Student: _____

1. Good forecasts usually result by using choosing a/n
   A. appropriate process involving several steps
   B. correct mathematical technique
   C. correct qualitative method
   D. experienced forecaster
   E. none of the above

2. Perfect forecasts can be obtained only by using
   A. the right techniques
   B. personnel with the right experience
   C. a right blend of software and experience
   D. carefully controlled conditions but are never obtained in the real world
   E. lucky people and good systems

3. Appropriate reasons for using qualitative techniques of forecasting include
   A. non-availability of data
   B. past data unrepresentative of future
   C. non-availability of personnel familiar with quantitative techniques
   D. A and B
   E. A, B, and C

4. Advantages of qualitative forecasts include ability to incorporate
   A. executive judgments
   B. insight gained over a long period of time
   C. personal biases
   D. A, B, and C
   E. A and B

5. An automatic traffic counter is set to collect data on the number of cars passing through an intersection between 9 a.m. and 10 a.m. on every Monday, alternate Fridays, and every third Thursday of the month. This data will
   A. be considered as a time series
   B. be considered as an unconventional time series
   C. not be considered as a time series because all days are not covered
   D. not be considered as a time series because of unequal intervals
   E. either C or D

6. Qualitative forecasts can be modified by
   A. user experience
   B. user judgment
   C. A and B
   D. using quantitative methods
   E. none of the above

7. Quantitative forecasts can be modified by
   A. user experience
   B. user judgment
   C. A and B
   D. using qualitative methods
   E. none of the above

8. A forecast based on average values as compared to original data will have
   A. more variation, since real data is lost due to averaging
   B. less variation because of the smoothing effect of averaging
   C. about the same variation
   D. A or B, depending upon the data
   E. none of the above

9. A monthly forecast based on average monthly sales as compared to monthly forecast produced using daily sales data will have
   A. more variation
   B. less variation
   C. about the same variation
   D. cannot tell
   E. none of the above

10. Techniques based on averaging include
   A. naïve forecasting
   B. moving average
   C. exponential smoothing
   D. A and B only
   E. A, B, and C

11. Naïve forecast for any period is equal to the
   A. previous period's forecast
   B. average actual demand of all available previous periods
   C. previous period's actual demand
   D. average forecast of all available previous periods
   E. average of the actual demand of two or three previous periods

12. For the data (0,100), (1,200), (2,220), (3,220), (4,250), (5,310), where the first number in parenthesis is period and the second number is the actual demand, naïve forecast for period 6 will be equal to the
   A. 250
   B. 280
   C. 100
   D. 310
   E. 370

13. For products having a monthly seasonal demand pattern, naïve forecast for February 2006 will be equal to
   A. forecast for January 2006
   B. forecast for February 2005
   C. actual for January 2006
   D. actual for February 2005
   E. actual for February 2005

14. All other things remaining the same, as the number of periods used in the moving average forecast increases, the forecast values will tend to have
   A. smaller variation from each other
   B. larger variation from each other
   C. about the same variation from each other
   D. variation dependent on the raw data
   E. sometimes larger and sometimes smaller variation

15. As the number of periods used in a moving average forecast decreases, the forecast becomes
   A. more sensitive
   B. more responsive
   C. more aggressive
   D. less responsive
   E. B and C

16. As the number of periods used in a moving average forecast increases, the forecast becomes
    A. more sensitive
    B. more responsive
    C. more aggressive
    D. less responsive
    E. B and C

17. If responsiveness to recent data is important to the forecaster, then the number of periods used in a moving average forecast
    A. should be small
    B. should be large
    C. should be medium
    D. should be either small or large but not medium
    E. could be anything

18. As the number of periods used in a moving average forecast increases, the lag between forecast and actual
    A. increases
    B. decreases
    C. stays the same
    D. may increase or decrease depending on the data
    E. none of the above

19. For the data (0,100), (1,200), (2,210), (3,220), (4,260), (5,330), where the first number in parenthesis is period and the second number is the actual demand, three period moving average forecast for period 6 will be equal to the
    A. 270
    B. 220
    C. 275
    D. 170
    E. 330

20. For the data (0,100), (1,200), (2,210), (3,220), (4,260), (5,330), where the first number in parenthesis is period and the second number is the actual demand, four period moving average forecast for period 6 will be equal to the
    A. 250
    B. 255
    C. 270
    D. 182.5
    E. 330

