Example 14.1 on p.386 – correct analysis

Paired T-Test and CI: second, first

```
Paired T for second - first
            N     Mean    StDev  SE Mean
second      5  550.000   52.440   23.452
first       5  530.000   70.000   31.305
Difference  5  20.0000  22.3607  10.0000

95% CI for mean difference: (-7.7645, 47.7645)
T-Test of mean difference = 0 (vs not = 0): T-Value = 2.00  P-Value = 0.116
```

Example 14.1 on p.386 – incorrect analysis

Two-Sample T-Test and CI: second, first

```
Two-sample T for second vs first
                           SE
        N   Mean  StDev  Mean
second  5  550.0   52.4    23
first   5  530.0   70.0    31

Difference = mu (second) - mu (first)
Estimate for difference:  20.0000
95% CI for difference:  (-72.4928, 112.4928)
T-Test of difference = 0 (vs not =): T-Value = 0.51  P-Value = 0.625  DF = 7
```

Example 14.2 on p.387 – correct analysis

Paired T-Test and CI: paint A, paint B

```
Paired T for paint A - paint B
            N     Mean    StDev  SE Mean
paint A     8  52.3750  19.0258   6.7266
paint B     8  45.2500  14.7721   5.2227
Difference  8  7.12500  7.91811  2.79947

95% CI for mean difference: (0.50530, 13.74470)
T-Test of mean difference = 0 (vs not = 0): T-Value = 2.55  P-Value = 0.038
```

Example 14.2 on p.387 – incorrect analysis

Two-Sample T-Test and CI: paint A, paint B

```
Two-sample T for paint A vs paint B
         N  Mean  StDev  SE Mean
paint A  8  52.4   19.0      6.7
paint B  8  45.3   14.8      5.2

Difference = mu (paint A) - mu (paint B)
Estimate for difference:  7.12500
95% CI for difference:  (-11.27299, 25.52299)
T-Test of difference = 0 (vs not =): T-Value = 0.84  P-Value = 0.418  DF = 13
```

Toluene and the Brain Example from Samuels and Witmer p.230

Six rats were given toluene and five rats were unexposed. After some time, concentration of the brain chemical NE (norepinephrine) was measured in the medulla region of these rats; the NE values follow:

	Toluene Group	Control Group
	543	535
	523	385
	431	502
	635	412
	564	387
	549	
n	6	5
$\bar{x}$	540.8	444.2
s	66.1	69.6

Method A – Conservative Approach: we must do by hand since Minitab does not perform this.

Method B – Welch's Approximation

Two-Sample T-Test and CI: toluene, control

```
Two-sample T for toluene vs control
                          SE
         N   Mean  StDev  Mean
toluene  6  540.8   66.1    27
control  5  444.2   69.6    31

Difference = mu (toluene) - mu (control)
Estimate for difference:  96.6
95% CI for difference:  (1.6, 191.7)
T-Test of difference = 0 (vs not =): T-Value = 2.34  P-Value = 0.047  DF = 8
```

Method C – Assuming Equal Variances

Two-Sample T-Test and CI: toluene, control

```
Two-sample T for toluene vs control
                          SE
         N   Mean  StDev  Mean
toluene  6  540.8   66.1    27
control  5  444.2   69.6    31

Difference = mu (toluene) - mu (control)
Estimate for difference:  96.6
95% CI for difference:  (3.9, 189.4)
T-Test of difference = 0 (vs not =): T-Value = 2.36  P-Value = 0.043  DF = 9
Both use Pooled StDev = 67.7049
```