



“... I wish to be useful even after my death, if possible, in forming and advancing other young men, that may be serviceable to their country in both these towns. To this end, I devote two thousand pounds sterling, of which I give one thousand thereof to the inhabitants of the town of Boston, in Massachusetts, and the other thousand to the inhabitants of the city of Philadelphia, in trust, to and for the uses, intents, and purposes herein after mentioned and declared. . .”

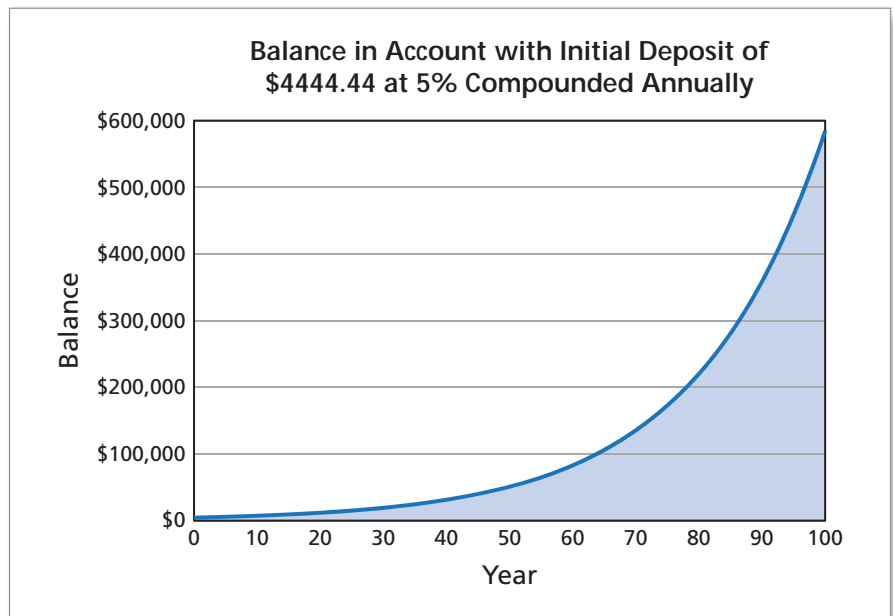
EXAMPLE 2 Calculating the Consequences of Franklin’s Will

Benjamin Franklin died in 1790. In his will, he left 1000 pounds sterling (about \$4444.44) to Boston and to Philadelphia. He expected the money to earn 5% annually for 100 years. Then, about 75% of the money would be distributed for various projects and the remaining 25% would be invested at 5% for another 100 years. The trust funds were set up in 1791.

- How much did Franklin expect each city to have after 100 years?
- Despite Franklin’s calculations, Boston had only about \$100,000 to reinvest after the distributions. This money earned about 4.1% annually for the next 100 years. What was the balance in Boston’s fund in 1991?
- Philadelphia had only about \$40,000 to reinvest after the distributions. This money also earned about 4.1% annually for the next 100 years. What was the balance in Philadelphia’s fund in 1991?

SOLUTION

a. $A = 4444.44(1 + 0.05)^{100} \approx \$584,449$



- b. In 1991, the balance of Boston’s fund was about

$$A = 100,000(1 + 0.041)^{100} \approx \$5,559,976.$$

- c. In 1991, the balance of Philadelphia’s fund was about

$$A = 40,000(1 + 0.041)^{100} \approx \$2,223,991.$$

So, although Franklin had intended for the two cities to end up with over \$38 million, the actual amount they received was about \$7.8 million.

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The CPI from 1774 through 2010 is shown on page 165. Use this index to estimate the value of \$5.6 million (in 1991 dollars) at the time of Franklin’s death in 1790.