21. For the data (0,100), (1,200), (2,210), (3,220), (4,260), (5,330), where the first number in parenthesis is period and the second number is the actual demand, four period moving average forecast for period 7 will be equal to the
    A. 250
    B. 255
    C. 270
    D. 182.5
    E. cannot find

22. One period moving average for any set of data will _____ be the same as the naïve forecast. (Choose the appropriate word to fill the blank.)
    A. sometimes
    B. always
    C. most of the times
    D. never
    E. cannot tell

23. Four period moving average for some data set can _____ be the same as naïve forecast. (Choose the appropriate word to fill the blank.)
    A. sometimes
    B. always
    C. most of the time
    D. never
    E. cannot tell

24. Exponential smoothing is an averaging method with
    A. unequal weights for the periods
    B. decreasing weights starting with highest weights for the oldest data
    C. decreasing weights starting with highest weights for the most recent data
    D. C and A
    E. none of the above

25. In exponential smoothing the actual weight assigned to previous data
    A. decreases with the age of data
    B. increases with the age of data
    C. is independent of the age of data
    D. stays the same regardless of age
    E. none of the above

26. In exponential smoothing the sum of the weights assigned to previous data
    A. tends to equal 1.0
    B. equals 1.0
    C. may be less than 1.0
    D. may be greater than 1.0
    E. none of the above

27. SUMPRODUCT function in excel can be used to
    A. sum two columns/rows and then multiply the sum
    B. multiply numbers of one column/row with the corresponding numbers of the other column/row
    C. multiply corresponding numbers of two columns/rows and add the products.
    D. either A or C, since they will give the same result
    E. none of the above

28. Weighted moving average method can be considered as a special case of exponential smoothing since both methods use
    A. weights for different actual values
    B. same number of periods
    C. decreasing weights
    D. increasing weights
    E. none of the above

29. Exponential smoothing can be considered as a special case of weighted moving average method since
    A. weights used in exponential smoothing decrease with age of data
    B. weights used in exponential smoothing increase with age of data
    C. weights used in exponential smoothing may be used as particular values in the weighted α moving average method
    D. both are similar
    E. none

30. Using the same data and exponential smoothing technique, produce Forecast A with α = 0.1 and Forecast B with α = 0.4
    A. forecast A will be more responsive than Forecast B
    B. forecast A will be less responsive than Forecast B
    C. forecast A will have the same level of responsiveness as Forecast B
    D. none of the above

31. As the value of α gets closer to 0,
    A. the pace of adjustment to forecast errors slows
    B. the pace of adjustment to forecast errors speeds up
    C. the smoothing increases
    D. the smoothing decreases
    E. A and D

32. The closer the value of α is to 1,
    A. the slower the pace of adjustment to forecast errors
    B. the faster will be the pace of adjustment to forecast errors
    C. greater will be the smoothing
    D. lesser will be the smoothing
    E. B and D

33. For the data (0,100), (1,200), (2,220), (3,220), (4,266), (5,318), where the first number in parenthesis is period and the second number is the actual demand, the exponentially smoothed forecast for period 6 (F_6), with initial forecast (F_0) = 100 and α =0.2, is equal to
    A. 206
    B. 306
    C. 318
    D. 305.7
    E. insufficient data

34. For the data (0,100), (1,200), (2,220), (3,220), (4,266), (5,318), where the first number in parenthesis is period and the second number is the actual demand, the exponentially smoothed forecast for period 7 (F_7), with initial forecast (F_0) = 100 and α =0.2, is equal to
    A. 206
    B. 306
    C. 318
    D. 228.4
    E. insufficient data

35. For the data (0,100), (1,200), (2,220), (3,220), (4,266), (5,318), where the first number in parenthesis is period and the second number is the actual demand, the exponentially smoothed forecast for period 6 (F_6), with initial forecast (F_0) = 100 and α =0.7, is equal to
    A. 206
    B. 237.4
    C. 318
    D. 297.9
    E. insufficient data

36. For the data (0,100), (1,200), (2,220), (3,220), (4,266), (5,318), where the first number in parenthesis is period and the second number is the actual demand, the exponentially smoothed forecast for period 7 (F_7), with initial forecast (F_0) = 100 and α =0.7, is equal to
    A. 206
    B. 237.4
    C. 318
    D. 297.9
    E. insufficient data

