# Final Exam A - Fall 2004 - ANSWERS

1. C

2. A

3. C

4. C

5. B

6. A

7. A

8. B

9. C

10. D

11. B

12. D

13. D

14. C

15. B

16. D

17. B

18. D

19. B

20. D

21. FALSE

22. TRUE

23. FALSE

24. FALSE

25. TRUE

26. FALSE

27. TRUE

28. TRUE

29. FALSE

30. TRUE


31. A.)   z = (116 - 100)/16 = 1.00

         P(Z > 1.00) = 1 - 0.8413 = 0.1587

    B.)   1.28 = (x - 100)/16

         x = 120.48


32. Trial 1, because their Average Weights are too different.


    NOTE: If you took the test during Fall 2004, this question is number 33.


33. LINEARITY: There is a curvilinear relationship (RESIDUAL PLOT).

    CONSTANT SIGMA: There is an increasing spread (RESIDUAL PLOT).

    NORMALITY: The distribution is skewed right (HISTOGRAM OF RESIDUALS)


    NOTE: If you took the test during Fall 2004, this question is number 32.


34. A.)   HYPOTHESES: Ho: B1 = 0   versus  Ha: B1 =/= 0

    B.)   TEST STATISTIC: t = - 1.64/0.12 = - 13.67

           DEGREES OF FREEDOM: df = 20 - 2 = 18

    C.)   INTERPRETATION OF b1: For each one degree increase in latitude, the estimated mean

           response of April temperature decreases by 1.64 degrees Fahrenheit.

    D.)   yhat = 118.78 - 1.64(x)

           yhat = 118.78 - 1.64(40) = 53.18 degrees Fahrenheit

E.)   CONFIDENCE INTERVAL: - 1.64 +/- 2.101(0.12)      (- 1.8921, - 1.3879)

We are 95% confident that for each one degree increase in latitude, the true mean

response of April temperature decreases by between 1.3879 and 1.8921 degrees Fahrenheit

35.   A.)   HYPOTHESES: Ho: MU = 140   versus   Ha: MU > 140

B.)   TEST STATISTIC: $t = (145 - 140)/(8/\sqrt{16}) = 2.500$

C.)   P-VALUE: $0.01 < \text{p-value} < 0.02$

D.)   DECISION: Reject Ho at alpha = 0.05, because $(0.01 < \text{p-value} < 0.02) < \text{alpha} = 0.05$

E.)   CONCLUSION: We have enough evidence to conclude that the true mean

of cellulose content of a variety of alfalfa hay is higher than 140 mg/g at alpha = 0.05.