

### 3.1: The Power of Compound Interest

The quote at the start of the chapter is often attributed to Albert Einstein (despite some controversy as to the accuracy of that attribution). However, the validity of the statement itself has merit. Positive returns on investments over long periods of time are central to making money work for you as the power of compounding allows for geometric growth. Consider the following table (before long, you'll be able to verify these calculations) of someone saving \$250 per month for various times at various rates of return. Note that an individual who is 25 would have about 40 years until a standard retirement at age 65 and, assuming their employer offers a 50% match on retirement savings plans such as a 401(k), a total contribution of \$250 each month would only be \$2000 per year out of pocket before taxes.

**Table 3.1.1 : Future Value of \$250 per month investment**

Years/Rate of Return	5%	10%	15%
1	\$3,069.71	\$3,141.39	\$3,215.09
5	\$17,001.52	\$19,359.27	\$22,143.63
10	\$38,820.57	\$51,211.24	\$68,804.26
15	\$66,822.24	\$103,617.59	\$167,126.69
20	\$102,758.42	\$189,842.21	\$374,309.87
25	\$148,877.43	\$331,708.35	\$810,882.40
30	\$208,064.66	\$565,121.98	\$1,730,819.90
35	\$284,023.11	\$949,159.51	\$3,669,295.04
40	\$381,505.04	\$1,581,019.90	\$7,754,013.69
45	\$506,609.32	\$2,620,625.43	\$16,361,256.65
50	\$667,162.99	\$4,331,097.70	\$34,498,278.44

Take a moment to review the table above. Note that at 5 years out, the rate of return makes some difference, but not a dramatic difference. By 15 years out, an individual would have 2.5 times as much at the 15% rate of return as the 5% rate of return. By 30 years out, the 10% rate of return is 2.7 times as much as the 5% rate of return and the 15% rate of return has accumulated 8.3 times the wealth. By 40 years out, an individual has invested \$120,000 into her retirement savings (40 years at \$3000 per year – with the potential for some of that \$120,000 coming from the employer). The power of compounding has generated about \$261,500 at 5%, nearly \$1.5 million at 10%, and over \$7.5 million at 15%. This example illustrates how powerful time and return are as tools for building wealth. Now it is time to show you how to do these and other time value of money calculations.

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