37. For the data (0,100), (1,200), (2,220), (3,220), (4,266), (5,318), where the first number in parenthesis is period and the second number is the actual demand, the exponentially smoothed forecast for period 6 (F_6), with initial forecast (F_0) = 100, was found to be 312.3. The researcher forgot the a used in the calculations, but it is known that the a used is either 0.9 or 0.2. What is your best guess for the α used, applying the properties of exponential smoothing?
    A. 0.2
    B. 0.9
    C. Either 0.2 or 0.9
    D. Cannot be guessed
    E. Only way is to calculate with both a and check

38. Trend of a time series is a
    A. persistent upward movement
    B. persistent downward movement
    C. persistent upward or downward movement
    D. may be linear or nonlinear
    E. C and D

39. Using the trend line $y_t = 20 + 6_t$, where yt is the trend line forecast for period t, y_5 will be equal to
    A. 20
    B. 26
    C. 30
    D. 50
    E. 10

40. In the trend line $y_t = a + 9t$, where yt is the trend line forecast for period t, and a is the Y-intercept. If y_8 = 82, *a* will be equal to
    A. 10
    B. 72
    C. 82
    D. –10
    E. cannot tell

41. Using the 'goal seek' command of the excel exponential smoothing module, one can
    A. optimize the forecast
    B. find a good exponentially smoothed forecast
    C. find an exponentially smoothed forecast which will minimize average forecast error
    D. change α as one wishes
    E. C and D

42. A linear trend equation of the form $yt = a + 9t$ may be obtained by
    A. drawing a graph of actual values on the y-axis and *t* on the x-axis
    B. the multiple regression method
    C. the simple linear regression method
    D. the squares of errors method
    E. none of the above

43. For the data (0,100), (1,200), (2,220), (3,220), (4,250), (5,280), where the first number in parenthesis is t and the second number is the actual demand, if we fit a trend line of the form $yt = a + bt$, the value of *a*
    A. must be 100
    B. must be between 100 and 200
    C. can be calculated using the formulae
    D. will not be exactly equal to 100
    E. C and D

44. For the data (0,100), (1,200), (2,220), (3,220), (4,250), (5,280), where the first number in parenthesis is t and the second number is the actual demand, if we fit a trend line of the form $yt = a + bt$, the value of *b*
    A. must be positive
    B. must be between 5 and 10
    C. can be calculated using the formulae
    D. must be negative
    E. A and C

45. For the data (0,400), (1,350), (2,300), (3,220), (4,200), (5,180), where the first number in parenthesis is *t* and the second number is the actual demand, if we fit a trend line of the form $yt = a + bt$, the value of *a*
    A. must be 400
    B. must be between 180 and 400
    C. can be calculated using the formulae
    D. will not be exactly equal to 400
    E. C and D

46. For the data (0,400), (1,350), (2,300), (3,220), (4,200), (5,180), where the first number in parenthesis is t and the second number is the actual demand, if we fit a trend line of the form $yt = a + bt$, the value of *b*
    A. must be positive
    B. must be between 5 and 10
    C. can be calculated using the formulae
    D. must be negative
    E. A and D

47. or the data (0,1000), (1,1500), (2,2000), (3,2500), (4,3000), (5,3500), where the first number in parenthesis is t and the second number is the actual demand, if we fit a trend line of the form $yt = a + bt$, the value of a obtained using the appropriate formulae is
    A. 0
    B. 500
    C. 1000
    D. 1500
    E. 2000

48. For the data (0,1000), (1,900), (2,800), (3,700), (4,600), (5,500), where the first number in parenthesis is t and the second number is the actual demand, if we fit a trend line of the form $yt = a + bt$, the value of a obtained using the appropriate formulae is
    A. 0
    B. 900
    C. 1000
    D. 750
    E. 500

49. For the data (0,1000), (1,1500), (2,2000), (3,2500), (4,3000), (5,3500), where the first number in parenthesis is t and the second number is the actual demand, if we fit a trend line of the form $yt = a + bt$, the value of b obtained using the appropriate formulae is
    A. 0
    B. 500
    C. 1000
    D. 1500
    E. 2000

50. For the data (0,1000), (1,900), (2,800), (3,700), (4,600), (5,500), where the first number in parenthesis is t and the second number is the actual demand, if we fit a trend line of the form $yt = a + bt$, the value of b obtained using the appropriate formulae is
    A. 0
    B. 900
    C. -100
    D. 100
    E. 750

