Assignment A2 Time series Name: Mice Waeham

Listed below is the selling price for a share of PepsiCo Inc. at the close of the calendar year.

Year	Price ($)	Year	Price ($)
1990	$13.000	1996	$29.250
1991	16.938	1997	36.250
1992	20.750	1998	40.875
1993	20.438	1999	35.250
1994	18.125	2000	49.563
1995	27.938		

Source: *http://phx.corporate-ir.net/phoenix.zhtml?c=78265&p=irol-stocklookup&t=HistQuote*

a. Plot the data.
b. Determine the least squares trend equation.
c. Estimate the values for the years 1995 and 2000

y2005=a+bt
y=8.44+3.27(6)
y=28.03

y2000=8.44+3.27(11)
y2000=$44.36

d. Estimate the selling price in 2008. Does this seem like a reasonable estimate based on the historical data?

y'2008=8.44+3.27(19)
y'2008=$70.57
No it will likely be less because the stock fluctuated +/- ever 2-3 years.

e. By how much has the stock price increased or decreased (per year) on average during the period?

During this period the stock increased/decreased and average of $13.68.

QUA2311 - Time Series Assignment Worksheet Name: Mice Carrehan

Share Price of PepsiCo. Inc.

	Time (t)				Trend Vals.		e)
Years	T(x)	y	ty	t^2	Y'	CI %	
1990	1	13.00	13	1	20.84	111.04	0
1991	2	16.94	33.88	1	19.66	113.12	3.94
1992	3	20.75	62.25	4	22.14	113.77	7.75
1993	4	20.44	81.75	9	24.63	95.04	7.44
1994	5	18.13	90.63	16	27.11	73.18	5.13
1995	6	27.94	167.63	25	29.60	99.66	14.94
1996	7	29.25	204.75	36	32.08	93.45	1.31
1997	8	36.25	290.00	49	34.56	104.88	23.25
1998	9	40.88	367.88	64	37.05	108.05	27.88
1999	10	35.25	352.50	81	39.53	85.78	22.25
2000	11	49.56	545.19	100	42.02	111.76	36.56
2001	12					Sum	150.44/11
2002	13						13.68
2003	14						
2004	15		2007	18			
2005	16		2008	19			
2006	17						
Sum	66	308.38	2209.45	506.00	308.38	-29.36	0

Formulae: $\boxed{Y' = a + bt}$ where a = y-intercept, b =slope, x = unit of time.

Slope = b $= \dfrac{n\sum ty - \sum t \sum y}{n\sum t^2 - (\sum t)^2}$

$= \dfrac{(11)(220945) - (66)(308.38)}{(11)(506) - 66^2}$

$= \dfrac{3951.06}{1210}$

$b = \$3.27$

Y-Intercept: $= \dfrac{\sum y}{n} - \dfrac{b(\sum t)}{n}$

$= \dfrac{308.38}{11} - 83.27\left(\dfrac{66}{11}\right)$

$= 28.03 - 3.27(6)$

$a = 8.141$

Using the slope and y-intercept, calculate the trend values: Y'= a + bx

substituting values for each x in the series.

Notice the increase in each Y' is the same (the amount of the slope). Interpret the meaning of this value.

Plot the time series (true values). (Blue)

Plot the trend line on the same graph. (Red)