Question A

1. W1 = (Baseline – Post)/2**.5
   W2 = (Baseline – Followup)/2**.5
   X1 = -2 if control, 1 if CBT or CBTAA
   X2 = 0 if control, -1 if CBT, 1 if CBTAA

   W1 Regression

```
proc reg;
model W1 = X1 X2/ss2 pcorr2 tol;
run;
```

   W2 Regression

```
proc reg;
model W2 = X1 X2/ss2 pcorr2 tol;
run;
```

2. A test of the intercept in the W1 model
3. A test of X1 in the W1 model
4. A test of X2 in the W1 model
5. A test of X1 in the W2 model
6. A test of X2 in the W2 model
7. The δ weights were:

	Baseline	Followup	Post
W1(δ_1)	1	0	-1
W2(δ_2)	1	-1	0

   If the two within-subject codes are orthogonal, then $\Sigma\delta_{1k}\delta_{2k} = 0$. However,
   $\Sigma\delta_{1k}\delta_{2k} = (1)(1) + (0)(-1) + (-1)(0) = 1$
   Therefore, the within-subject codes are not orthogonal.

8.

	Control	CBT	CBTAA
X3	0	1	0
X4	0	0	1

```
proc reg;
model W1 = X3 X4;
run;
```

   The coefficient to be tested is the intercept.

9. A: BATT = $\beta_0 + \beta_1 X1 + \beta_2 X2 + \varepsilon_i$
   C: BATT = $\beta_0 + \varepsilon_I$

10. A: $W1 = \beta_0 + \beta_1 X1 + \beta_2 X2 + \beta_3 BATT + \beta_4 X1xBATT + \beta_5 X2xBATT + \varepsilon_i$
    C: $W1 = \beta_0 + \beta_1 X1 + \beta_2 X2 + \beta_3 BATT + \beta_5 X2xBATT + \varepsilon_i$

Question B

1. The mean accuracy of the average participant is:

$$\frac{dom1 + dom2 + dom3 + non1 + non2 + non3}{6} = \frac{9.78}{6} = 1.63$$

2. A: $SUM = \beta_0 + \beta_1 ORDER + \varepsilon_i$
   C: $SUM = \beta_0 + \varepsilon_i$
   PRE = .0263
   F(1,16) = .43
   p = .5201

   The evidence suggests that accuracy did not depend on which hand participants threw with first.

3. A: $DOMVSNONDOM = \beta_0 + \beta_1 ORDER + \varepsilon_i$
   C: $DOMVSNONDOM = 0 + \beta_1 ORDER + \varepsilon_i$

$$PRE = \frac{SSR}{SSR + SSEa}$$

$$SSR = n(\beta_0)^2 = 18(1.78)^2 = 57.03$$

SSEa = 120.89

$$PRE = \frac{57.03}{57.03 + 120.89} = .32$$

$F(1,16) = (2.74)^2 = 7.50$
p = .0144

Accuracy was greater when participants threw with their dominant hand than with their non-dominant hand.

4. A: $DOMVSNONDOM = \beta_0 + \beta_1 ORDER + \varepsilon_i$
   C: $DOMVSNONDOM = \beta_0 + \varepsilon_i$

$$PRE = \frac{SSR}{SSR + SSEa}$$

SSR $= n(\beta_1)^2$
$= 18(-1.11)^2$
$= 22.18$

SSEa = 120.89

$$PRE = \frac{22.18}{22.18 + 120.89} = .155$$

$F(1,16) = (-1.71)^2 = 2.924$
p = .1056

The difference in accuracy between dominant and nondominant hand did not depend on which hand the participants threw with first.

5. A: $LINEAR = \beta_0 + \beta_1 ORDER + \varepsilon_i$
C: $LINEAR = 0 + \beta_1 ORDER + \varepsilon_i$

$$PRE = \frac{SSR}{SSR + SSEa}$$

SSR $= n(\beta_0)^2$
$= 18(.78)^2$
$= 10.89$

SSEa = 95.11

$$PRE = \frac{10.89}{10.89 + 95.11} = .103$$

$F(1,16) = (1.35)^2 = 1.823$
p = .1947

On average, accuracy of scores does not improve linearly across the set of three throws.

6. A: $LINEARINT = \beta_0 + \beta_1 ORDER + \varepsilon_i$
C: $LINEARINT = 0 + \beta_1 ORDER + \varepsilon_i$

$$PRE = \frac{SSR}{SSR + SSEa}$$

SSR $= n(\beta_0)^2$
$= 18(-.33)^2$
$= 2$

SSEa = 76.44

$$PRE = \frac{2.00}{2.00 + 76.44} = .0255$$

$F(1,16) = (-.65)^2 = .4225$

$p = .5268$

The extent to which there is linear improvement in throwing accuracy does not depend on the hand used to throw.

7. A: $LINEARINT = \beta_0 + \beta_1 ORDER + \varepsilon_i$
   C: $LINEARINT = \beta_0 + \varepsilon_i$

$$PRE = \frac{SSR}{SSR + SSEa}$$

$SSR = n(\beta_1)^2$
$= 18(-.556)^2$
$= 5.56$

$SSEa = 76.44$

$$PRE = \frac{5.56}{5.56 + 76.44} = .0678$$

$F(1,16) = (-1.08)^2 = 1.16$

$p = .2969$

The strength of the interaction does not depend on the hand participants threw with first.

8. $DOMVSNONDOM = 1.778 - 1.11ORDER$
   ORDER = -1 if participant threw first with their nondominant hand

$DOMVSNONDOM = 1.778 - 1.11(-1)$
$DOMVSNONDOM = 1.778 + 1.11$
$DOMVSNONDOM = 2.89$

The difference in accuracy between dominant and nondominant hands for this group is predicted to be 2.889, with accuracy greater for the dominant hand than for the nondominant hand.