51. For the data (0,1000), (1,1500), (2,2000), (3,2500), (4,3000), (5,3500), where the first number in parenthesis is t and the second number is the actual demand, if we fit a trend line of the form $yt = a + bt$, the line may be called
    A. a good fit
    B. an above average fit
    C. a poor fit
    D. a perfect fit
    E. can not tell

52. For the data (0,1000), (1,1500), (2,2000), (3,2500), (4,3000), (5,3500), where the first number in parenthesis is t and the second number is the actual demand, if we fit a trend line of the form $yt = a + bt$, then the trend line forecast for period 7 will be
    A. 4500
    B. 4000
    C. 5500
    D. 3500
    E. insufficient data

53. For the data (0,10), (1,20), (2,30), (3,40), (4,60), (5,80), where the first number in parenthesis is t and the second number is the actual demand, if we fit a trend line of the form $yt = a + bt$, the value of a obtained using the appropriate formulae is
    A. 5.0
    B. 10.0
    C. 13.71
    D. 5.71
    E. 0

54. For the data (0,10), (1,20), (2,30), (3,40), (4,60), (5,80), where the first number in parenthesis is t and the second number is the actual demand, if we fit a trend line of the form $yt = a + bt$, the value of b obtained using the appropriate formulae is
    A. 5.0
    B. 10.0
    C. 13.71
    D. 5.71
    E. 0

55. For the data (0,10), (1,20), (2,30), (3,40), (4,60), (5,80), where the first number in parenthesis is t and the second number is the actual demand, if we fit a trend line of the form $yt = a + bt$, then the trend line forecast for period 8 will be
    A. 140
    B. 115.39
    C. 59.39
    D. 128.0
    E. 110.0

56. If a time series exhibits an increasing trend, simple exponentially smoothed forecast will
    A. lag the trend
    B. be too low
    C. lead the trend
    D. be too high
    E. A and B

57. If a time series exhibits a decreasing trend, simple exponentially smoothed forecast will
    A. lag the trend
    B. be too high
    C. A and B
    D. be too low
    E. A and D

58. If a time series exhibits a strong trend, forecasting is best done using
    A. moving average
    B. exponential smoothing
    C. trend-adjusted exponential smoothing
    D. naïve method
    E. none of the above

59. A time series has seasonality if it exhibits a
    A. specific pattern for each season (Fall, Winter, Spring and Summer)
    B. pattern for each of the 12 months
    C. pattern for during the year (monthly, quarterly or bi-monthly)
    D. trend during the year
    E. A or D

60. Centered moving average is
    A. a technique for forecasting
    B. a technique for finding a representative value corresponding to a period
    C. used as a forecast, though not done often
    D. moving average positioned at the center of the data from which it is derived
    E. B and D

61. Seasonality indices (seasonal relatives) can be calculated by
    A. volume/average
    B. volume/centered moving average
    C. centered moving average/volume
    D. average/volume
    E. none of the above

62. Demand for roses in Great Lakes Roses has trend and seasonal components. Seasonal relatives Q_w, Q_{sp}, Q_{su}, Q_f are respectively 0.2, 1.3, 1.7, and 0.8. The trend line is estimated to be *yt = 1500 + 200 t*, where t is the quarter number. Starting with $t = 1$ for Winter 2004, when Great Lakes Roses opened its doors, the trend line forecast for Fall 2005 would be
    A. 1600
    B. 3100
    C. 2900
    D. 2480
    E. 2320

63. Demand for roses in Great Lakes Roses has trend and seasonal components. Seasonal relatives Q_w, Q_{sp}, Q_{su}, Q_f are respectively 0.2, 1.3, 1.7.and 0.8. The trend line is estimated to be $y_t = 1500 + 200\ t$, where t is the quarter number. Starting with t=1 for Winter 2004, when Great Lakes Roses opened its doors, the seasonally adjusted forecast for Fall 2005 would be
    A. 1600
    B. 3100
    C. 2900
    D. 2480
    E. 2320

64. A common way of incorporating cyclical variations in the forecast is through use of
    A. trend line estimation
    B. seasonal adjustment
    C. linear regression using a correlated leading variable as the independent variable
    D. linear regression using a correlated leading variable as the dependent variable
    E. government issued statistics and projections

