9.30

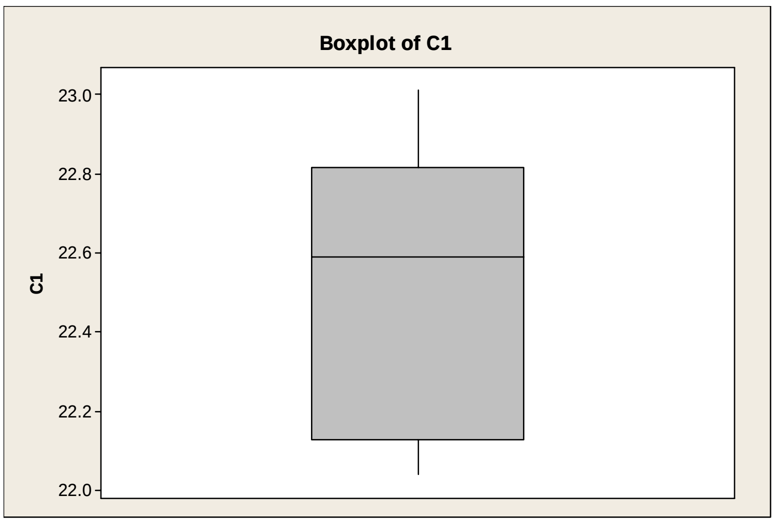
(a) **One-Sample T: C1**

```
Test of mu = 22.5 vs not = 22.5


Variable  N     Mean   StDev  SE Mean       95% CI              T      P
C1        5  22.4960  0.3783   0.1692  (22.0262, 22.9658)  -0.02  0.982
```

The P-value of .982 says we get data favoring H_A by this much 98.2% of the time when H_0 is actually true. We do not reject H_0 since P-value > 0.05. There is no evidence to contradict H_0, so the results are not significant.

(b) With 5 observations it is pretty hard to tell, but there is no evidence to contradict an assumption of normality



(c) Don't worry about calculating power

(d) **Power and Sample Size**

```
1-Sample t Test

Testing mean = null (versus not = null)
Calculating power for mean = null + difference
Alpha = 0.05  Assumed standard deviation = 0.3783


            Sample  Target
Difference    Size   Power  Actual Power
      0.25      27     0.9      0.910618
```

(e) 22.5 is in the 95% CI for μ, so we would not reject H_0

9.31

(a) **One-Sample T: C1**

```
Test of mu = 98.6 vs not = 98.6


Variable   N     Mean   StDev  SE Mean        95% CI             T      P
C1        25  98.2640  0.4821   0.0964  (98.0650, 98.4630)  -3.48  0.002
```

The P-value of 0.002 says we get data favoring the alternative hypothesis by this much only 0.2% of the time when μ is actually 98.6. Since this is less than 0.05, we reject H_0 and conclude μ is not 98.6. The results are significant (we have "proven" $\mu \neq 98.6$).

(b) Don't worry about calculating power.

(c) **Power and Sample Size**

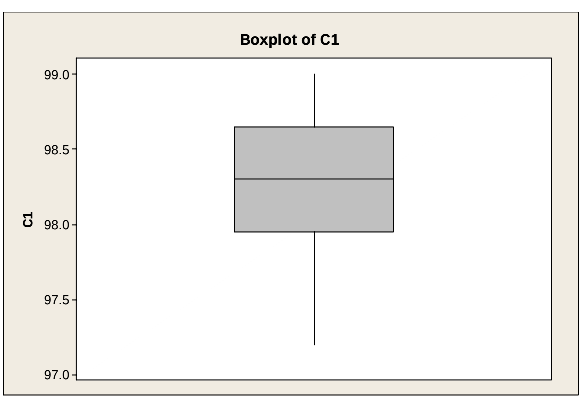
```
1-Sample t Test

Testing mean = null (versus not = null)
Calculating power for mean = null + difference
Alpha = 0.05  Assumed standard deviation = 0.4821


            Sample  Target
Difference    Size   Power  Actual Power
       0.4      18     0.9      0.912347
```

(d) 98.6 is not in the 95% CI, so we would not find 98.6 to be a plausible value of μ.

(e) There are no outliers or other reason to be very concerned about the normality assumption.



The remaining problems in this section (32-25 are done similarly).

9.52 **Test and CI for One Proportion**

```
Test of p = 0.05 vs p not = 0.05


Sample   X    N  Sample p         95% CI          Z-Value  P-Value
1       13  300  0.043333  (0.020294, 0.066373)    -0.53    0.596
```

Because the P-value is larger than α, we cannot reject H_0, the results are not significant, and we have proven nothing.

9.53 **Test and CI for One Proportion**

```
Test of p = 0.05 vs p < 0.05


                                 95%
                               Upper
Sample   X    N  Sample p      Bound  Z-Value  P-Value
1       13  300  0.043333  0.062669    -0.53    0.298
```

Because the P-value is larger than α, we cannot reject H_0, the results are not significant, and we have proven nothing.

9.54 The wording here might suggest a one-sided test, but unless you are specifically told otherwise, do a 2-sided test (there are good reasons for this, and it is usual practice).

Test and CI for One Proportion

```
Test of p = 0.5 vs p not = 0.5


Sample    X    N  Sample p         95% CI          Z-Value  P-Value
1       117  484  0.241736  (0.203593, 0.279878)   -11.36    0.000
```

The P-value is effectively 0, which says there is no chance of getting data like this if H_0 is true. Since the P-value is less than α, we reject H_0 – the results are significant and we have “proven” that $p \neq 0.5$. Since the CI does not include .5, we knew we would reject H_0 .

I will leave 9.55 for you