b)** About 245.5 and 286.5 days: Take $266 \pm (1.2816)(16)$.

**2.6** **(a)** At right. First-round score should be on the horizontal axis; horizontal and vertical scales should be the same. **(b)** There is a fairly strong positive association; since the scores are those of the same golfers on two rounds, this association is expected. **(c)** The player with 105 on the first round and 89 on the second lies outside the generally linear pattern. (The extreme point at (102, 107) lies in the pattern, so should not be considered an outlier.) We can't tell which round was unusual for the outlying player.