65. A group of garden enthusiasts are growing beans. The first number in parenthesis is the ounces of fertilizer used in a community garden plot with an area of 200 sq. ft., the second number is the pounds of beans harvested in the plot: (12,50), (6, 36), (20,60), (5,24), (38,70), (3,24), (8, 42), (20,65), (10, 40), (15, 60). Your best guess of the correlation coefficient between the two variables is
    A. positive, may be 1.3
    B. negative, may be –1.4
    C. positive, but less than 1.0
    D. negative, but greater than –1.0
    E. cannot tell because of lack of specification as to which variable is correlated with which

66. If the slope of the linear regression line of the form $y' = a + bx$ is positive then we can be sure that
    A. correlation between x and y will be positive
    B. correlation between x and y will be positive
    C. correlation between x and y will be negative
    D. correlation between x and y will be negative
    E. both A and B, since the correlations refer to the same thing

67. A multiple regression line between mid termscores (y' , as dependent variable), hours worked (H), and the number of classes attended (c) is found to be y' = 20 + 10*h+ 5*c. This implies that
    A. all other things remaining the same, actual midterm score will be higher by 5 points for those who attended 11 classes as compared to those who attended 10 classes
    B. all other things remaining the same, estimated midterm score will be higher by 5 points for those who attended 11 classes as compared to those who attended 10 classes
    C. all other things remaining the same, actual midterm score will be higher by 10 points for those who worked for 8 hours as compared to those who worked for 7 hours
    D. all other things remaining the same, estimated midterm score will be higher by 10 points for those who worked for 8 hours as compared to those who worked for 7 hours
    E. B and D

68. MAD and MSE for a given set of data will be
    A. about the same for all data since they are both positive
    B. different since one is square of the other
    C. different in general, though both will be positive
    D. different in general, though both will be negative
    E. none of the above

69. Tracking signal
    A. will always be positive
    B. will always be less than 1
    C. could be any real number
    D. is the ratio of forecast errors to MAD
    E. C and D

70. If several consecutive values of tracking signal turn out to be negative, then the forecasting method may be
    A. overestimating demand
    B. underestimating demand
    C. inaccurately estimating, but not consistently over or underestimating
    D. need more information, like sign of MAD to conclude correctly
    E. none of the above

71. Demand data for number of packed food sold by Advanced Airlines on each day of the first two weeks of August 2005 is given in the table below.

Date	Day	Number of packages sold
8-1-2005	Monday	3010
8-2-2005	Tuesday	3100
8-3-2005	Wednesday	3300
8-4-2005	Thursday	3500
8-5-2005	Friday	3000
8-6-2005	Saturday	2500
8-7-2005	Sunday	2200
8-8-2005	Monday	3110
8-9-2005	Tuesday	3200
8-10-2005	Wednesday	3450
8-11-2005	Thursday	3600
8-12-2005	Friday	3100
8-13-2005	Saturday	2700
8-14-2005	Sunday	2200

    (A) Make a naïve forecast for 8-15-2005.
    (B) Make two sets of moving average forecasts with number of periods n= 3 and n=4 for 8-15-2005.
    (C) Make an exponentially smoothed forecast for 8-15-2005 with a = 0.3, setting the initial forecast to be equal to the actual.
    (D) Suggest a better method to forecast this demand and justify.

72. Demand data for number of packed food sold by Advanced Airlines on each day of the first two weeks of August 2005 is given in the table below.
    (A) Using the centered moving average method, generate a set of centered moving averages using n, the number of periods set to 3.
    (B) Fit a trend line for the centered moving average data, using t=1 for 8-1-2005.
    (C) Estimate seasonal index Monday.
    (D) Make a seasonally adjusted trend line forecast for 8-15-2005.

73. Data collected from a random set of 8 students on the number of hours they put in for a course and the score they obtained in the final exam of that course below.
(A) Find the sample correlation coefficient between the two variables.
(B) If you calculate the regression line using x as the independent variable and y as the dependent variable, what will be sign of the slope of the regression line?
What can you tell about the magnitude of the slope?
Data on hours worked and final exam score:

x (hours worked on the course)	y (score on the final exam)
10	20
20	58
34	100
12	22
6	15
18	60
7	20
18	50

74. Calculate the forecast accuracy measures such as MAD, MSE, and tracking signal for the data given below.

Date	Day	Number of packages sold	Forecast using exponential smoothing (alpha=0.3 and initial forecast=actual)
8/1/2005	Monday	3010	3010
8/2/2005	Tuesday	3100	3010
8/3/2005	Wednesday	3300	3037
8/4/2005	Thursday	3500	3116
8/5/2005	Friday	3000	3231
8/6/2005	Saturday	2500	3162
8/7/2005	Sunday	2200	2963
8/8/2005	Monday	3110	2734
8/9/2005	Tuesday	3200	2847
8/10/2005	Wednesday	3450	2953
8/11/2005	Thursday	3600	3102
8/12/2005	Friday	3100	3251
8/13/2005	Saturday	2700	3206
8/14/2005	Sunday	2200	3054

75. The data regarding cost and related variables of a promotional insert in major magazines is given in the Table below. The multiple regression output is given below. Answer the questions that follow.

