The retirement plan in Example 3 is somewhat unreasonable because it assumes that a person invests the same amount each month for 50 years. In a typical retirement plan, the monthly amount that a person invests increases over time.

Study Tip

The money invested in a 401(k) retirement plan is tax deferred. As such, these plans follow rules and regulations published by the IRS.

EXAMPLE 4 Creating a Retirement Plan

You start your working career when you are 22 years old. Your beginning salary is $40,000 per year. Your employer offers a 401(k) matching retirement plan that amounts to 10% of your salary (5% from you and 5% from your employer). Assume that your salary increases 3% each year and that the 401(k) plan averages 6% annual returns for the life of the plan. What is the balance in your account at age 70?

SOLUTION

The following spreadsheet is oversimplified because it calculates interest annually, instead of monthly. It still gives you the magnitude of the balance after 48 years.

DATA

	A	B	C	D
1	**Annual Salary**	**401(k) Contribution**	**Balance in Account**	**Interest Earned**
2	$40,000.00	$4,000.00	$4,000.00	$240.00
3	$41,200.00	$4,120.00	$8,360.00	$501.60
⋮				
48	$155,801.75	$15,580.17	$1,527,202.89	$91,632.17
49	$160,475.80	$16,047.58	$1,634,882.65	$98,092.96
50	**Total**	**$417,633.58**		**$1,315,342.02**

So, at the end of 48 years, you and your employer will have contributed about $418,000 into the account, and the account will have earned about $1,315,000 in interest, for a total balance of about $1,733,000.

Checkpoint

Help at Math.andYOU.com

The graph shows the balance in the retirement account in Example 4. Use the graph to estimate the balance in your account at age 59.