

Earnings per Share The table shows the earnings per share y (in dollars) for Wal-Mart Stores, Inc. from 1990 to 2012. (Data Source: Wal-Mart Stores, Inc.)

DATA	Year	Earnings per share, y
	1990	0.29
	1991	0.35
	1992	0.44
	1993	0.51
	1994	0.59
	1995	0.60
	1996	0.67
	1997	0.78
	1998	0.99
	1999	1.28
	2000	1.40
	2001	1.50
	2002	1.81
	2003	2.03
	2004	2.41
	2005	2.63
	2006	2.92
	2007	3.16
	2008	3.42
	2009	3.66
	2010	4.07
	2011	4.45
	2012	5.02

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- (a) Use a graphing utility to plot the data. Let t represent the year, with $t = 0$ corresponding to 1990. Describe the trend in the data.
- (b) Use the technique demonstrated in Exercises 97–100 in Section 7.3 to set up a system of equations for the data and to find a least squares regression parabola $y = at^2 + bt + c$ that models the data. Let t represent the year, with $t = 0$ corresponding to 1990.
- (c) Use the graphing utility to graph the least squares regression parabola from part (b) and the original data in the same viewing window. How well does the model fit the data? Explain your reasoning.
- (d) Use the *regression* feature of the graphing utility to find a quadratic model for the data. How does the model given by the graphing utility compare with the model you found in part (b)?
- (e) Value Line, Inc., a corporation that provides financial services and publications, projected that the earnings per share for Wal-Mart in 2013 and 2014 would be \$5.20 and \$5.65, respectively. Compare Value Line's projections for 2013 and 2014 with the earnings per share predicted by the model from part (b). Do Value Line's estimates agree with the model?
- (f) Do you think a different type of model would be a better fit for the data? If so, use the *regression* feature of the graphing utility to find another model for the data and predict the earnings per share for Wal-Mart in 2013 and 2014. How do these predictions compare with those determined by Value Line?