Cost ($) of a promotional insert (y)	Circulation ($x1$)	Median Age of readers ($x2$)	Median Income ($) of readers($x3$)
73820	8000	41	23241
35140	845	39	30884
23795	725	31	25982
28980	2250	28	22785
21886	1250	33	16505
62750	7450	42	21785
33760	2000	34	24337
25090	700	42	36783
30040	670	40	35204
24340	1800	27	21828

ANOVA				
	df	SS	MS	F
Regression	3	2.72E+09	9.06E+08	44.65639
Residual	6	1.22E+08	20287390	
Total	9	2.84E+09		

(A) Write down the Multiple Regression equation.
(B) What is the predicted cost of a promotional insert cost for a circulation of 7000, with a median age of 43 and median income of $25,000?
(C) Is the overall regression line significant at 0.10 level?
(D) Is median age significant at 0.10 level?
(E) Which independent variable/s, if any, would you omit and why?

	Coefficients	Standard Error	t Stat	p-value
Intercept	-3368.6	9630.322	-0.34979	0.738446
Circulation ($x1$)	6.099642	0.889141	6.860153	0.000472
Median Age of readers ($x2$)	394.0439	454.2879	0.867388	0.419063
Median Income ($) of readers($x3$)	0.369846	0.413479	0.894473	0.405518

ch02 Key

1. A
2. D
3. D
4. E
5. D
6. E
7. C
8. B
9. B
10. E
11. C
12. D
13. DE
14. A
15. B
16. D
17. A
18. A
19. A
20. B
21. E
22. E
23. A
24. D
25. A
26. B
27. C
28. E
29. C
30. B
31. E
32. E
33. A
34. E
35. D
36. E

37. B

38. E

39. D

40. A

41. C

42. C

43. E

44. E

45. E

46. E

47. C

48. C

49. B

50. C

51. D

52. A

53. D

54. C

55. B

56. E

57. C

58. C

59. C

60. E

61. B

62. B

63. D

64. C

65. C

66. E

67. E

68. C

69. E

70. A

Date	Day	Number of packages sold	Moving average with *n*=3	Moving average with *n*=4	Forecast using exponential smoothing (alpha=0.3 and initial forecast=actual)
8/1/2005	Monday	3010			3010
8/2/2005	Tuesday	3100			3010
8/3/2005	Wednesday	3300			3037
8/4/2005	Thursday	3500	3136.667		3115.9
8/5/2005	Friday	3000	3300	3227.5	3231.13
8/6/2005	Saturday	2500	3266.667	3225	3161.791
8/7/2005	Sunday	2200	3000	3075	2963.254
8/8/2005	Monday	3110	2566.667	2800	2734.278
8/9/2005	Tuesday	3200	2603.333	2702.5	2846.994
8/10/2005	Wednesday	3450	2836.667	2752.5	2952.896
8/11/2005	Thursday	3600	3253.333	2990	3102.027
8/12/2005	Friday	3100	3416.667	3340	3251.419
8/13/2005	Saturday	2700	3383.333	3337.5	3205.993
8/14/2005	Sunday	2200	3133.333	3212.5	3054.195
			2666.667	2900	2797.937

(D) seasonally adjusted trend line forecast:
(C) 2797.3
(B) 2666.7 and 2900
71. (A) 2200

(D) (3085 – 5.2*15)*(1.096) = 3297.05
(C) 1.096
(B) Trend line: y' = 3085.7 – 5.2 t

