Sec I – Term 4 Name Key ID: 1

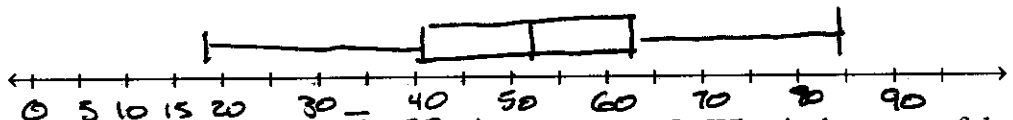
Self Check #19 – Statistics & Correlation Date_____ Period_____

Use the following data of the ages of the Best Actor Winners to answer questions 1-9:

63, 52, 84, 55, 44, 36, 32, 38, 18, 48, 46, 59, 52, 81, 62, 64, 52

1. Find the following: Min: 18 Q1: 41 Med: 52 Q3: 62.5 Max: 84

2. Make a Box Plot



3. What is the mean of the data? $\bar{x}$: 52.1

4. What is the interquartile-range (IQR)? 62.5 − 41 = 21.5

5. What is the standard deviation? 16.6

5. What is the range of the data? 84 − 18 = 66

7. What is the mode? 52

9. Is there an outlier? 81 & 18

Use the data below about Time someone spent Searching for an iPod online and how much of a discount they were able to get. .

Time Spent Searching (minutes)	26	19	25	16	24	24	28	21	18
Dollars Discounted	27	18	21	21.5	23	24	29	19.5	17.5

6. Make a scatter plot of the data. Which kind of regression would me more appropriate for the situation, Linear or Exponential? Correlation Coefficient of Exp is closer to 1

7. What is the linear regression equation?

$y = 0.76x + 5.15$

8. What is the slope? What does it mean in terms of sale prices and time spent on the internet?

$m = 0.76$ discount goes up for each minute

9. What is the y-intercept? What does it mean in terms of time spent searching and dollars discounted? Does it make sense in the context?

$b = 5.15$ start w/ discount of $5.15

10. Predict the dollars discounted if the time spent searching is 25 minutes.

$y = 0.76(25) + 5.15$
$y = 24.15$ or $24.15 discount at 25 min.

11. What is the correlation coefficient?

0.7912

12. Is the correlation between time searching and dollars discounted a good correlation?

yes, above 0.5.

13. Do you believe there is a causational relationship between time searching and dollars discounted?

no, not direct by adding one more minute

Use the following tables and your calculator to complete the following:

The table below shows the number frogs in a pond over time.

years	9	15	0	6	2	12	7	5	3
# of frogs in the pond	34	5	286	89	216	25	57	119	168

14. Find the exponential regression equation on your calculator.

$y = 364.4 \cdot (0.77)^x$

15. What does the factor of change tell you in terms of the situation?

0.77 is less than 1.00 so decay

16. What does the y-intercept tell you in terms of the situation?

start w/ 364 frogs using equation

17. What is the correlation coefficient?

0.9526

18. What does this tell you about the relationship between number of years and number of frogs?

Very strong correlation

For each data set shown, state the correlation between the two variables. Determine if you think there is a causation relationship between the variables. If so, explain why. If not, give some other factors that might cause the correlation.

Absences	6	1	15	9	12	5	8	10	20
Final Grade	80	99	41	72	56	86	70	65	23

19. What is the linear correlation coefficient?

-0.9961

20. Do you think there is a causational relationship? If so, what is it?

no, not direct one to one

21. Why do you think there is causation? or What else might explain the correlation?

- Missed classes for athletics or othe extra curricular

Number of years worked and annual salary (in thousands of dollars).

Years	0.5	1	1	1.5	2	2	3	4	4.5	9	9.5	15
Salary (thousands of $)	55	63	64	62	64	68	70	74	74	80	85	90

22. Correlation coefficient:

Linear: 0.9452 EXP: 0.9283

23. Is there a correlation? How do you know?

Yes, both are close to 1

24. Is there a Causation?

- no - not direct one to one