ANSWERS TO THE PRACTICE FINAL

PART I:

1. a
2. b
3. c
4. b (In the normal table the closest entry to 4% = .0400 is .0401, which corresponds to z = –1.75. Then $x = 3350 - 1.75(480) = 2510$.)
5. d
6. c
7. e
8. 5
9. b
10. a
11. b
12. b
13. c
14. a
15. d

PART II:

1. True
2. True
3. True
4. False (the 95% confidence interval will be *wider* than the 90% confidence interval)
5. True
6. False (It answers the question "Could the result reasonably be due to *chance*)
7. True
8. True

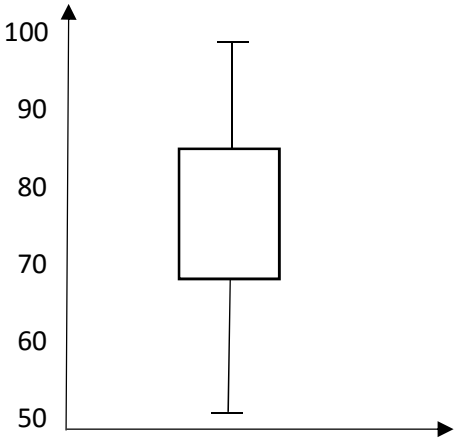
PART III:

1. (a)

Minimum	Q1	M	Q3	Maximum
51	68	73.5	85	98

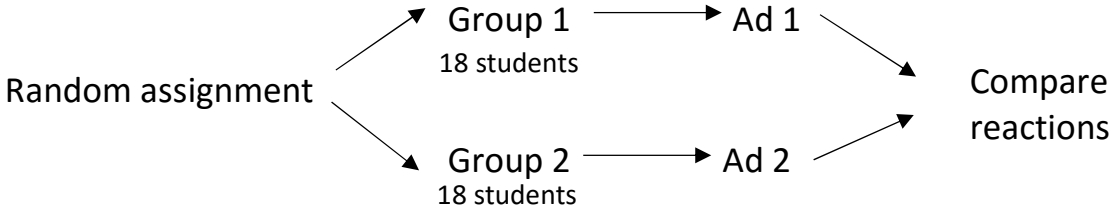
(b) $85 - 68 = 17$.

(c)



2. S, S

3.



4. Math test: $Z = (60 - 54)/3 = 2$
   History test: $Z = (80 - 75)/2 = 2.5$

   She did better on the history test, on which she scored 2.5 sd's above the mean, whereas on the math test she scored 2 sd's above the mean.

5. (a) The husband's age is *x* and the wife's age is y. Thus

$$b = r\frac{s_y}{s_x} = 0.394*(13.1/15.1) = 0.342.$$

(b) For every year older that the husband is, the wife's predicted age is 0.342 years older.

(c) $a = \bar{y} - b\bar{x}$ = 38.9 – (0.342)*44.9 = 23.5
so $\hat{y} = a + bx$ gives $\hat{y}$ = 23.5 + 0.342x.

(d) $\hat{y}$ = 23.5 + 0.342(44) = 38.5 years old.

6. (a) Use $\tilde{p} \pm z^* \sqrt{\frac{\tilde{p}(1-\tilde{p})}{n+4}}$ where $\tilde{p} = \frac{2+2}{30+4}$ = .118 and z^* = 1.96. We get .118 ± .108 = (.010, .226), or (1.0%,22.6%).

(b) We are 95% confident that between 1% and 22.6% of the students at the instructor's university are getting at least 8 hours of sleep per night.

7. (a) 4621/ (3057+4621+606) = .558, or 55.8%.
(b) 27/(27+606) = .043, or 4.3%.

8. (a) H_0: p = .50 and H_a: p > .50

(b) $\hat{p}$ = 59.2% = .592, p_0 = .50, and n = 120. Then $z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$ gives

Z = … = 2.02.

(c) $P(Z \geq 2.02) = 1 - P(Z \leq 2.02) = 1 - .9783 = .0217$, or ≈ 2%.

(d) Yes, since the *p*-value is less than the 5% significance level.

(e) There is good evidence that majority of American adults do not believe the news media exaggerate the seriousness of the global warming.

9. (a) 34 (the smaller of 40 – 1 and 35 – 1).

(b) $\bar{x}_1$ = 2.24, $\bar{x}_2$ = 1.44, s_1 = 0.40, s_2 = 0.24, n_1 = 40, n_2 = 35, and t^* = 1.691 (from calculator; if you use Table C you can use the value for the closest d.f. (30), t^* = 1.697. Using $\bar{x}_1 - \bar{x}_2 \pm t^* \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$ gives

2.24 – 1.44 ± 1.691(.075) = 0.80 ± 0.128 ≈ (0.67,0.93).