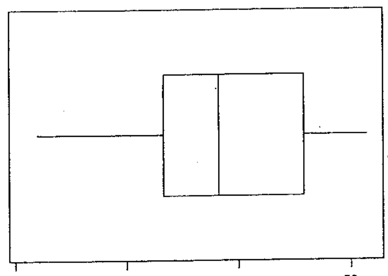
Chap 7.

49.

a. There appears to be a slight positive skew in the middle half of the sample, but the lower whisker is much longer than the upper whisker. The extent of variability is rather substantial, although there are no outliers.




b. The pattern of points in a normal probability plot is reasonably linear, so, yes, normality is plausible.

c. $n = 18$, $\bar{x} = 38.66$, $s = 8.473$, and $t_{.01,17} = 2.567$. The 98% confidence interval is

$$38.66 \pm 2.567\frac{8.473}{\sqrt{18}} = 38.66 \pm 5.13 = (33.53, 43.79).$$

50. $\bar{x} =$ the midpoint of the interval $= \dfrac{229.764 + 233.504}{2} = 231.634$. To find $s$ we use width $= 2t_{.025,4}\left(\dfrac{s}{\sqrt{n}}\right)$, and solve for $s$. Here, $n = 5$, $t_{.025,4} = 2.776$, and width = upper limit – lower limit = 3.74.

$3.74 = 2(2776)\dfrac{s}{\sqrt{5}} \Rightarrow s = \dfrac{\sqrt{5}(3.74)}{2(2.776)} = 1.5063$. So for a 99% CI, $t_{.005,4} = 4.604$, and the interval is

$$231.634 \pm 4.604\frac{1.5063}{\sqrt{5}} = 213.634 \pm 3.101 = (228.533, 234.735).$$

Chap. 8

32. The parameter of interest is $\mu$ = the true average dietary intake of zinc among males aged 65-74 years. The hypotheses are $H_0$: $\mu = 15$ versus $H_a$: $\mu < 15$.
Since the sample size is large, we'll use a $z$-procedure here; with no significance level specified, we'll default to $\alpha = .05$. Hence, we'll reject $H_0$ if $z \le -z_\alpha = -z_{.05} = -1.645$.
From the summary statistics provided, $z = \dfrac{11.3 - 15}{6.43/\sqrt{115}} = -6.17 \le -1.645$. Hence, we reject $H_0$ at the $\alpha = .05$ level. (In fact, with a test statistic that large, –6.17, we would reject $H_0$ at any reasonable significance level. There is convincing evidence that average daily intake of zinc for males aged 65-74 years falls below the recommended daily allowance of 15 mg/day.

51. Use Table A.8.

a. $P(t > 2.0)$ at 8df = .040.

b. $P(t < -2.4)$ at 11df = .018.

c. $2P(t < -1.6)$ at 15df = 2(.065) = .130.

d. by symmetry, $P(t > -.4) = 1 - P(t > .4)$ at 19df = 1 – .347 = .653.

e. $P(t > 5.0)$ at 5df < .005.

f. $2P(t < -4.8)$ at 40df < 2(.000) = .000 to three decimal places.