Date	Day	Number of packages sold	Centered moving average with *n*=3	Period	Seasonal index = Volume/centered moving average
8/1/2005	Monday	3010			
8/2/2005	Tuesday	3100	3136.667	2	0.988310308
8/3/2005	Wednesday	3300	3300	3	1
8/4/2005	Thursday	3500	3266.667	4	1.071428571
8/5/2005	Friday	3000	3000	5	1
8/6/2005	Saturday	2500	2566.667	6	0.974025974
8/7/2005	Sunday	2200	2603.333	7	0.845070423
8/8/2005	Monday	3110	2836.667	8	1.096357227
8/9/2005	Tuesday	3200	3253.333	9	0.983606557
8/10/2005	Wednesday	3450	3416.667	10	1.009756098
8/11/2005	Thursday	3600	3383.333	11	1.064039409
8/12/2005	Friday	3100	3133.333	12	0.989361702
8/13/2005	Saturday	2700	2666.667	13	1.0125
8/14/2005	Sunday	2200			

72. (A)

(C) You cannot tell anything about the magnitude of the slope, based on *r*.
(B) The slope will be positive, since the correlation coefficient is positive.
(A) Using the formulas given in 2-8, will yield *r* = 0.98

x(hours worked on the course)	*y*(score on the final exam)	*x***x*	*y***y*	*x***y*
10	20	100	400	200
20	58	400	3364	1160
34	100	1156	10000	3400
12	22	144	484	264
6	15	36	225	90
18	60	324	3600	1080
7	20	49	400	140
18	50	324	2500	900
125	345	2533	20973	7234

73. It is easiest to do the calculations systematically as displayed in the Table below. The last row contains the totals; the additional columns are self-explanatory.

74.

Date	Day	Number of packages sold	Forecast	Absolute deviation	Square of error	Deviation	Cumulative deviation up to the period	MAD up to the period	Tracking signal
8/1/2005	Monday	3010	3010	0	0	0	0	0	-
8/2/2005	Tuesday	3100	3010	90	8100	90	90	45	2
8/3/2005	Wednesday	3300	3037	263	69169	263	353	117.6667	3
8/4/2005	Thursday	3500	3115	385	148225	385	738	184.5	4
8/5/2005	Friday	3000	3231	231	53361	-231	507	193.8	2.616099
8/6/2005	Saturday	2500	3161	661	436921	-661	-154	271.6667	-0.56687
8/7/2005	Sunday	2200	2963	763	582169	-763	-917	341.8571	-2.68241
8/8/2005	Monday	3110	2734	376	141376	376	-541	346.125	-1.56302
8/9/2005	Tuesday	3200	2846	354	125316	354	-187	347	-0.5389
8/10/2005	Wednesday	3450	2952	498	248004	498	311	362.1	0.858879
8/11/2005	Thursday	3600	3102	498	248004	498	809	374.4545	2.160476
8/12/2005	Friday	3100	3251	151	22801	-151	658	355.8333	1.84918
8/13/2005	Saturday	2700	3205	505	255025	-505	153	367.3077	0.416545
8/14/2005	Sunday	2200	3054	854	729316	-854	-701	402.0714	-1.74347
			Sum	5629	3067787	-701			
				MAD = 402.07	MSE=235983				

(E) One of the second and third variables may be dropped. Then run the regression and see what the significance of the remaining variables is, before proceeding further. We would not want to drop more than one variable at a time, because dropping one variable may affect all numbers in a regression analysis.
The first independent (predictor) variable is significant because the corresponding p-value is less than 0.10. The second independent (predictor) variable is not significant because the corresponding p-value is less than 0.10. The third independent (predictor) variable is not significant because the corresponding p-value is greater than 0.10.
(D) We just look at the p-value for each coefficient, ignoring the constant.

Step 5: Conclusion: Reject H_0 . At least one of the β 's is significant
Step 4: Calculate the test statistic value: F= 44.65

Step 3: If the test statistic > 3.29, reject H_0 . Otherwise fail to reject H_0
Step2: Test statistic is F, with 3 (numerator d.f.) and 6 (denominator d.f.) and for a significance level of 0.10, the critical value is 3.29

H_1 : Not all β's are 0

$H_o : \beta_1 = 0, \beta_2 = 0; \beta_3 = 0$

(C) Step 1:
(B) Predicted promotion insert cost = -3368.6 + 6.099642 (7000) + 394.0439 (43) + 0.369846 (25000) = 65518.92
Y-hat = -3368.6 + 6.099642 x_1 + 394.0439 x_2 + 0.369846 x_3
75. (A) The regression equation is:

ch02 Summary

Category	*# of Questions*
Difficulty: Easy	12
Difficulty: Hard	23
Difficulty: Med	40
Stevenson - Chapter 02	75